mini mx SDI

User Manual

RGBlink®

Since April 1, 2025, the system of mini-mx models will be upgraded to the system of mini-mx SDI.

For mini-mx models already purchased or for which the purchasing needs were submitted to RGBlink before April 1, 2025, please contact your local sales representatives for solutions.

Since April 1, 2025, please use mini-mx SDI models, along with their associated materials and pricing system.

Attention please:

1. mini-mx devices do not have SDI input connectors and the embedded system cannot support any SDI operations. You can not set IN1~IN4 of a mini-mx as SDI inputs. If necessary, please purchase a mini-mx SDI instead.

2. The silkscreens of mini-mx and mini-mx SDI will be unified to that of mini-mx SDI. You can distinguish between the two models by checking whether your device has SDI input connectors.

Content

Content **3**

Declarations **8**

FCC/Warranty 8

Operators Safety Summary 9

Installation Safety Summary 9

Chapter 1 Your Product **11**

1.1 In the Box 11

1.2 Product Overview 13

1.2.1 Application 14

1.2.2 Key Features 15

1.2.3 Front Panel 16

1.2.4 Interface Panel 18

1.2.5 Dimension 20

Chapter 2 Install Your Product **21**

2.1 Connecting HDMI/SDI Input 21

2.2 Connecting HDMI Output 21

2.3 Connecting Microphone and External Monitoring Devices 22

2.4 Connecting USB for Streaming and Recording 23

2.5 Connecting Router 24

2.6 Plugging in Power 24

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2.7 Turning on Your mini-mx SDI 25

Chapter 3 Use Your Product **26**

3.1 Main Interface 26

3.2 MENU 27

3.3 Editing Interface 29

3.4 Adding Layers 30

3.4.1 Adding Layer A 30

3.4.2 Adding Layer B 31

3.5 PIP (Picture-in-Picture) 32

3.6 Adding Materials 33

3.6.1 Layer Storage Path 33

3.6.2 Adding a Background 36

3.6.3 Adding a LOGO 38

3.6.4 Adding a Overlay 40

3.6.5 Adding Scoreboard 43

3.7 Chroma Key 44

3.8 Controlling PTZ Camera 45

3.8.1 PTZ Control 46

3.8.2 PTZ Preset 50

3.9 Saving and Loading Scenes 52

3.9.1 Save a Scene 52

3.9.2 Load a Scene to the PVW window 53

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3.9.3 Replace a Scene 54
3.9.4 Delete a Scene 54
3.10 Video Output 54
3.10.1 Multi-view 55
3.10.2 Program 57
3.10.3 Resolution 58
3.10.3 NDI Output 58
3.11 TAO Cloud Device Access 60
3.11.1 Binding mini-mx SDI to TAO Cloud 60
3.12 Streaming 63
3.12.1 Streaming on Device 63
3.12.1.1 Network connection 63
3.12.1.2 Copy the Streaming Address (Take YouTube as an Example) 66
3.12.1.3 Select the Platforms to be Streamed 68
3.12.1.4 Streaming Setting 68
3.12.1.5 Enable Streaming 69
3.12.2 TAO Cloud Streaming 69
3.12.3 USB2 Capture Streaming 72
3.13 Recording 75
3.14 Transition Effects 77
3.14.1 Transition Effects Selection 77
3.14.2 Transition Effects Illustration 79
3.15 Audio 82
3.15.1 Audio Management Interface 82
3.15.2 Selecting Microphone and Setting Level 85
3.15.2.1 Selecting Microphone 85

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3.15.3 Advanced Functions 86
3.16 Setting 89
3.16.1 About 90
3.16.2 Date and Time 90
3.16.3 Input 91
3.16.3.1 Input Selection 92
3.16.3.2 Signal Switching via TAO Cloud 93
3.16.3.2 NDI Authorization 94
3.16.3.3 Media Library 96
3.16.4 Language 96
3.16.5 Network 97
3.16.6 Bluetooth 99
3.16.7 Scene Loop 99
3.16.8 VFA(Video Follow Audio) 100
3.16.8 Switch Mode 101
3.16.10 Fan 102
3.16.11 Display 102
3.16.12 Color Management 102
3.16.13 PGM PTZ Protect 103
3.16.14 T-Bar Correction 103
3.16.15 Auto Return 104
3.16.16 Reset 104
Chapter 4 Ordering Codes **106**
4.1 Product Code 106

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Chapter 5 Appendix **107**

5.1 Specification 107

5.2 FAQ 108

5.3 Upgrade 111

5.3.1 Online Upgrade 111

5.4 Terms & Definitions 113

5.5 Revision History 120

Chapter 6 Support **121**

6.1 Contact us 121

6.2 Operation Videos 122

Thank you for choosing our product!
This User Manual is designed to show you how to use this product quickly and make use of all the features. Please read all directions and instructions carefully before using this product.

Declarations

FCC/Warranty

Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the user will be responsible for correcting any interference.

Guarantee and Compensation

RGBlink provides a guarantee relating to perfect manufacturing as part of the legally stipulated terms of guarantee. On receipt, the purchaser must immediately inspect all delivered goods for damage incurred during transport, as well as for material and manufacturing faults. RGBlink must be informed immediately in writing of any complains.

The period of guarantee begins on the date of transfer of risks, in the case of special systems and software on the date of commissioning, at latest 30 days after the transfer of risks. In the event of justified notice of compliant, RGBlink can repair the fault or provide a replacement at its own discretion within an appropriate period. If this measure proves to be impossible or unsuccessful, the purchaser can demand a reduction in the purchase price or cancellation of the contract. All other claims, in particular those relating to compensation for direct or indirect damage, and also damage attributed to the operation of software as well as to other service provided by RGBlink, being a component of the system or independent service, will be deemed invalid provided the damage is not proven to be attributed to the absence of properties guaranteed in writing or due to the intent or gross negligence or part of RGBlink.
If the purchaser or a third party carries out modifications or repairs on goods delivered by RGBlink, or if the goods are handled incorrectly, in particular if the systems are commissioned operated incorrectly or if, after the transfer of risks, the goods are subject to influences not agreed upon in the contract, all guarantee claims of the purchaser will be rendered invalid. Not included in the guarantee coverage are system failures which are attributed to programs or special electronic circuitry provided by the purchaser, e.g. interfaces. Normal wear as well as normal maintenance are not subject to the guarantee provided by RGBlink either.
The environmental conditions as well as the servicing and maintenance regulations specified in this manual must be complied with by the customer.

Operators Safety Summary

The general safety information in this summary is for operating personnel.

Do Not Remove Covers or Panels

There are no user-serviceable parts within the unit. Removal of the top cover will expose dangerous voltages. To avoid personal injury, do not remove the top cover. Do not operate the unit without the cover installed.

Power Source

This product is intended to operate from a power source that will not apply more than 230 volts rms between the supply conductors or between both supply conductor and ground. A protective ground connection by way of grounding conductor in the power cord is essential for safe operation.

Grounding the Product

This product is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle before connecting to the product input or output terminals. A protective-ground connection by way of the grounding conductor in the power cord is essential for safe operation.

Use the Proper Power Cord

Use only the power cord and connector specified for your product. Use only a power cord that is in good condition. Refer cord and connector changes to qualified service personnel.

Use the Proper Fuse

To avoid fire hazard, use only the fuse having identical type, voltage rating, and current rating characteristics. Refer fuse replacement to qualified service personnel.

Do Not Operate in Explosive Atmospheres

To avoid explosion, do not operate this product in an explosive atmosphere.

Installation Safety Summary

Safety Precautions

For all product installation procedures, please observe the following important safety and handling rules to avoid damage to yourself and the equipment.
To protect users from electric shock, ensure that the chassis connects to earth via the ground wire provided in the AC power Cord.
The AC Socket-outlet should be installed near the equipment and be easily accessible.

Unpacking and Inspection

Before opening product shipping box, inspect it for damage. If you find any damage, notify the

shipping carrier immediately for all claims adjustments. As you open the box, compare its contents against the packing slip. If you find any shortages, contact your sales representative.
Once you have removed all the components from their packaging and checked that all the listed components are present, visually inspect the system to ensure there was no damage during shipping. If there is damage, notify the shipping carrier immediately for all claims adjustments.

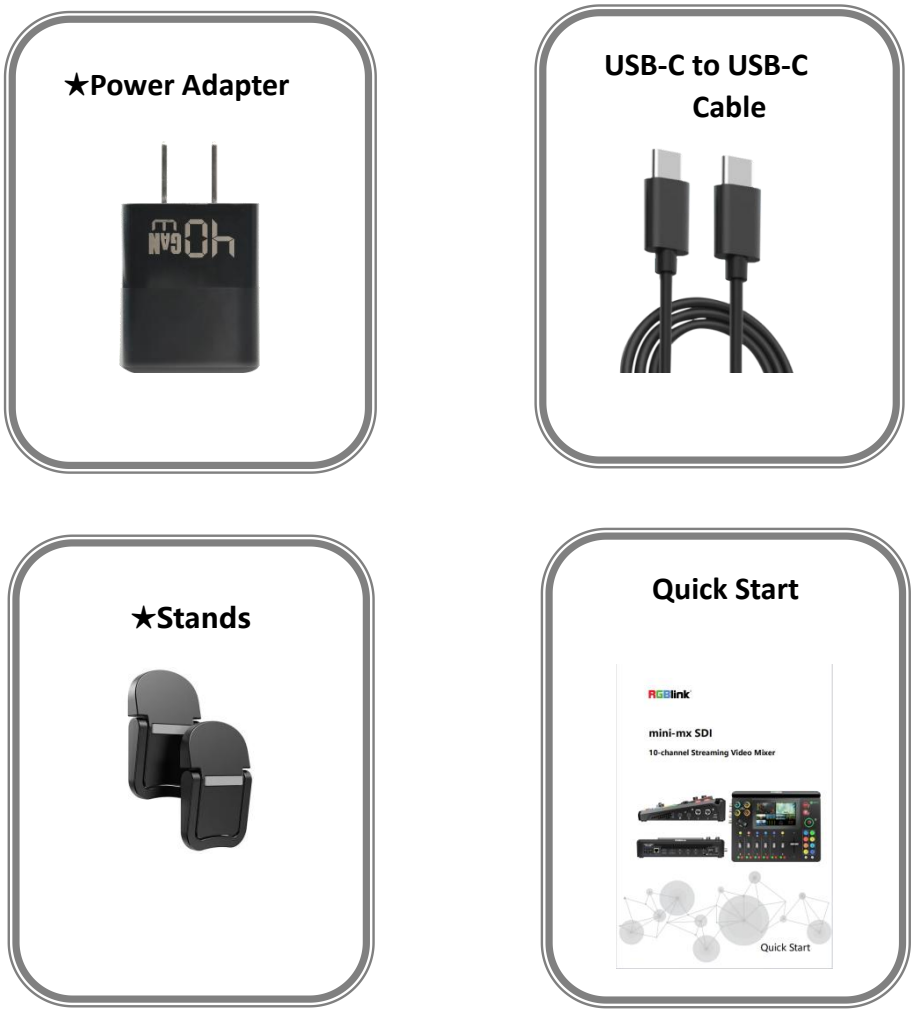
Site Preparation

The environment in which you install your product should be clean, properly lit, free from static, and have adequate power, ventilation, and space for all components.

Chapter 1 Your Product

1.1 In the Box

mini-mx SDI is equipped with **Power Adapter*1**, **USB-C to USB-C Cable *1, Stand*2, Quick Start*1**.



Notes:

1. The standard power supply can **ONLY** be used with the mini-mx SDI, and cannot be used for powering other devices simultaneously. RGBlink disclaim all responsibility for instability or damage caused by improper use.

2. For desktop applications:

   2.1 It is recommended to use portable stands for better heat dissipation and more stable space when using the device in various desktop applications. The installation steps are as follows:

   a. Tear off the white protective film on the back;

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b. Attach the adhesive area to mini-mx SDI to provide support and reduce device temperature.

2.2 We also strongly recommend you to use the mini-EFP. With the mini-mx SDI model installed, it delivers enhanced stability and security for content production. This shock-resistant portable solution serves as an all-terrain production helper, ideal for diverse scenarios including music festivals, outdoor weddings, sports events, and other field productions.

For more details about mini-EFP, please go to the website: https://rgblink-web.azurewebsites.net/productsinfo.aspx?id=280.

3. For other non-desktop applications, please consult your sales representatives for the best solutions suited the actual scenarios.

1.2 Product Overview

mini-mx SDI features four 4K HDMI 2.0 inputs and four 3G SDI inputs, one UVC and one NDI bi-directional input & output. It supports digital embedded audio and video signals from a PC, cameras, and more. Additionally, it has analog audio input options via 2 x Phantom, 1 x Line - in and 1 x MIC, and also supports Bluetooth audio.

There are two separate HDMI outputs for multi-viewer Preview, Program or Test Pattern. One USB 3.0 output supports YUY2 and MJPEG capture formats, which can be recognized as a webcam for streaming to Facebook, YouTube, ZOOM, etc.

The UVC can be used bidirectionally for USB disk recording, wireless speaker and wireless microphone. This function can be applied to devices such as RGBlink AI mini. The Ethernet port with NDI license enable is bi-direction too, which ensures that the NDI encoder and decoder can work at the same time. mini-mx SDI is built in with 5.5-inch TFT touch panel for menu operation and multiviewer video display.

Compared with mini-mx, mini-mx SDI has 4 more 3G SDI inputs and a ready to license bidirectional NDI, also Noise Reduction, Equalizer, Echo, Reverberation, Voice Fusion for audio inputs. Else it features including dynamic output control, multiviewer, picture in picture, chroma Key, transitions, on board PTZ camera controls and much more.

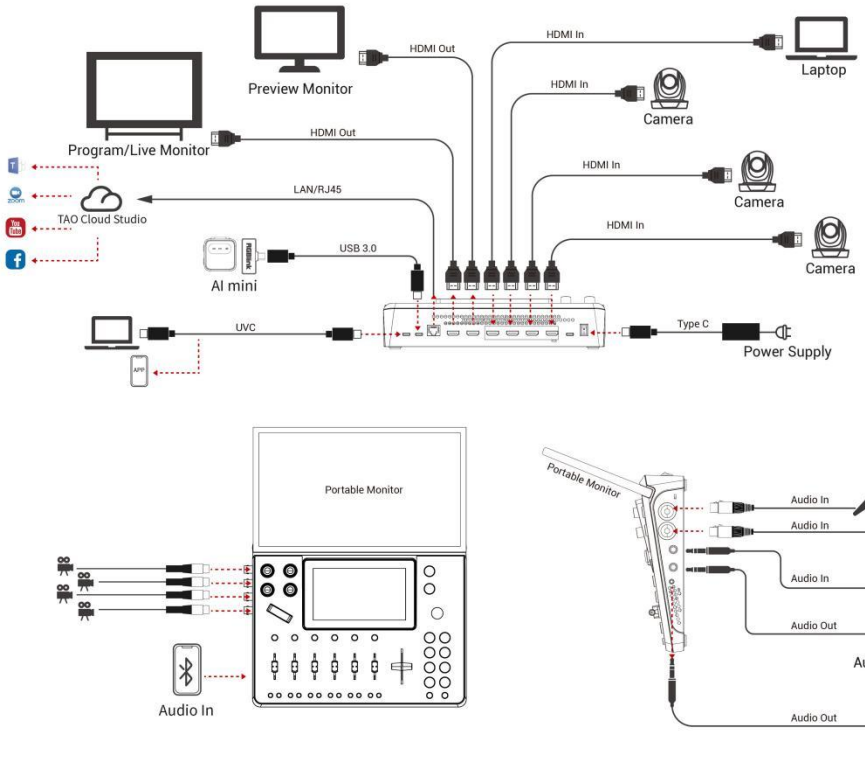
mini-mx SDI is web APP ready, also integrated with TAO Cloud for remote control and can stream to at least 4 content platforms at the same time.

Notes:

1. If using 4 platforms for streaming at the same time, please ensure the upstream bitrate is not less than 100Mbps.
2. For upstream bitrate lower than 100Mbps, it is recommended to use 1 platform.
3. To stream to multiple platform, it is recommended to use TAO Cloud.

1.2.1 Application

mini-mx SDI features multiple connectors for versatile applications. Refer to Chapter two Install Your Products for the connections of the connectors.



On top of the front panel of mini-mx SDI, there's a slot for inserting RGBlink's portable monitor. This allows users to have a larger screen for monitoring purposes.The Type-C interface on the display can be used to supply power to the monitor and also transmit audio and video signals. Meanwhile, the mini HDMI interface is highly versatile and can be compatible with most devices such as HD TVs and HD cameras.

For more details about RGBlink portable screen, please go to the website: https://rgblink-web.azurewebsites.net/productsinfo.aspx?id=275.

If you want to purchase RGBlink's portable monitor, please consult your sales representative for prices of the package or single unit.

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1.2.2 Key Features

- Embedded 5.5-inch TFT and touchscreen
- 10 input connectors (4 x HDMI 2.0, 4 x 3G-SDI, 2K UVC, and 2K NDI)
- 6-CH customizable video inputs
- Maximum 8 channels for audio mixing
- Dynamic text overlay/scoreboard
- Configurable VFA (video follow audio)
- 2-CH independent HD HDMI
- 2K streaming and live via IP and UVC
- Streaming supports NDI | HX2
- Streaming and management via RGBlink TAO Cloud
- Manual real-time control of PTZ cameras, such as zoom in/out, rotation, and focus, via VISCA or NDI
- Third-party control and integration via free RGBlink Central Control Protocol

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1.2.3 Front Panel

❶ **Audio Volume Control**	Embedded audio volume adjustment for HDMI/SDI 1~4 inputs. Check the audio status on the touch screen.
❷ **Toggle**	● Size adjustment for Layer A and Layer B. ● Zoom in/out for PTZ control.
❸ **Layer Selection Buttons**	● The buttons indicate Background, Layer A, Layer B, Logo, Overlay and Text. ● No button lights for closed layer. ● Single Click: Single click to add a layer to PRE window. The button turns blue to indicate an enabled and selected state, which allows you to use button 1~8 to select the corresponding layer signal or source. The Button lit green indicates an enabled but unselected state. Click the button lit blue again to close the enabled layer. ● Long Press: 1) Long press the Background/Logo/Overlay button to enter Media Management Interface. 2) Long press Button Layer A/Layer B to enter Layout Interface.
❹ **Channel Fader**	Control audio volume level for MIC1, MIC2, Line-in, Bluetooth, headphone, and PROGRAM.
❺ **Listen & Mute Buttons**	● Audio Monitoring Button: Audio management for monitoring port. The button lit green allows users to monitor the audio from a channel ; no button light indicates that the monitoring function is off. ● Mute Button: Mute the channel at the program port. When a channel is muted, the button will turn red; no button light to indicate the channel is on at the program port.

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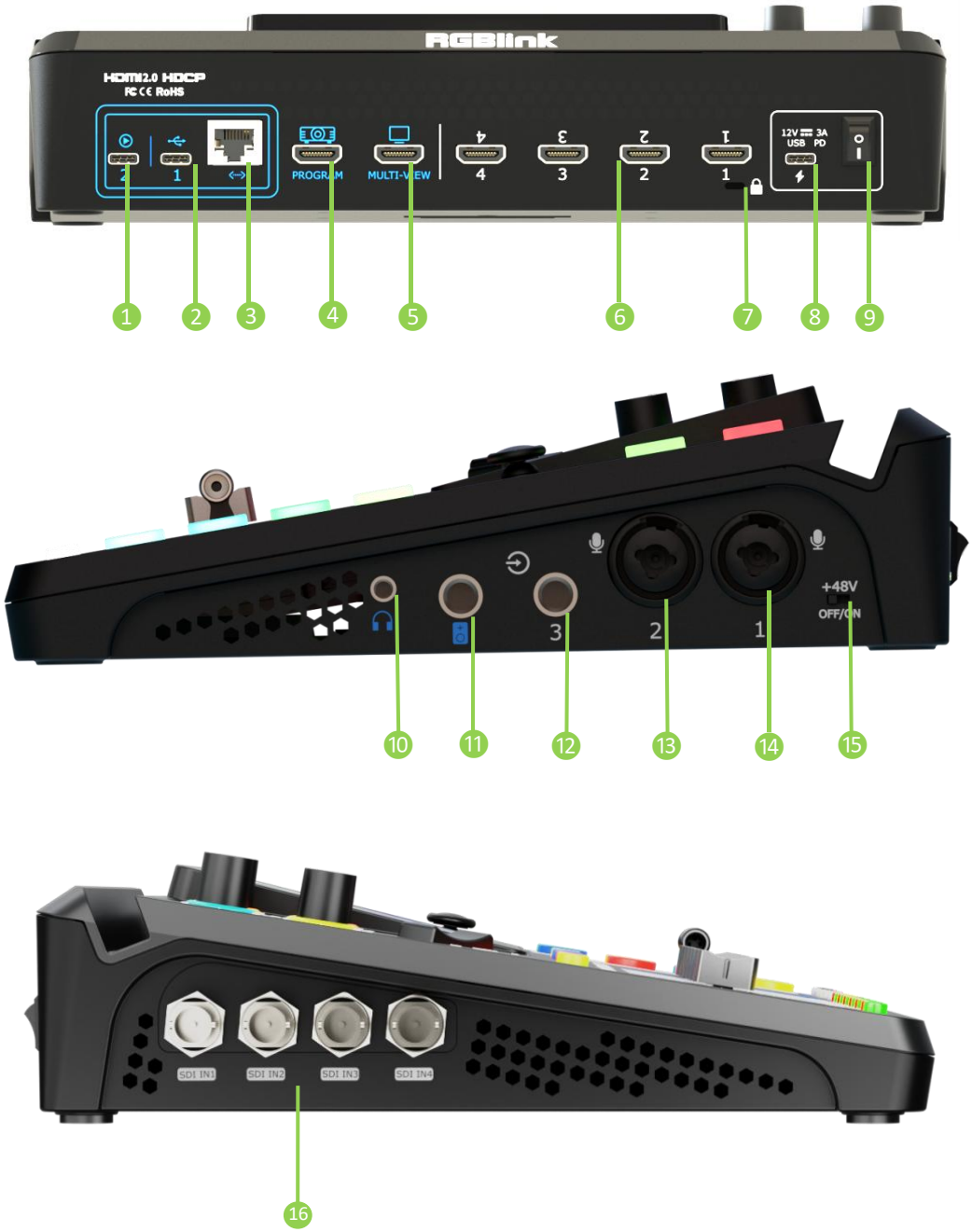
	• HDMI audio input: switch the audio input or output sources of the two HDMI ports.
⑥ **T-Bar**	Preview and Program views can be transitioned manually by pushing the T-bar bidirectionally from the top to the bottom or from bottom to top.
⑦ **Page Up**	Press to return to the previous operation interface or page.
⑧ **Page Down**	Press to enter the next page.
⑨ **Button 1~8**	• Button 1~8 correspond to 1~8 items in MENU. • Button 1~4: Used as HDMI/SDI input switch buttons if Layer A or B is selected or source selection buttons when selecting other layers. • Button 5~8: Used as source selection buttons when selecting layers except Layer A and Layer B. • No button light for no input. When there is an input signal, the button will turn white. When the signal is in preview, the button will turn green; when the signal is being edited, the button will turn blue; when the signal is in Program, the button will be illuminated red.
⑩ **5-Direction Joystick**	• Move Up/Down/Left/Right: Position adjustment for layer; set pan, tilt and zoom for PTZ camera. • Press: Press the joystick to enter full screen if Layer A or Layer B is selected and press it once more to restore; push the joystick to enter Controlling PTZ Camera when under PTZ control.
⑪ **MENU Button**	• Single Click: In the main interface, click to enter MENU; in MENU, click to enter the main interface; in the interface except MENU and the main interface, click to return to the previous page. • Long Press: In the interface except the main interface, long press to enter the main interface; in the main interface, long press to lock buttons and touch screen, after which the MENU button will turn red; long press MENU button again to unlock.
⑫ **ON AIR**	• Press to start or end the live streaming. • Check streaming status on LCD screen: The button turns red for successful streaming, blinks red for an unstable network and unlit for finished streaming.
⑬ **5.5-inch Touch Screen**	For menu operation and multi-view window monitoring.

1.2.4 Interface Panel



❶	**UVC**	Recognized as a USB webcam to connect computer or mobile phone for streaming or video conference.
❷	**USB-C**	● Insert SSD or U disk for recording. ● Insert a U disk to import audio, video and graphic files. ● Network sharing from Cell phone with a USB-C cable connection and also Network sharing enable on cell phone. (Refer to Smartphone Tethering)

❸	**Ethernet Port**	Achieve network connection and camera control connection for streaming, remote control, upgrade, and camera signal transmission.
❹	**PROGRAM**	Default to output real-time scene, and can be set as multiviewer or Test Pattern.
❺	**MUlTI-VIEW**	Default as multiviewer output, and can be set as Program or HDMI/SDI 1~4.
❻	**1~4 HDMI in**	4K resolution and downward compatible with all resolutions.
❼	**Locking Hole**	Use the T-lock to fix the device.
❽	**USB-C Power Port**	PD protocol, 12V 3.3A.
❾	**Power Switch**	Provide smartphone tethering when connecting to the standard USB-C cable.
❿	**Headphone Output**	3.5mm mini-jack for audio monitoring of each analog input and HDMI/SDI input.
⓫	**6.35mm TRS Jack**	Balanced TRS audio output.
⓬	**Line-in**	Balanced 6.35mm TRS jack to connect to PC, mobile phone, or audio console.
⓭	**MIC in 2**	XLR+TS input port to connect to microphone.
⓮	**MIC in 1**	● XLR+TS input port to connect to microphone. ● 48V Phantom Power supported.
⓯	**+48V DIP Switch**	● 48V Phantom Power switch. ● Default to OFF.
⓰	**SDI 1~4 Inputs**	● Four SDI input interfaces can be connected to HD cameras, computers, and other input sources. ● Input resolution support HD and backward compatible. ● Input supports 3G/HD/SD-SDI.

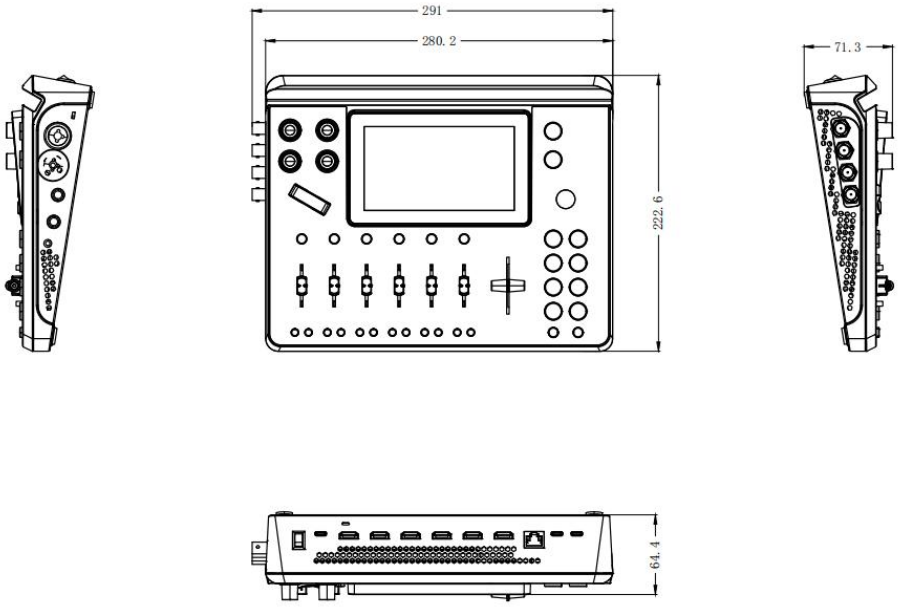
Notes:

Except condenser microphones that require phantom power, please turn off phantom power switch when connecting other devices.

1.2.5 Dimension

Following is the dimension of mini-mx SDI for your reference:

291mm x 222.6mm x 71.3mm.



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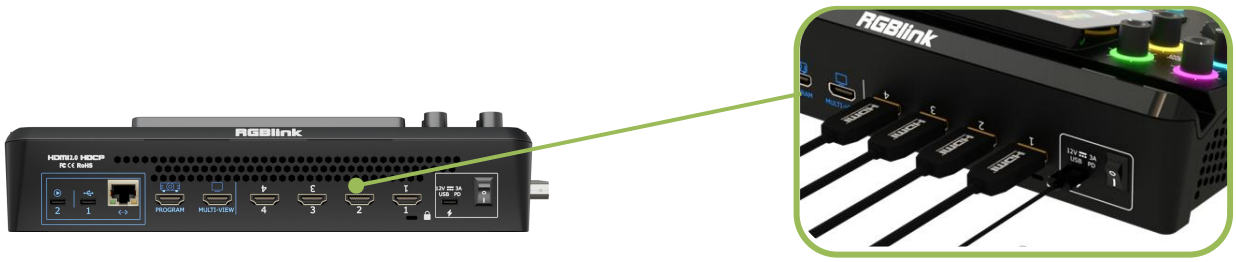
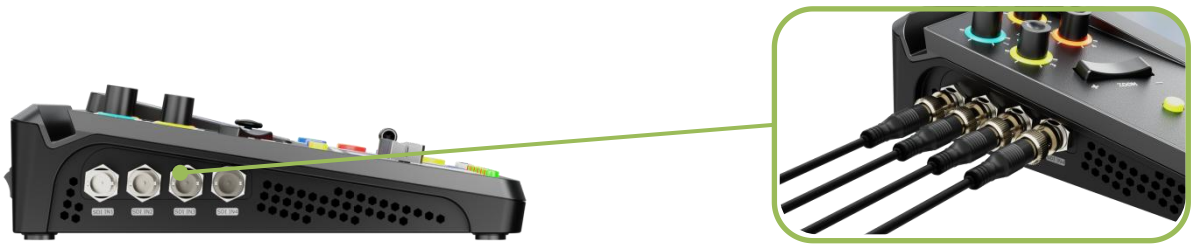
Chapter 2 Install Your Product

2.1 Connecting HDMI/SDI Input

mini-mx SDI features 4 HDMI interfaces and 4 SDI interfaces. All HDMI and SDI interfaces support multiple resolutions: HDMI up to 4K@60Hz and SDI up to HD. If users use interlaced signals, mini-mx SDI supports automatic de-interlacing function through HDMI and SDI interfaces. Users can connect devices with HDMI or SDI interfaces, such as computers or cameras, to mini-mx SDI.

mini-mx SDI has a built-in 5.5-inch monitor, which will automatically recognize and display the scenes of the input sources when it is powered on and connected to HDMI/SDI devices. Users can also connect mini-mx SDI to a monitor with an HDMI cable to check the video or audio of the input sources.





Notes:

The HDMI/SDI cable is not included in the mini-mx SDI package and needs to be purchased separately. For example, some camcorders use a mini HDMI port, you need to buy a mini HDMI-HDMI cable separately when you use these camcorders.

2.2 Connecting HDMI Output

Users can use HDMI cables to connect the MULTI-VIEW and PROGRAM output interfaces to a monitor with an HDMI input interface so as to check PRE and PGM views in real time.

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The default output of MULTI-VIEW port is multi-screen Preview view, so users can see the audio and video conditions of all input signal sources, check current status of each function of mini-mx SDI and see the Preview view.

Users can switch screen mode and select HDMI output resolution by pressing **OUTPUT** on the main menu.

MULTI-VIEW supports output in multi-view, HDMI /SDI 1~4 signal source or program.

PROGRAM supports output in multi-view, program and test pattern.

2.3 Connecting Microphone and External Monitoring Devices

On the right side of mini-mx SDI, there are four audio jacks in total.

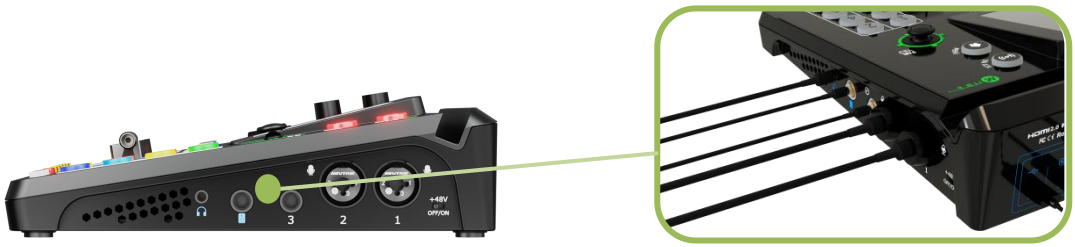
External audio inputs:
1. MIC1. It adopts XLR+TR jack with 48V Phantom power and can be connected to active or passive microphones.
2. MIC2: It can be connected to active or passive microphones.
2.Line in. 6.35mm TRS jack, which can be connected to computer, mobile phone, tablet, audio console and other line audio inputs.

External audio outputs:
1.Line out. 6.35mm audio output.
2.Headphone out. 3.5mm jack for audio monitoring, which can be connected to earphones.

For computers or phones with no audio input ports, mini-mx SDI embeds a Bluetooth module. Users can connect mini-mx SDI to devices with bluetooth function, such as computers or mobile phones, to input steady and high quality audio signals in real time. (For more details please refer to the Bluetooth section)

In addition to the audio ports mentioned above, mini-mx SDI supports built-in audio (HDMI/SDI 1~4). Besides, pressing the AFV(audio-follow-video) buttons which correspond to the interfaces HDMI/SDI 1~4 can trigger the audio-follow-video function. These 8 audio inputs can be controlled via the operation board to achieve audio mixing and monitoring. For more details, please refer to the Audio

section.



Notes:

1. Noise may occur during plugging, unplugging and audio tuning. When connecting audio output port (main output and monitor port) to the speaker, if the speaker is powered on, it may be damaged during unplugging process. Therefore, please power on speaker after connection, and power off it first before unplugging.
2. MIC supports access to a wireless microphone with a 3.5mm female to 6.5mm male single-track adapter. LINE supports access to a wireless microphone with a 3.5mm female to 6.5mm male dual-track adapter.
3. Balanced signals can only be input through MIC 1 or MIC2; stereo signals can only be input through LINE IN.

2.4 Connecting USB for Streaming and Recording

The USB port **labeled number 2** is for video capture, which allows users to capture videos to computer and the captured video content can be streamed to Facebook, YouTube, Zoom, Twitter and other streaming media platforms via a third-party Video Media Player software like OBS.

Insert a U disk to the other USB 3.0 port **labeled number 1** by USB 3.0 cable to perform recording. mini-mx SDI supports recording streaming media content to an external USB storage device, such as U disk or SSD. The SSD storage can reach up to 2T, and the USB storage can support up to 64G. The supported format is exFAT.

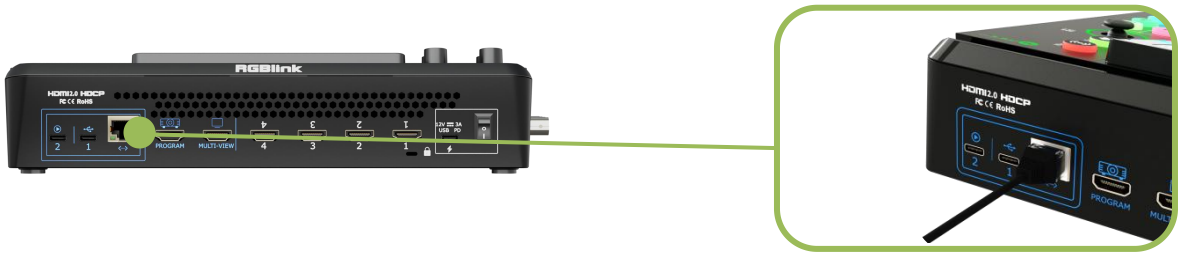
Notes:

1. For U disk, please use one with USB 3.0 port.
2. For SSD, please check if it needs extra power supply.
3. OTG cable only for file transfer cannot be used for streaming.
4. For dual-channel streaming, or use UVC output/recording simultaneously, the touch screen may get sluggish.

5. USB-C ports adopts USB 3.1 data transmission protocol.

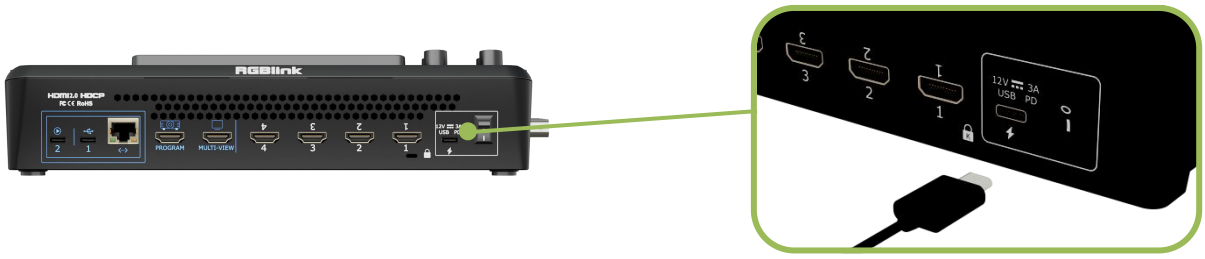
2.5 Connecting Router

Connect router and mini-mx SDI with CAT6 cable. Click **MENU > SETTING > NETWORK >Turn off DHCP** to set IP address of mini-mx SDI. When connecting mini-mx SDI and the router, the IP address of mini-mx SDI must be in the same LAN as the router.



2.6 Plugging in Power

RGBlink mini-mx SDI is packaged with a PD power adapter (power cable included) , check the power supply standard used in your country or region before the power connection.



Connect mini-mx SDI to power plug by a USB cable

Notes:

It is recommended to use the power adapter included in the mini-mx SDI box. In cases when using other power adapters, the power adapter used should meet the following requirements:

1. Support PD "Fast Charge" protocol.
2. USB type-C interface insertable in either direction.
3. The power supply is rated for a minimum of 36W.

2.7 Turning on Your mini-mx SDI

After mini-mx SDI is connected to power supply, push the switch on the rear panel, and the device will show mini-mx SDI logo and then enter to the operation interface.

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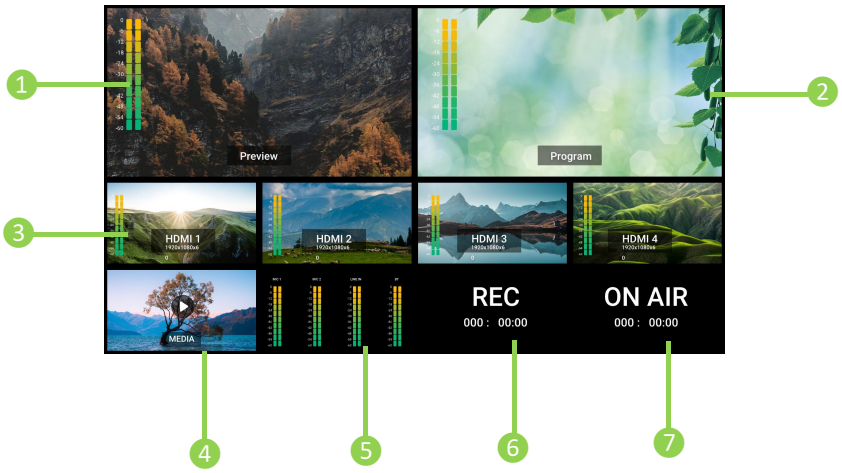
Chapter 3 Use Your Product

After the above steps are completed, users can use mini-mx SDI to do the following.

3.1 Main Interface

As shown below, once powering on mini-mx SDI, the 5.5 inch display will show mini-mx SDI logo and then come into the main interface. Users can refer to the description below.



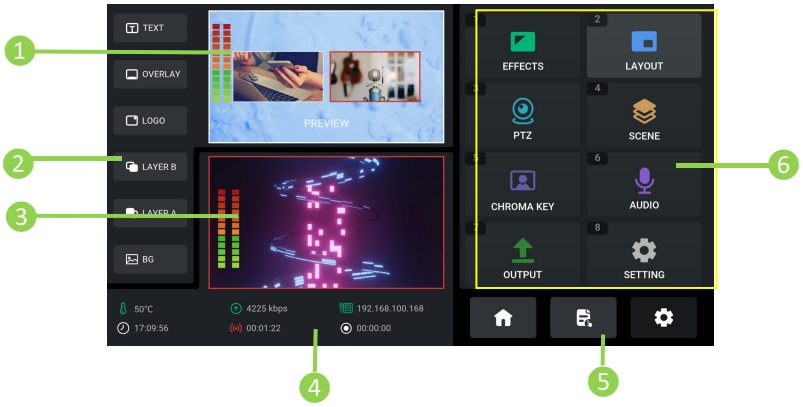
Area	Description	Operation	
❶ PREVIEW	Show Preview screen and audio meter	Single Click	Enter Editing Interface.
		Double Click	Enter full screen mode and double click again to exit.
		Long Press	Choose to save current scene or not (Click Saving and Loading Scenes for more details.)
❷ PROGRAM	Show Program screen and audio meter	Single Click	●Enter Saving and Loading Scenes. ●Enter Saving and Loading Scenes on full screen mode.

		Double Click	Enter full screen mode and double click again to exit.
		Long Press	Enter Switch Effect Setting.
❸ Source Selection	Show HDMI/SDI 1~4 signals and audio meter	Single Click	If a PTZ is used as an HDMI/SDI input source, single click to select PTZ, use toggle and joystick can achieve PTZ control. Push Joystick to enter Controlling PTZ Camera.
		Double Click	Switch to current signal in PREVIEW.
		Long Press	Display current signal to PROGRAM.
❹ Media	Show media sources	Single Click	Select media signal source.
		Double Click	Enter Media Management Interface.
		Long Press	Display current signal source to PROGRAM.
❺ Audio Monitoring	Monitor 3 analog audio inputs (MIC1, MIC2, and Line-in) and 1 Bluetooth audio input	Single Click	Enter Audio.
		Double Click	Enter Audio.
		Long Press	Enter Audio.
❻ Recording	Check recording duration and remaining recording duration	Single Click	Start or end recording.
		Double Click	Enter Recording.
		Long Press	Start or end recording.
❼ Streaming	Check streaming duration and status	Single Click	Start or end streaming.
		Double Click	Enter Streaming.
		Long Press	Start or end streaming.

3.2 MENU

There is a 5.5-inch touch screen on operation board, through which most operations can be done.

Push the “MENU” button in the main interface and the LCD screen will quickly enter MENU.



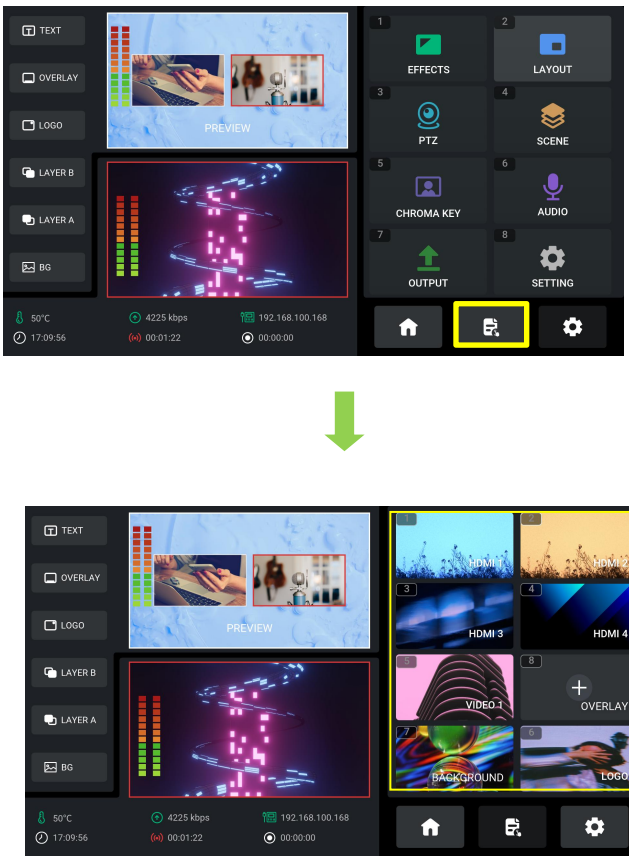
As shown in the figure above the UI style on the touch screen is similar to the current smart phone operating interface. The first-level menu contains several icons. Users can quickly enter the corresponding function management interface by tapping the corresponding icon.

8 functions are available in MENU, including **EFFECTS**, **LAYOUT**, **PTZ**, **SCENE**, **CHROMA KEY**, **AUDIO**, **OUTPUT** and **SETTING**.

❶ **PREVIEW**	●Preview screen and audio meter monitoring area, which can be used for enabling/disabling layer, editing size & position, signal, source, PTZ control, etc. ● Long Press: Choose to save the current scene or not (Click Saving and Loading Scenes for more details.) ● Double Click: Enter full screen mode and double click again to exit.		
❷ **Layer Selection**	● For layer not been selected, click the corresponding icon to enable. ● Icon in green indicates enabled status. Icon in blue indicates editing status. ● Click icon in blue (editing status) once more to close the opened layer.		
❸ **PROGRAM**	● Program screen and output audio meter monitoring area. ● Single Click: Enter Saving and Loading Scenes. ● Long Press: Enter Ttansition Effects. ● Double Click: Enter full screen mode and double click again to exit. (Under full screen mode, you can do the followings: 1. Click PGM window to enter Saving and Loading Scenes; 2. Long press to choose whether to save current scene or not, tap"YES" to enter Saving and Loading Scenes.		
❹**Status Display**	50°C: Temperature	4225 kbps: Bit Stream	192.168.100.168: Network State& IP
	17:09:56: Time	00:01:22: Streaming Status	00:00:00: Recording Status
❺**Icons**	Press to enter Main Interface, Editing Interface or MENU Interface.		

3.3 Editing Interface

Click PREVIEW window on the main interface or tap icon to enter Editing Interface.



Signal Monitoring & Source Selection

- Correspond to Button 1~8 one-by-one.
- 1~4 windows for HDMI/SDI 1~4 signal monitoring, tap Window 1~4 or use Button 1~4 to switch signal. If a PTZ is used as an HDMI or SDI input source, use toggle & joystick to control PTZ, and push the joystick to enter the PTZ Camera Control mode.
- 5~8 windows for source selection, use U disk to import sources. Single click to choose sources available. Single click, long press or double click window with no source to enter Media Management Interface for source selection.

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3.4 Adding Layers

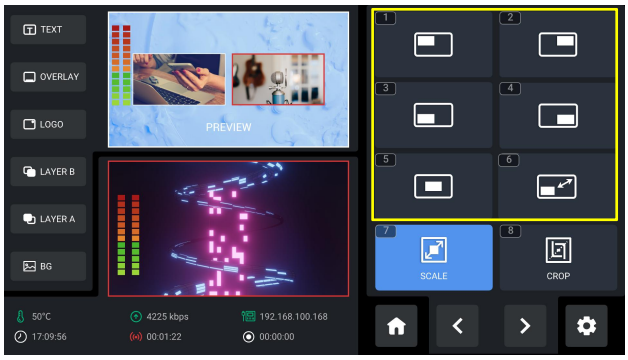
3.4.1 Adding Layer A

1. Push Layer A Button on the front panel to edit Layer A. This operation simultaneously enables Layer A.

2. Push Button 1~4 on the front panel to select the input.

3. Use the toggle on the front panel for zoom-in and zoom-out of Layer A and the Joystick to quickly adjust horizontal and vertical position. Press the joystick to enable full-screen mode, then push it again to restore to the size and position of the last set.

4. Long press Layer A/Layer B Button to enter Layout Selection Interface. Or you can tap LAYOUT icon in MENU or push Button 2 to enter Layout Selection Interface. Select required layout for Layer A and display it on the background. For advanced setting, click option “7” and “8" to do more specific parameter settings for layer cropping and scaling.



3.4.2 Adding Layer B

1. Push Layer B Button on the front panel to edit Layer B. This operation simultaneously enables Layer B.

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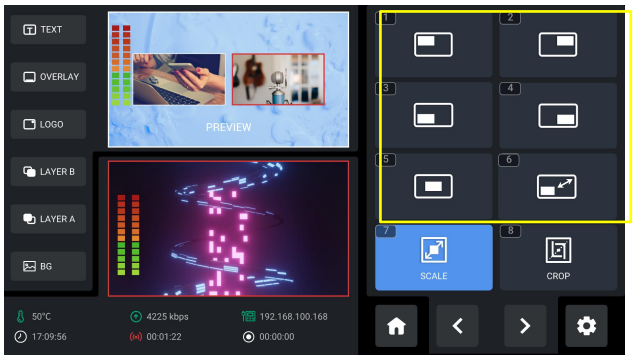
2. Push Button 1~4 on the front panel to select the input.

3. For Layout Selection, Size & Position Adjustment, Layer Cropping & Scaling of Layer B, please refer to operations in Adding Layer A.

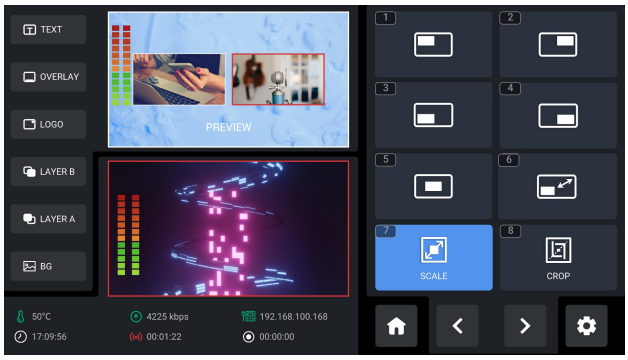


3.5 PIP (Picture-in-Picture)

mini-mx SDI defaults to single-screen switching. PIP layout allows multiple windows to be displayed simultaneously on a single screen, offering users a perfect platform to check multiple video contents at the same time. The PGM is display on the full screen, and at same time the PIP video source will be displayed on the PGM window as an inset window. To use PIP function, proceed as follows:

1. Press MENU Button to enter Main Menu, tap “LAYOUT” in MENU or push Button 2 to enter the setting interface.

2. m

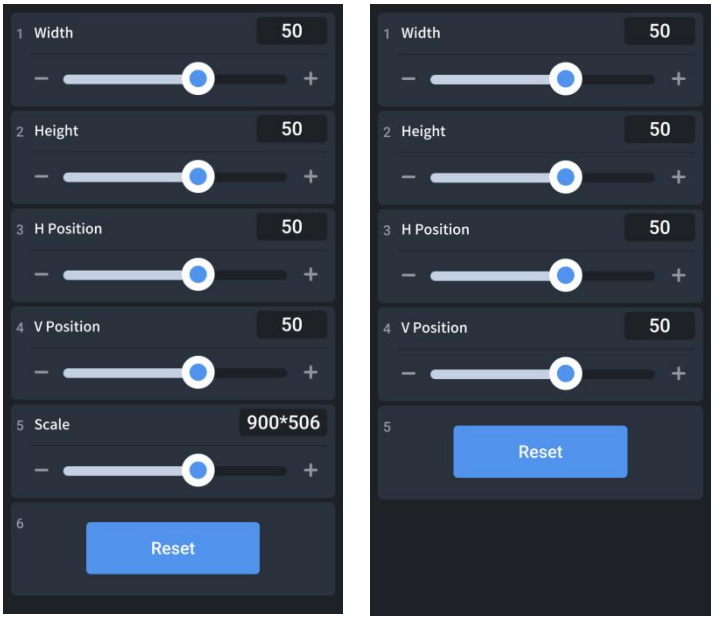


3. For advanced setting, click Option “7” or “8” to do more specific parameter settings for layer cropping and scaling. Users can use joystick to choose item and then adjust the value by using slide bar or toggle.

In **Layer Scaling** interface, users can adjust Width, Height, Horizontal Position, Vertical Position and set Zoom ratio.

In **Layer Cropping** interface, there are Width, Height, Horizontal Position and Vertical Position can be set.

Click **Reset** at the bottom to clear wrong settings so as to restore to the default values.



3.6 Adding Materials

mini-mx SDI allows users to import layers, such as BACKGROUND, LOGO, OVERLAY, etc. mini-mx SDI not only support displaying two video layers on the integral screen, but also can add three static layers (Background, logo and overlay), providing richer content creation and promoting the brand building.

3.6.1 Layer Storage Path

Use a U disk to import layers, such as BACKGROUND, LOGO, OVERLAY, etc.

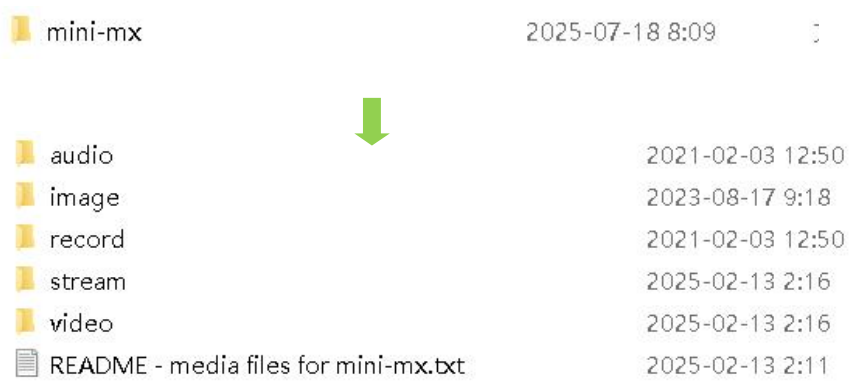
1. Before importing layers, please create folders for layer storage in the U disk, which can be done manually and automatically.

1.1 Create Folders Automatically:

a. Insert a U disk into USB interface labeled number 1 and reboot mini-mx SDI, the U disk will automatically form a folder named mini-mx SDI.
b. The mini-mx SDI folder includes five folders: audio, image, record, stream and video. The image folder includes three folders: background, logo and overlay.

1.2 Create Folders Manually:

a. Create a folder named mini-mx SDI by yourself;
b. Create audio, image, record, stream and video folders respectively in mini-mx SDI folder;
c. Create three sub-folders in image: background, logo and overlay.



2. Store materials in the corresponding folder and insert the U disk to the USB port labeled number 1.

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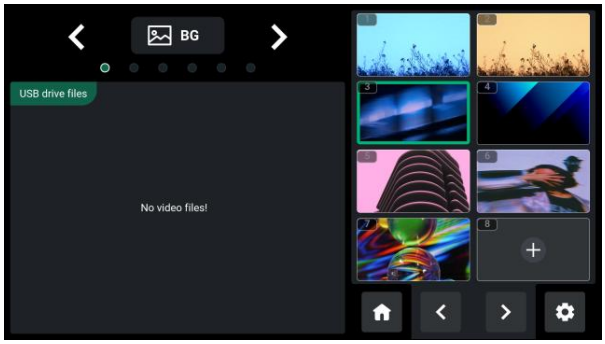
3. Wait for mini-mx SDI to recognize available files. Figure below indicates no files available in U disk.



Tips: Layers should meet the following requirements:

1. BACKGROUND:

(1) space and symbols are not allowed in the picture name;

(2) jpg, png format (32-bit depth) or bmp (24-bit depth), resolution within 1920x1080, subject to the actual output resolution;

(3) picture size should be consistent with the resolution.

2. LOGO:

(1) space and symbols are not allowed in the picture name;

(2) png format (32-bit depth), resolution within 1920x1080, subject to the actual output resolution.

3. OVERLAY:

(1) space and symbols are not allowed in the picture name;

(2) png format (32-bit depth), resolution within 1920x1080, subject to the actual output resolution.

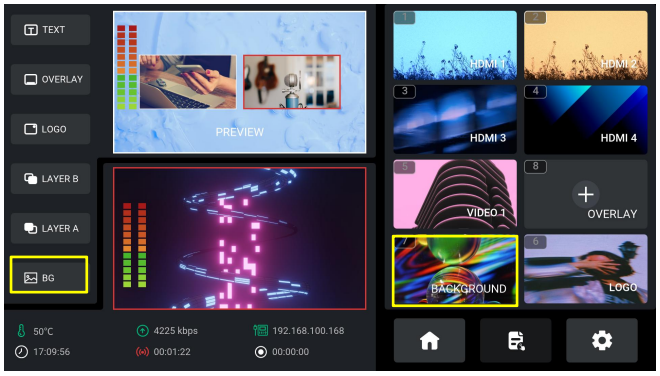
4. Audio: in mp3 format.

3.6.2 Adding a Background

1. Add a Background Layer

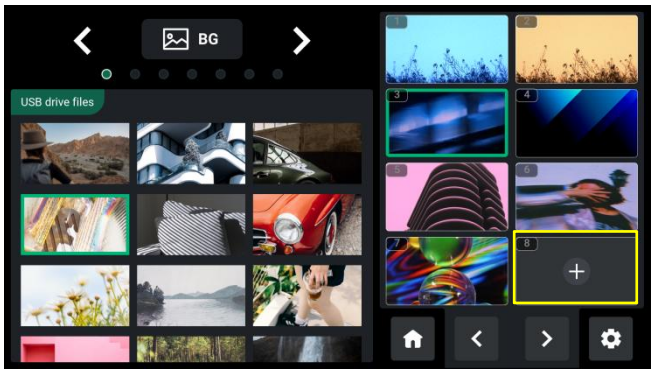
1.1 Import the material to the folder named “background”, and insert a U disk into the USB port labeled number 1.

1.3 Tap BACKGROUND in Layer Selection Area or Source Selection Area, long press BACKGROUND Button to enter background management interface.



1.4 Add a Background Material

a. Tap "+" and then choose background source in U disk to add it to Source Selection Area. Long press the added source for deletion.



b. Press the BKG button on the front panel and the selected background will be displayed on the preview window.

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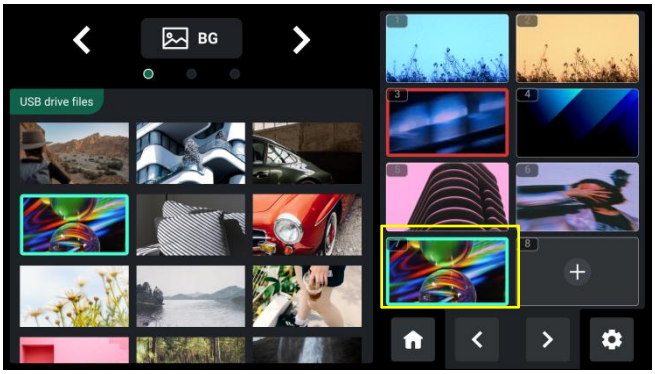
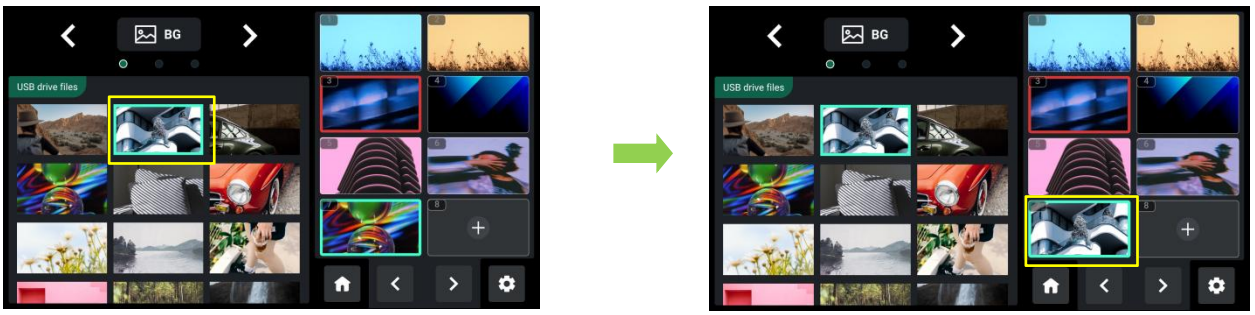
2. Replace a Background Source

2.1 To replace background source saved in Window 7, tap window 7 to select.

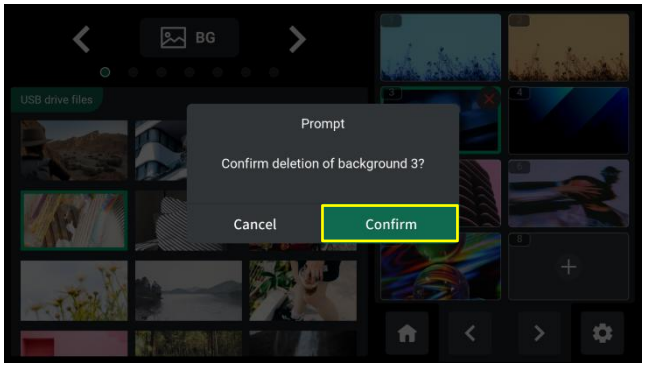


2.2 Select one background source in the U disk to replace the material in window 7.



3. Delete a Background Source

3.1. As shown in the figure below, to remove the background material on window 3, long press the window 3 to choose “Delete”, and a confirmation window will pop up. Choose “Confirm” to delete the background.

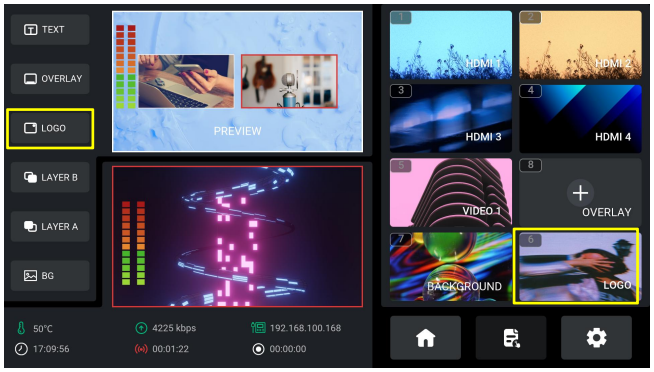


3.6.3 Adding a LOGO

1. Add a Logo

1.1 Import the material to the folder named “logo”, and insert a U disk into the USB port labeled number 1.

1.2 Tap LOGO in Layer Selection Area or Source Selection Area to enter LOGO management interface.



1.4 Tap "+" and then choose logo source in U disk to add it to Source Selection Area.

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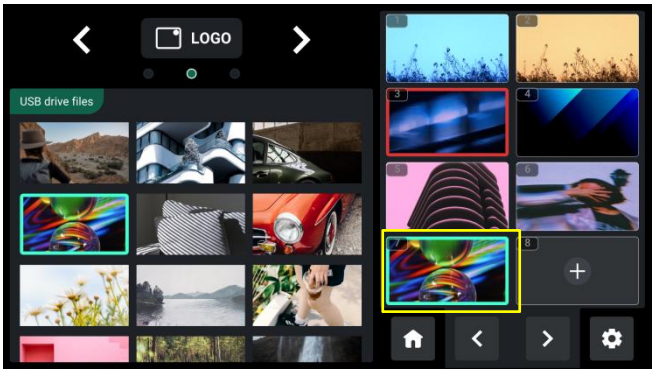
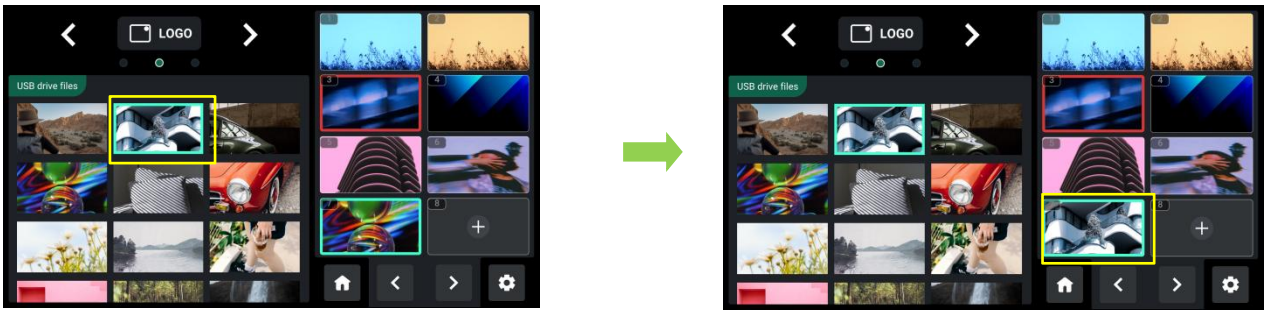
2. Replace a Logo

2.1 To replace logo source saved in Window 7, long press window 7 and a box will pop up.

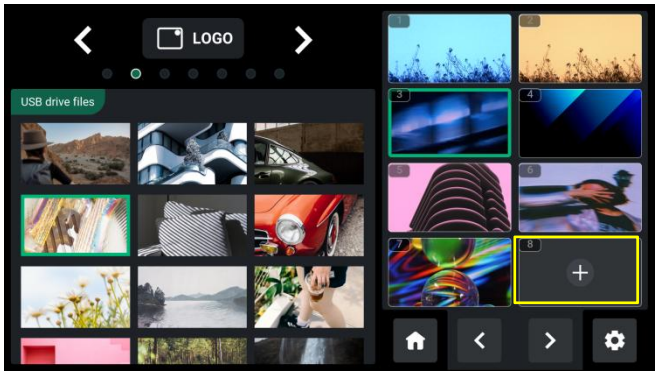


2.3 Select one logo source in the U disk to replace the material in window 7.



3. Delete a Logo

Long press the added source for deletion.



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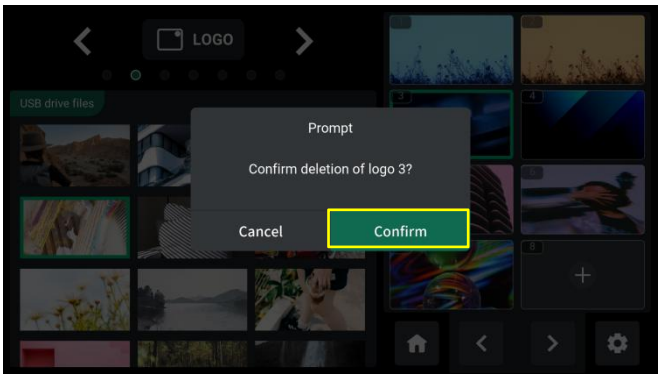

4. Push LOGO Button on the front panel to enable the function.

5. Same as operations in Adding Layer A and Adding Layer B, choose required layout in LAYOUT interface and use the Joystick to quickly adjust horizontal and vertical position of LOGO.

3.6.4 Adding a Overlay

1. Add a Overlay Source

1.1 Import the material to the folder named “overlay”, and insert a U disk into the USB port labeled number 1.

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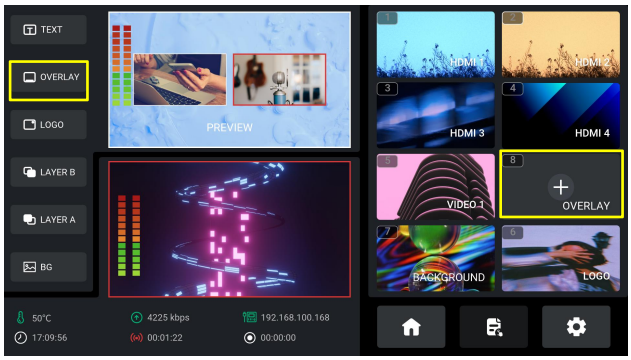
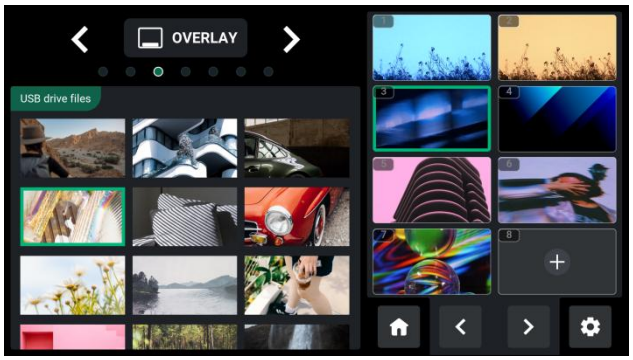
1.2 Tap OVERLAY in Layer Selection Area or Source Selection Area to enter OVERLAY management interface.



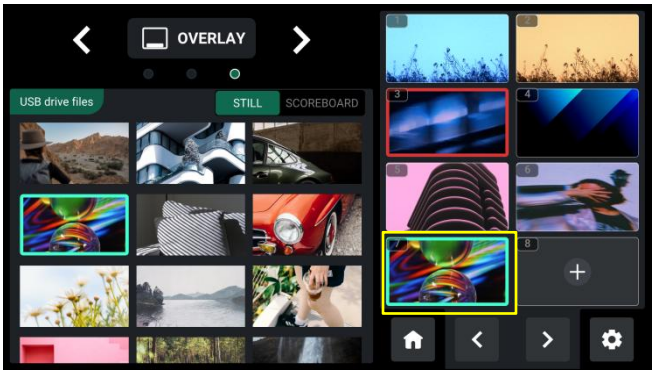
1.3 Tap "+" and then choose background source in U disk to add it to Source Selection Area.



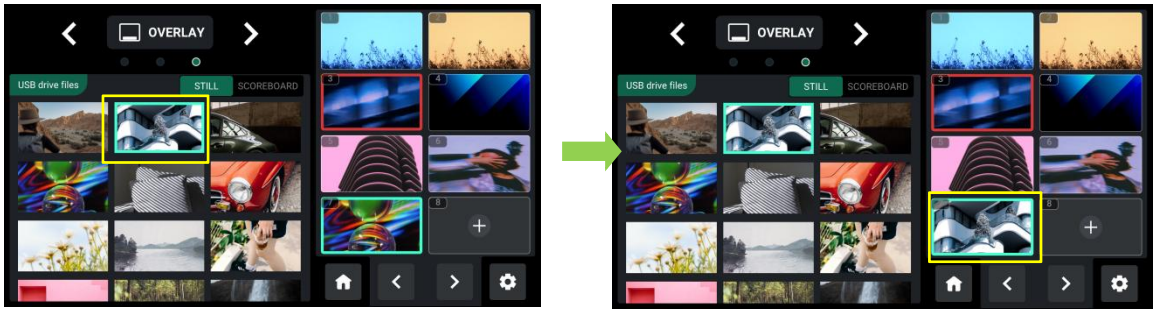
1.5 Same as operations in Adding Layer A and Adding Layer B, choose required layout in LAYOUT interface and use the Joystick to quickly adjust horizontal and vertical position of OVERLAY.

2. Replace a Overlay Source

2.1 To replace logo source saved in Window 7, tap window 7 an.

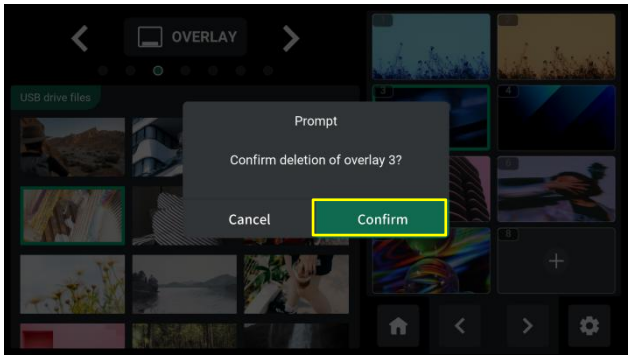


2.2 Select one overlay source in the U disk to replace the material in window 7.



3. Delete a Overlay Source

3.1 Long press the added source for deletion.



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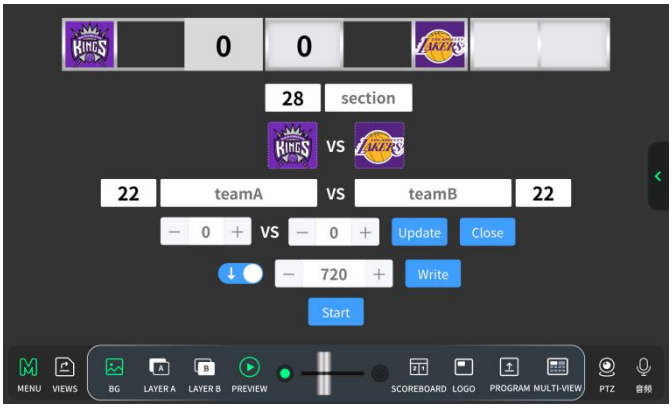
4. Push Overlay Button on the front panel to enable the function.

3.6.5 Adding Scoreboard

A scoreboard layer can be added to the PGM program output window via mini-mx web interface. The scoreboard can record the score of a game in real time, which is commonly used in sports broadcasts, such as football, basketball, or other competitive sports matches. mini-mx's scoreboard function allows viewers to stay updated on the current score at any time.

Click

to enter the following interface.



Operation is as follows:

1.

: Enter First Half or Second Half and set its corresponding Font Size so as to allow spectators and participants to check the scoring situation of the game in different time periods. After setting, click

to save.

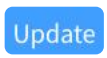
2.
: Click to import images as logos for two teams.

3.

: Enter names for two teams and set its corresponding Font Size. After setting, click

to save.

4.

: Click"-"to decrease scores in real time and"+"to increase. After setting, click 

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to save.

5. Update: Click to synchronize the settings.

6. Close: Click to cancel scoreboard display on PVW Preview window and click once again to display the scoreboard on PVW Preview window.

7. 720: Enter the Time Duration of the game (unit: seconds), click Write and then Start to start timing. Click Stop to stop timing. indicates to decrease 1 second in real time. Click to switch to to increase 1 second in real time.

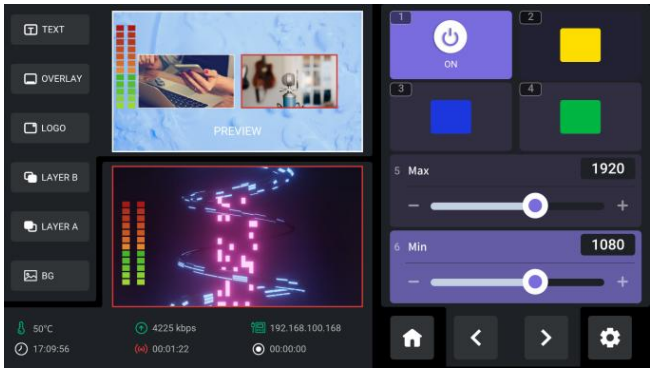
Complete the above settings, then click PROGRAM to check the scoreboard layer placed on PGM window.

3.7 Chroma Key

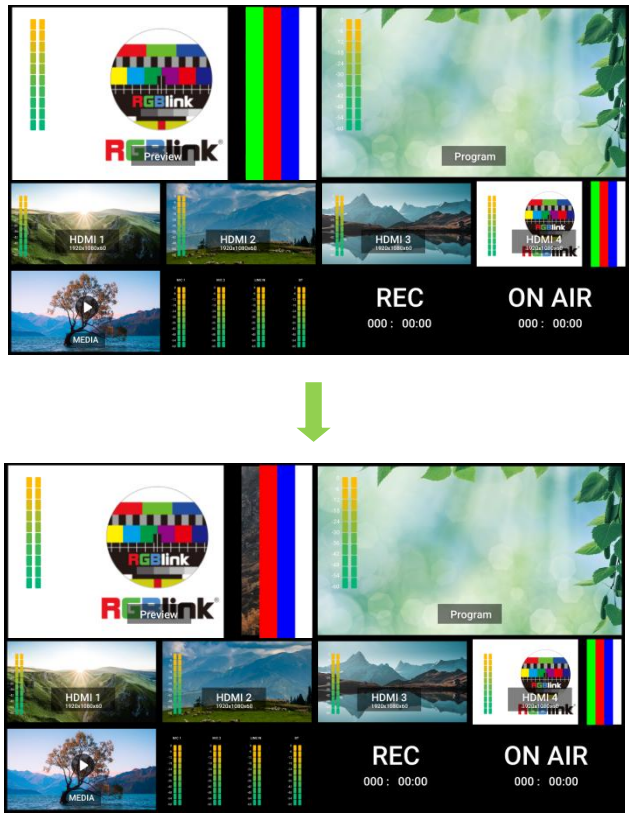
mini-mx SDI supports matting, that is, removing the solid color background and overlaying it on another signal to realize the application of virtual reality. The Chroma Key function defaults to OFF and it operates on layer B by default when it is enabled. Please proceed as follows:

1. Push MENU Button to enter Main Menu, tap “CHROMA KEY”in MENU or push Button 5 to enter the setting interface.

2. Select the background color (yellow, blue or green, default green) to be removed and make adjustments according to the application scenario.



3. After selecting a color, the PVW window jumps to show layer B with the selected color removed. As shown in the figure below:



4. Check the background color required and then use 5-direction joystick to shift options between Max, Min and Margin. Max defaults to 1232, Min defaults to 560, Margin defaults to 200.

3.8 Controlling PTZ Camera

mini-mx SDI can control the camera's lens moving horizontally and vertically, focus and zoom via **IP VISCA protocol** and **NDI protocol** and save the position and zoom information for quick calling.

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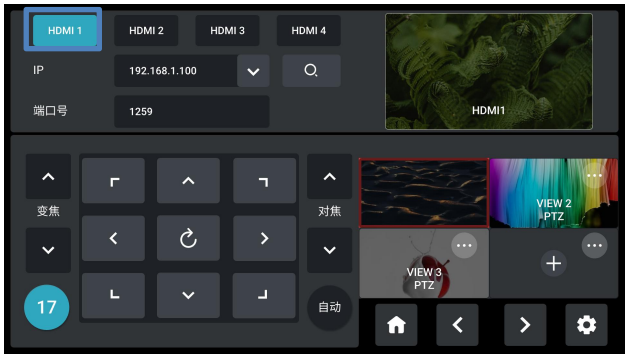
The PTZ preset of mini-mx SDI not only saves the parameters of the PTZ, but also includes calling the camera, that is, when the preset of PTZ is loaded, the input is switched to the camera signal source at the same time.

3.8.1 PTZ Control

1. Push MENU Button to enter Main Menu.

2. Tap “PTZ” or push Button 3 to enter the interface. Tap HDMI 1/HDMI 2/HDMI 3/HDMI 4 or SDI 1/SDI 2/SDI 3/SDI 4 to switch camera control interface.



3. PTZ Camera Control

mini-mx SDI supports **simultaneous control of up to four cameras**. **Please check if the port number of the controlled camera is 1259** (It’s recommended to use RGBlink vue series PTZ camera). If the port number is not 1259, please enter the port number in PTZ Control interface.

The following operations are explained with examples of using mini-mx SDI to control ONE camera and simultaneously control FOUR cameras.

3.1 Example 1: mini-mx SDI controls ONE camera.

3.1.1 Connect mini-mx SDI and the camera directly via an Ethernet cable;

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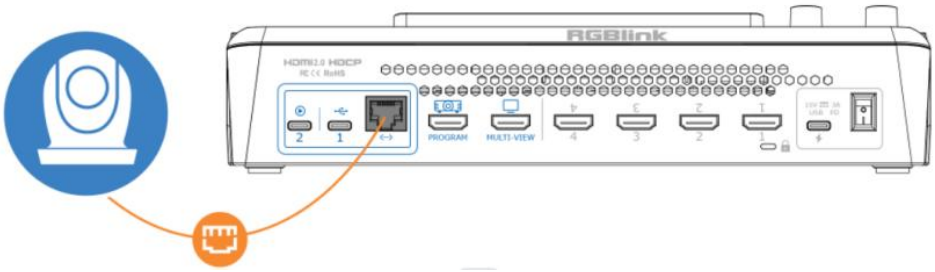


3.1.2 Configure the IP address of the camera

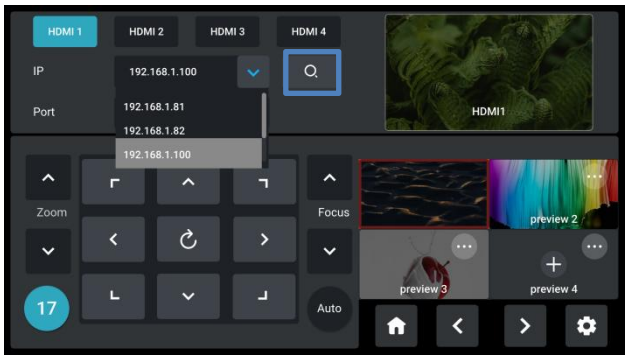
Note that the IP address of mini-mx SDI and camera controlled should be in the same LAN, which means the former three digits of the IP addresses of the camera and the device should be the same. Please proceed as follows:

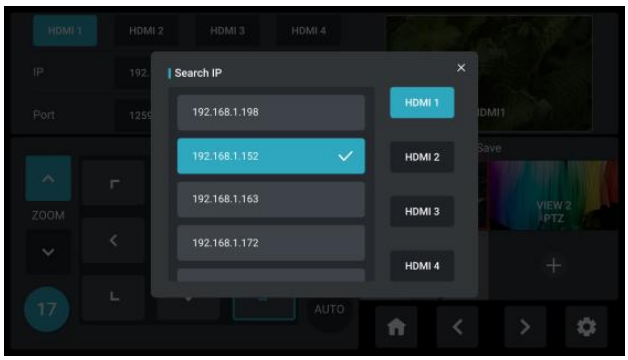
3.1.2.1 Check or modify the IP address of the PTZ:

Automatic:

a. If using the network cable to directly connect camera to mini-mx SDI, mini-mx SDI can only control one camera. The current IP address and IP address set before can be captured by device automatically.

b. If devices are connected in the same LAN, press the search icon , then users can check all the IP address of the cameras in the LAN. Select the IP address of the camera to be controlled in Search IP Interface. Besides, users can open the drop-down list for IP selection.





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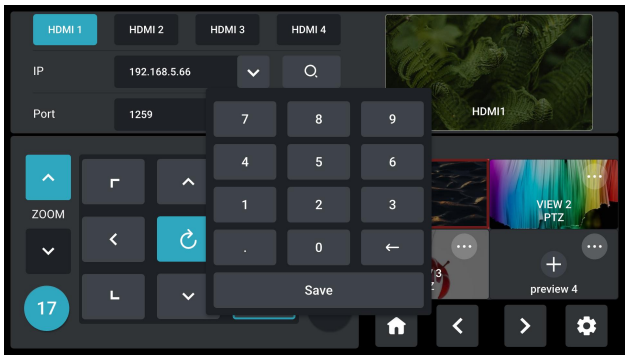
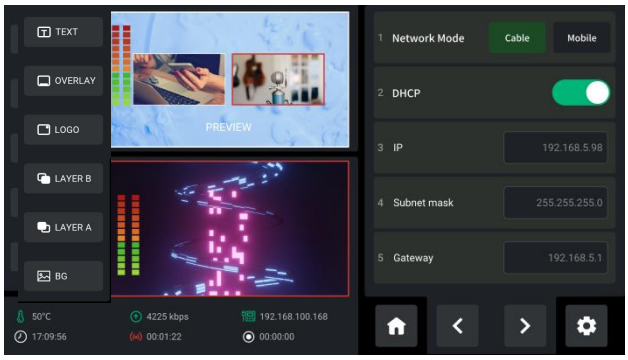
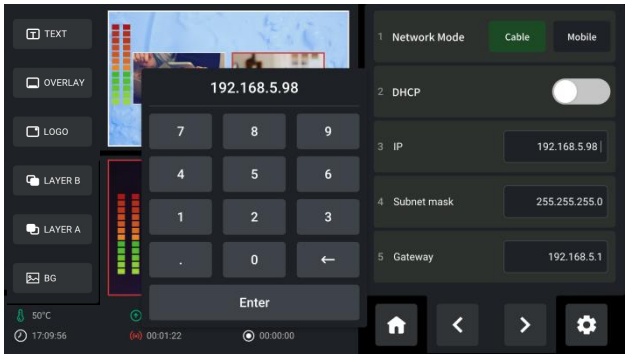
Manual:
To modify the IP address, tap the IP column and then a number interface will pop up.



3.1.2.2 Check or modify the device IP address:
Automatic:
On the main interface, tap “SETTING” and then “Network”, users can check the device IP address on the “Network” interface. The IP address is automatically distributed when DHCP is enabled.



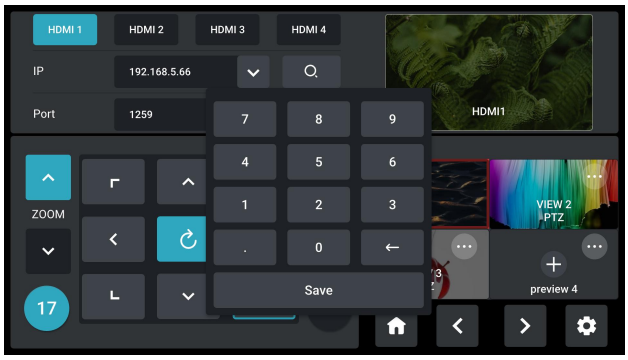
Manual:
Users can disable the DHCP and modify the IP address by using the number panel.



3.2 Example 2: Use mini-mx SDI and switch to control FOUR cameras.

3.2.1 Use the **ping command** to analyze network connectivity, check if IP address of mini-mx SDI and the cameras are occupied, operations please refer to FAQ.
3.2.2 Enter PTZ configuration interface below to set the camera's IP address, then click "Save" to save.

(Make sure IP address has not been occupies, and IP address of mini-mx SDI and camera are in the same LAN.)



3.2.3 Connect camera and computer to the switch.

3.2.4 Connect mini-mx SDI and camera to the switch via Ethernet cables (It is recommended to use RGBlink CAT6 cable with order code as 940-0001-00-11-0). Then use mini-mx SDI for PTZ control.

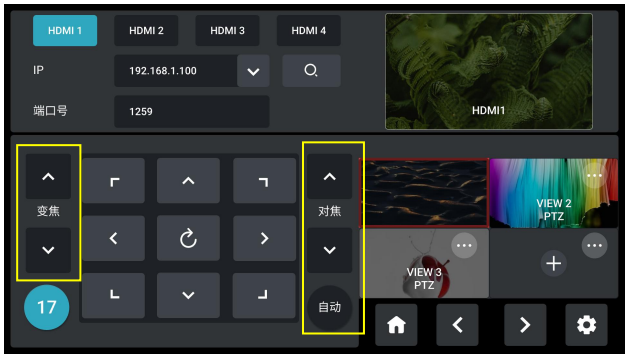
Notes:

1. The computer IP, mini-mx SDI IP and the tested IP must be in the same LAN.
2. It is suggested to use ping command to check IP addresses of four cameras one by one to ensure normal communication.
3. ONLY VISCA via IP protocol and NDI (planned) are supported. Protocols including CGI/HTTP/Pelco-D/Pelco-P are not supported.

3.8.2 PTZ Preset

1. Focus

1.1 Use the toggle on the front panel or tap icon to adjust zoom and focus. Automatic adjustment can be achieved by clicking **AUTO**.



2. Use Joystick to adjust position of camera or press the position icons on the interface.

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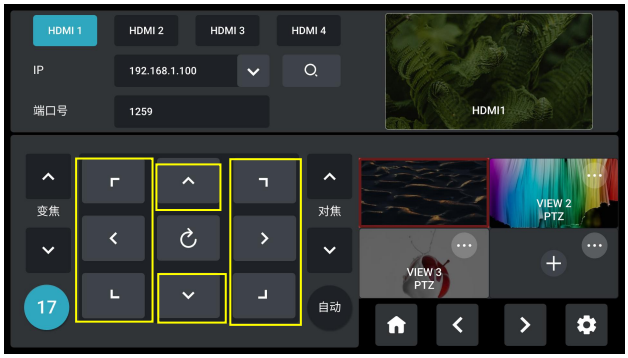
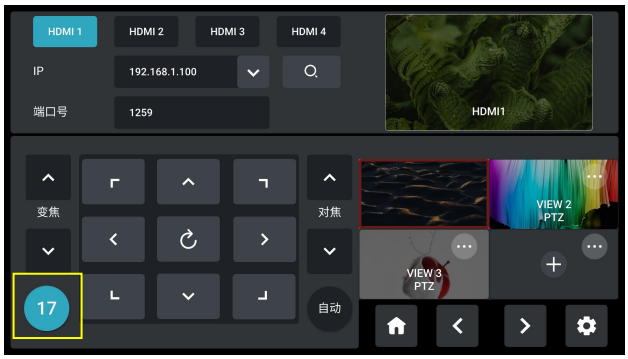
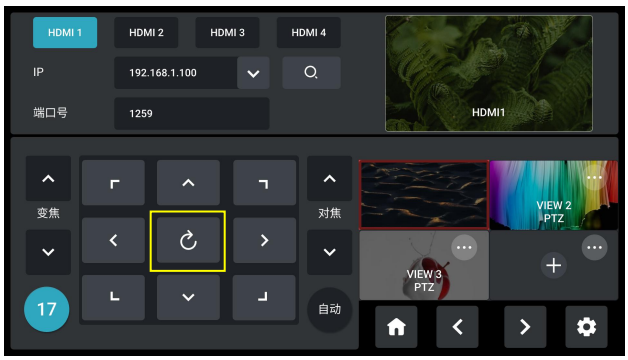


3. As shown in the figure below, the number displayed indicates the rotation speed of the camera. Use the Joystick or tap the number icon to adjust rotation speed as 17 (by default), 14, 11, 8, 5 or 2.



4. Click icon to clear wrong settings so as to restore the set parameters to the default values.



5. Users can create multiple views by setting different camera presets and adjusting parameters such as zoom. Click to capture a picture and add it to View.

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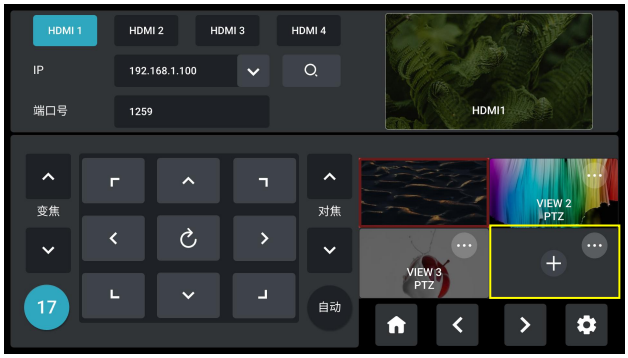
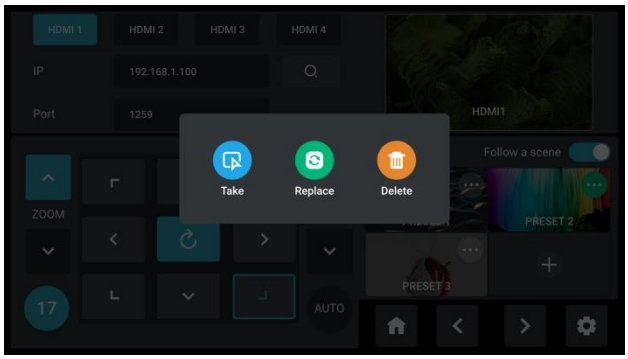


6. Long press a window containing PTZ image, and a box will pop up for more operations. Tap “Take” to load the PTZ preview to the PVW window (If PGM PTZ Protect is enabled, then the selected PTZ image cannot be loaded). Tap “Replace” to replace the selected window with the current image on the PVW window. Tap “Delete” to delete the selected PTZ window.



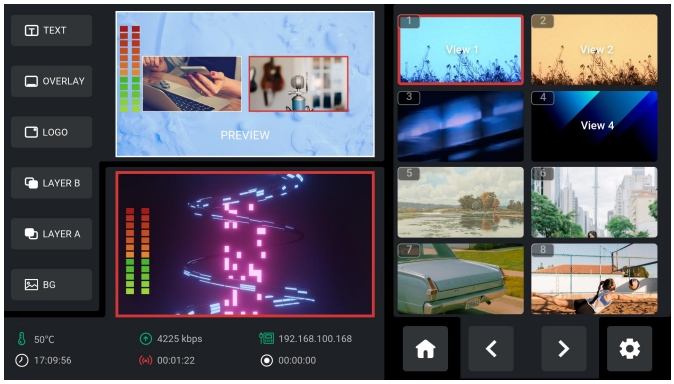
3.9 Saving and Loading Scenes

mini-mx SDI **save presets to Scene in real time**. If users want to quickly load current preset next time, just save it to corresponding scene. The Scene will save all the currently set parameters including Chroma Key, PTZ Presets and more. Therefore when user needs to load a preset, push corresponding Scene for quick calling.

3.9.1 Save a Scene

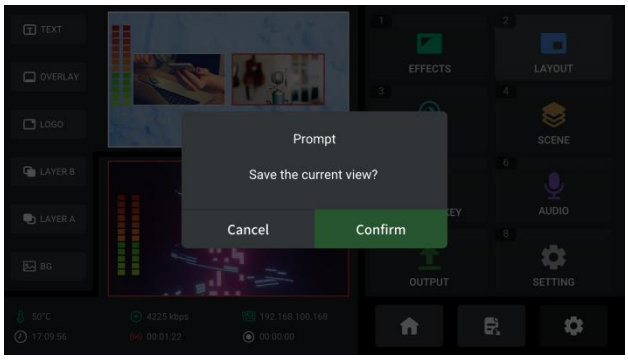
1. After setting the effect, push MENU Button to enter MENU, then tap “SCENE” or push Button 4 to enter the interface. You can also long press PREVIEW window or single click PROGRAM window in Main Interface to quickly enter following interface for preset calling or saving.

2. The preset saving interface is shown as below. Click for page up or page down.



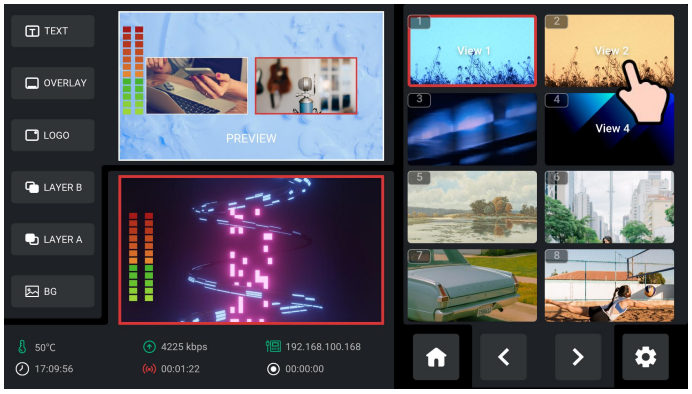
3. mini-mx SDI allows user to save 16 presets in total to the corresponding View 1~16. Long press Preview Window in Editing Interface or Main Interface, and you can choose whether to form a static picture of the current scene and save it or not.

4. mini-mx SDI can save the formed picture to selected area if no scene has been stored before.



3.9.2 Load a Scene to the PVW window

1. Tap a saved scene and the scene will be displayed on the PVW window.



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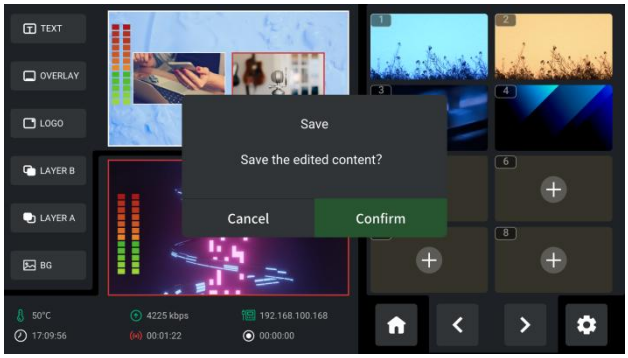
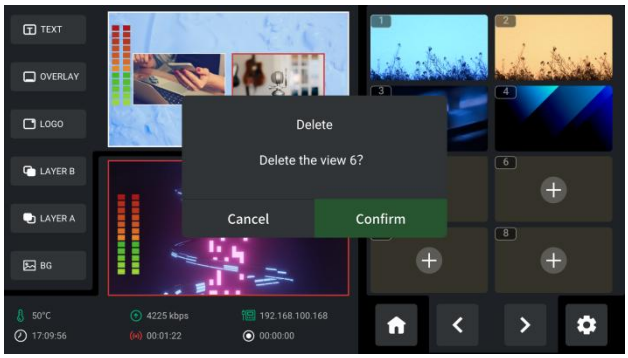
3.9.3 Replace a Scene

If you need to replace the content of a scene window, after adjusting the content of the preview window, tap any scene window. The area will display the save icon . Tap this icon, and a prompt box “Save the edited content?” will appear on the interface. Click "Confirm" to overwrite the previously saved scene.



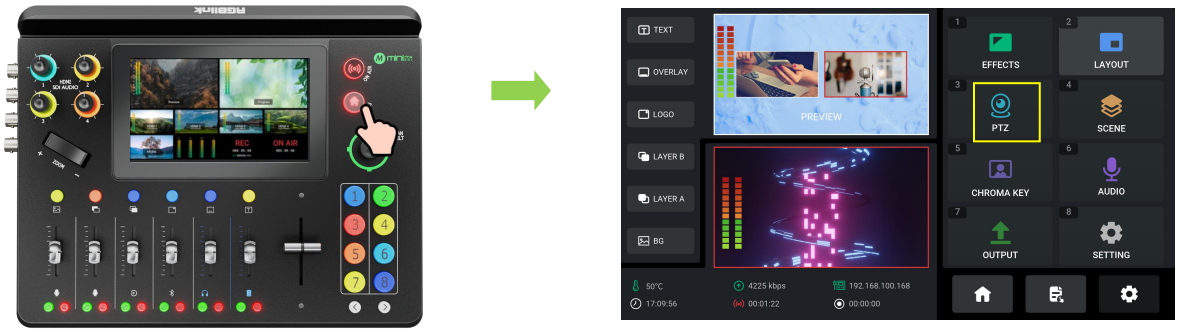
3.9.4 Delete a Scene

Long press a scene window and a deletion box will pop up. Tap “Confirm” to delete a scene.



3.10 Video Output

Push MENU Button to enter MENU.



Tap "OUTPUT” in MENU or push Button 7 to set parameters for video output.

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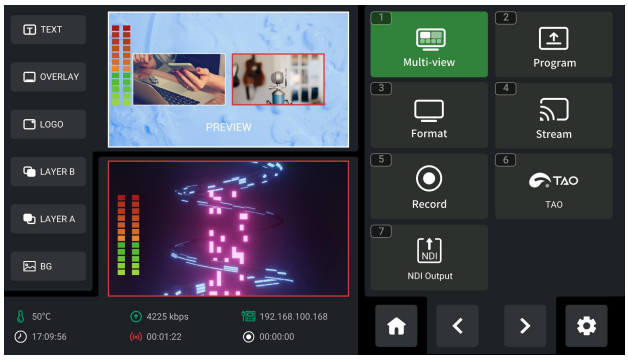
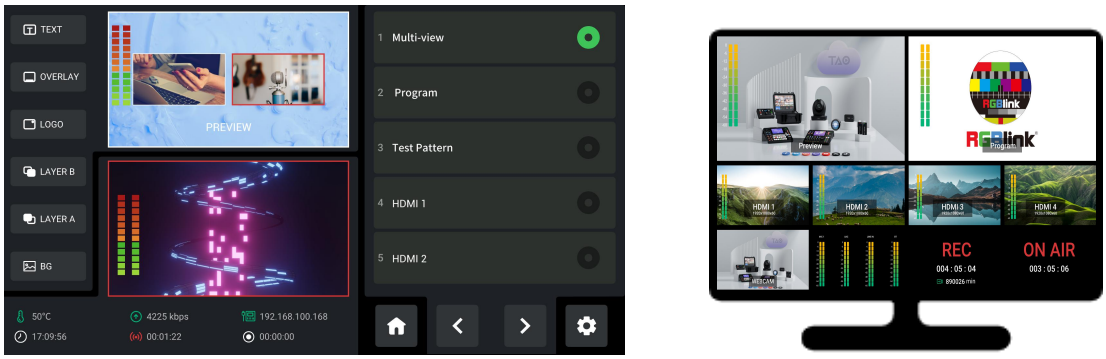


3.10.1 Multi-view

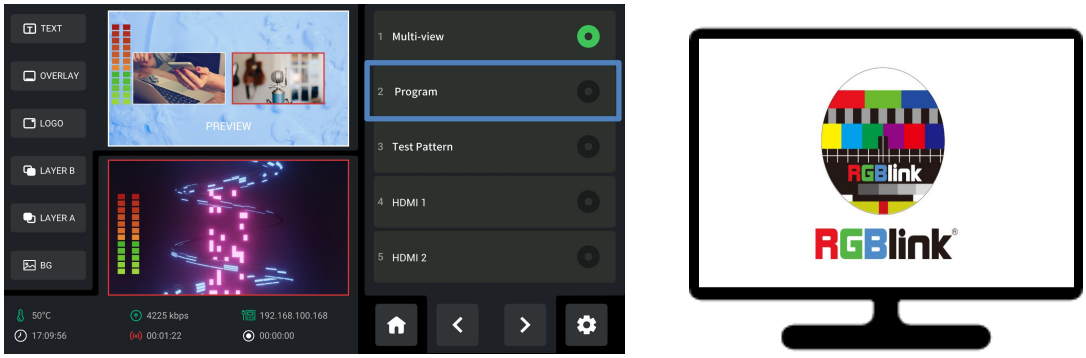
The multi-view output defaults to be multiviewer, which can be switched to Program, Test Pattern or 1~4 HDMI/SDI inputs for various applications.

1. Click “Multi-view” to set parameters. The monitor is by default to show the multi-view scenes.

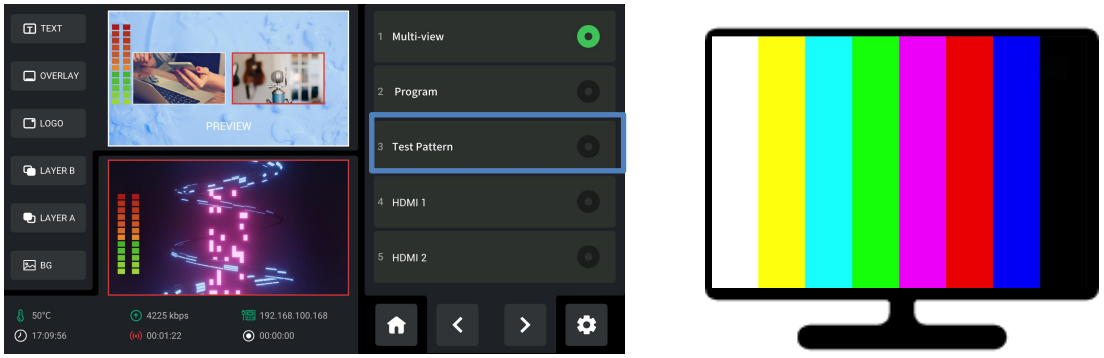


Select “Multi-view” as the multi-view output

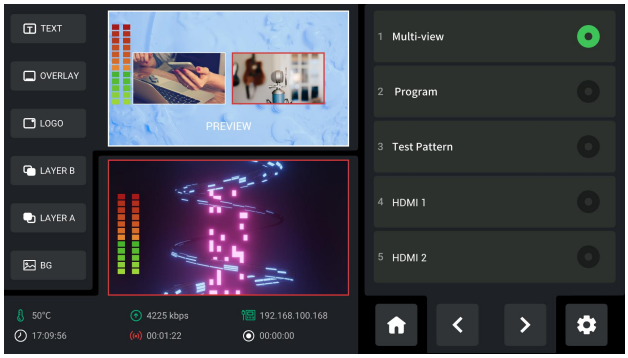
2. User can also select Program, Test Pattern or HDMI/SDI 1~4 inputs for various applications.

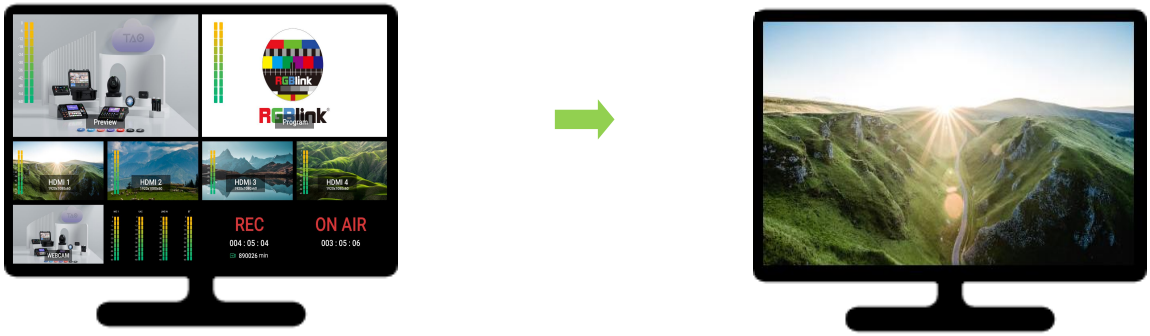


Select “Program”as the multi-view output

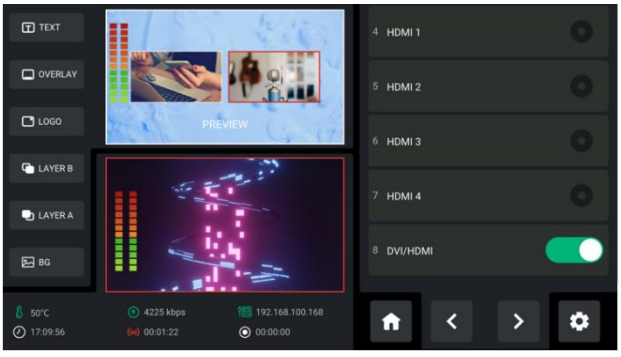


Select “Test Pattern” as the multi-view output





Select “HDMI1” as the multi-view output



3. DVI/HDMI is turned on by default for connecting multiple display devices simultaneously. For example, DVI is generally used to adapt LED control cards (sending cards) and displays with DVI input interfaces, while HDMI/SDI is generally used to adapt displays with HDMI/SDI input interfaces. Turn on DVI/HDMI, mini-mx SDI can adapt to different types of display devices. Users can return to Editing Interface to check input source preview on the touch screen.

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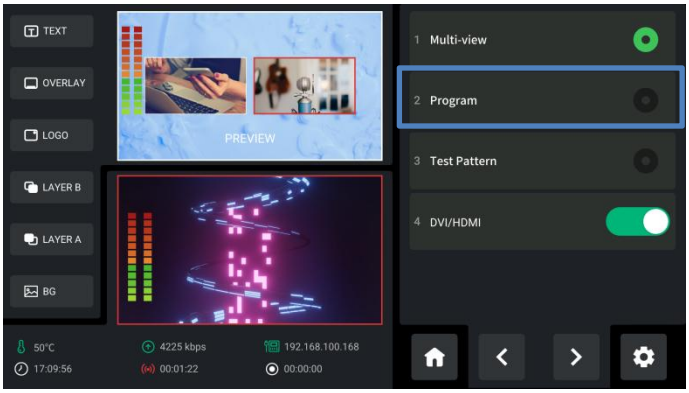
3.10.2 Program

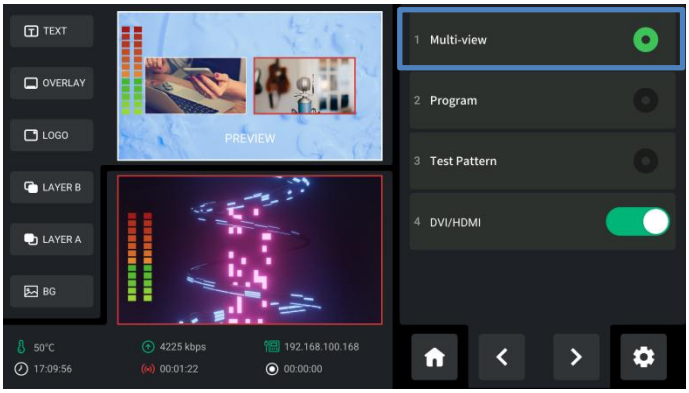
The program output defaults to be Program and can be changed to multi-view or Test Pattern.

1. The connected monitor defaults to display the program scene.

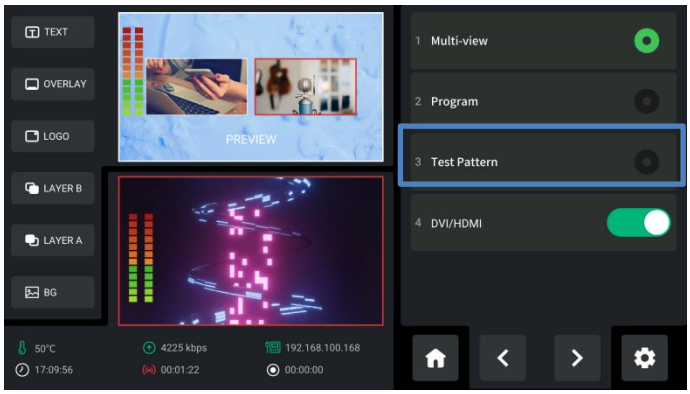


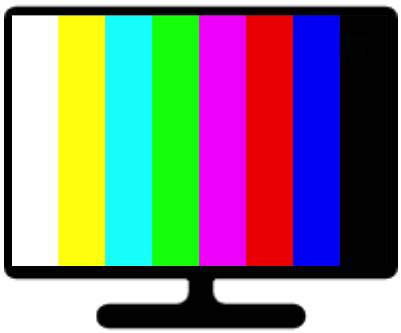
Output the Program scene by default

2. Users can also select to output multi-view scenes and test pattern as needed.



Select “Multi-view” as the program output





Select “Test Pattern” as the program output

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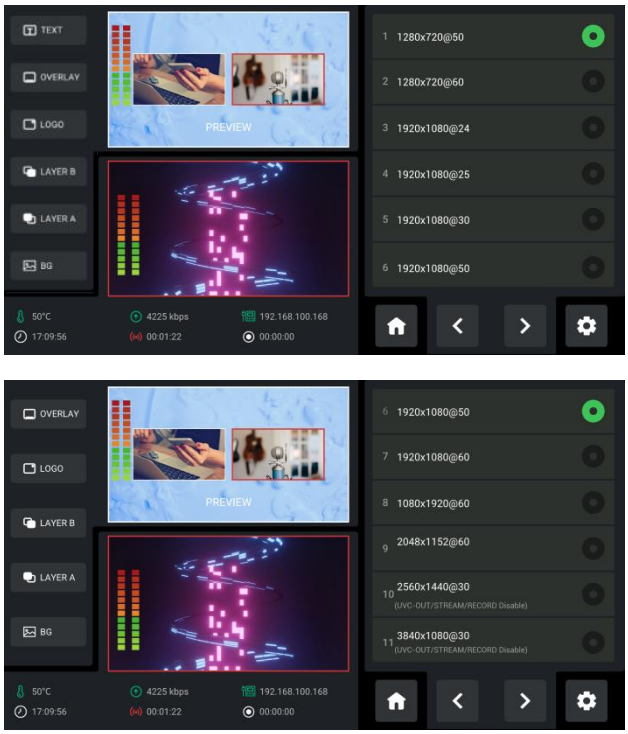
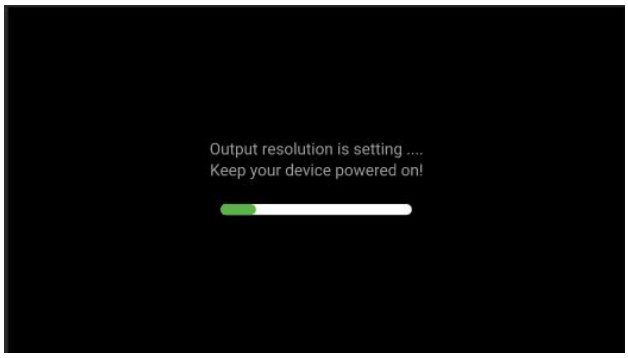
3.10.3 Resolution

mini-mx SDI support output resolution up to 3840x1080@30. Users can select the matched output resolution as needed.

1. On the “OUTPUT” interface, tap “Format” to choose output resolution.



2. Please keep the device powered on after selecting a resolution.



3.10.3 NDI Output

The mini-mx SDI has newly added the NDI output function. Without the need for complex wiring and additional hardware devices, it has significantly reduced the cost and difficulty of system setup. This makes the audio and video transmission between devices smoother and more stable.

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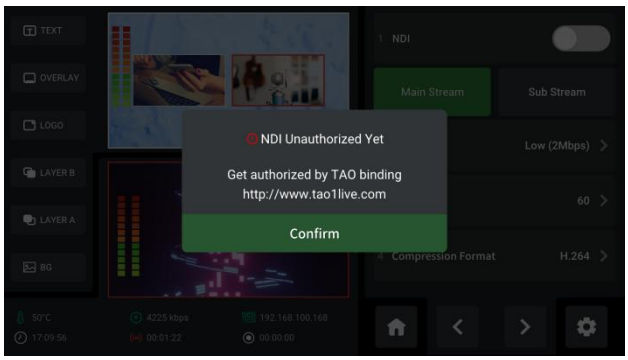
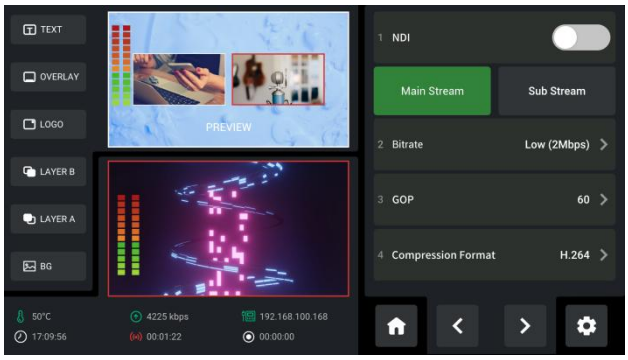
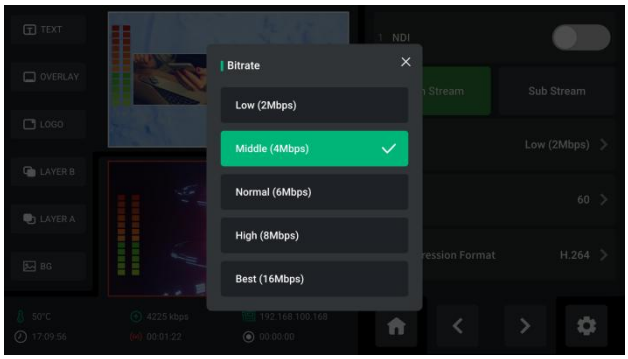
1. Tap “NDI Output” on the OUTPUT interface. Please get the NDI authorization before enabling NDI.



2. On the setting interface, users can configure the bitrate, GOP and compression format.



3. Users can adjust the bitrates according to the image quality. Usually the higher the bitrates, the higher the image quality.



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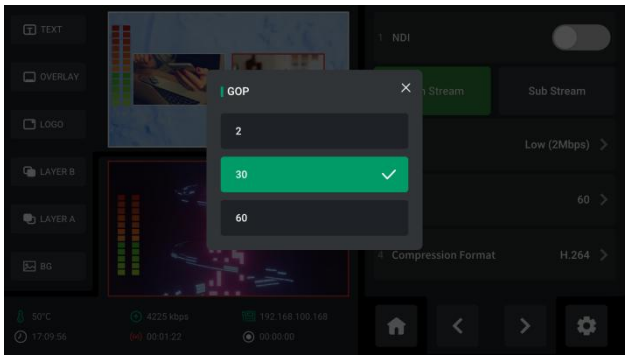
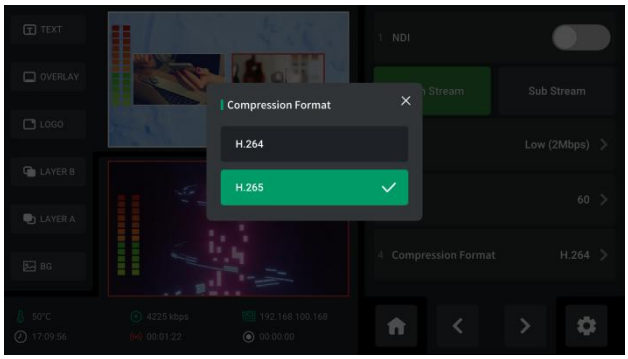
4. Users can adjust GOP, optimizing the coding to ensure the accuracy and integrity of the video transmission.



5. Users can select suitable compression format as needed.

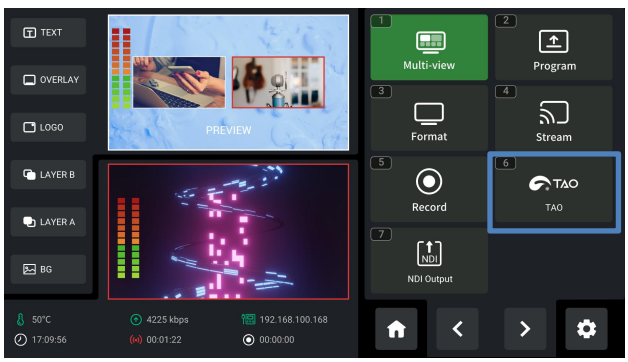


3.11 TAO Cloud Device Access

With TAO Cloud integrated directly into RGBlink devices, such as mini-mx SDI, users can do more content production. The TAO Cloud creates an effective streaming platform, catering to the need for fast production. Users can take full advantage of TAO Cloud to distribute the content to more than 30 mainstream live-streaming platforms, breaking through the geographical limitation.

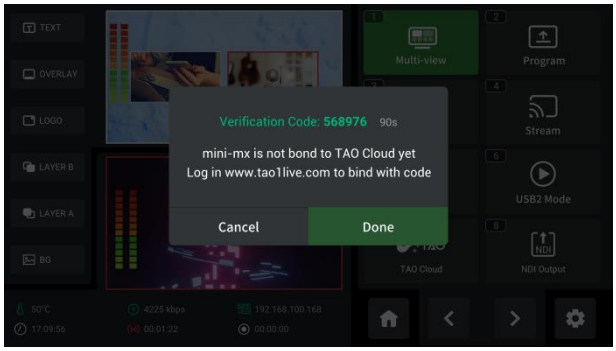
3.11.1 Binding mini-mx SDI to TAO Cloud

1. On the “OUTPUT” interface, click “TAO Cloud ” to enter the following interface.

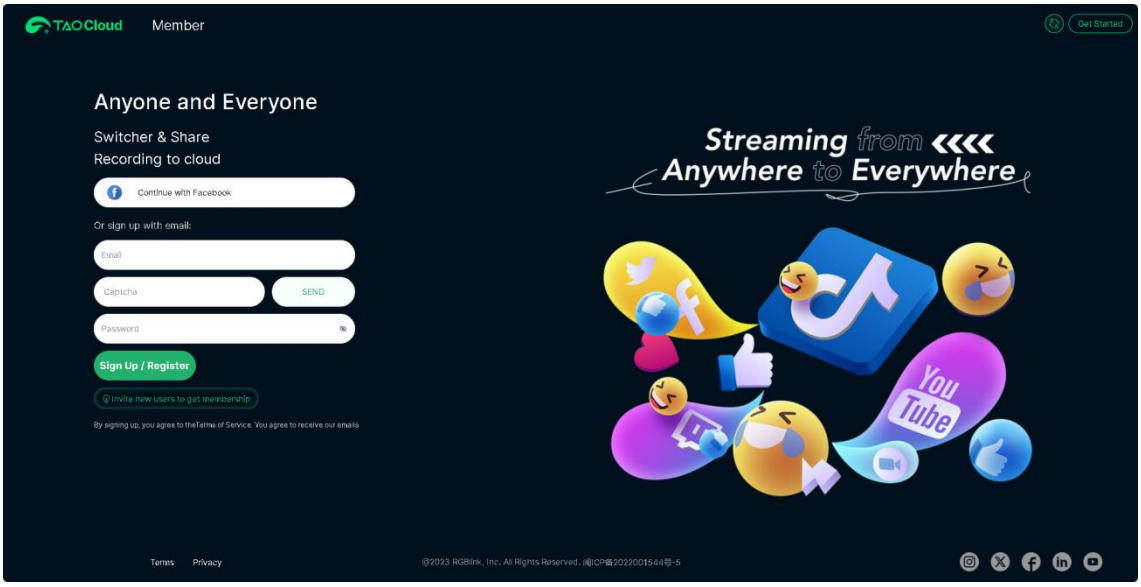


2. If mini-mx SDI is unbound to TAO Cloud, a box will pop up to prompt the users to get a verification

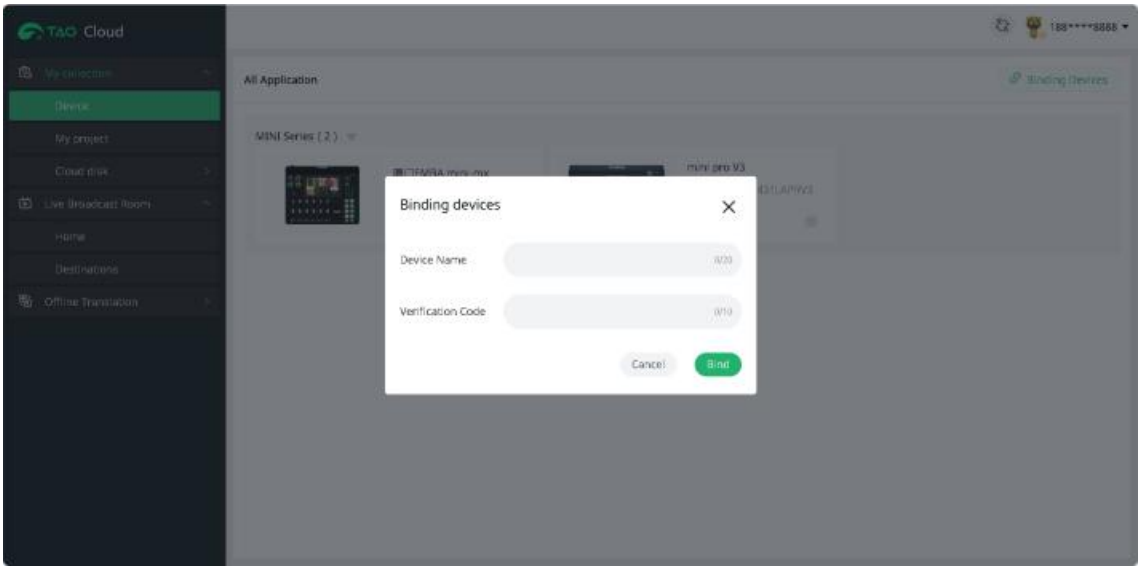
code. Please make sure your network is working before receiving the verification code.



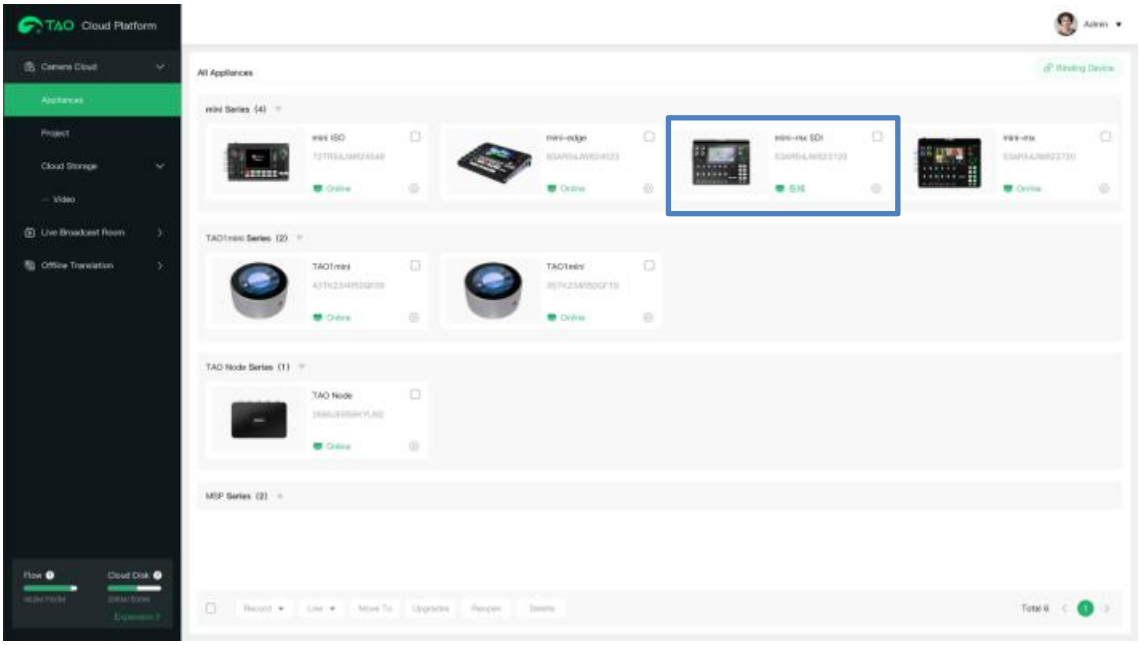
3. Log into TAO Cloud (available at https://www.tao1live.com), and use a Facebook account to log in or sign up with email.



4. Enter TAO Cloud homepage. Click“All Appliances”> “Binding Devices”to enter interface as shown. Enter device name (customizable) and verification code, then click“Bind”to confirm.



5. You can check binding status in All Appliances interface.



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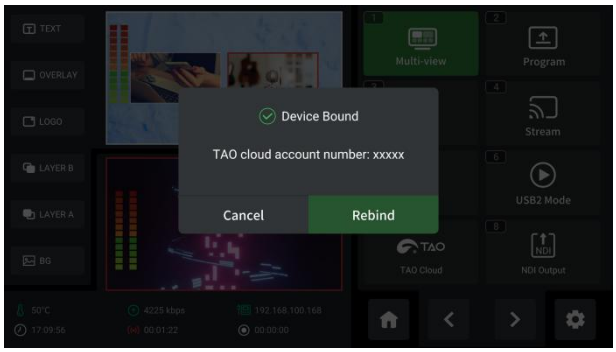
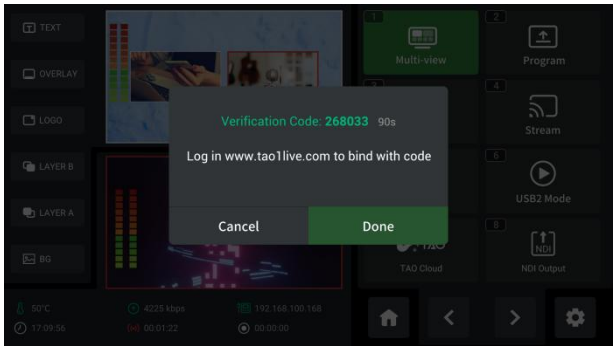
6. If you want to unbind, use the ENTER button to select "TAO Cloud" once again and then select "Rebind". Then you can choose to rebind or perform other operations.





Notes:

If mini-mx SDI has been connected to the internet, you can perform device unbinding via a factory reset.

3.12 Streaming

So far mini-mx SDI supports three ways of streaming: device, TAO Cloud, USB output capture.

3.12.1 Streaming on Device

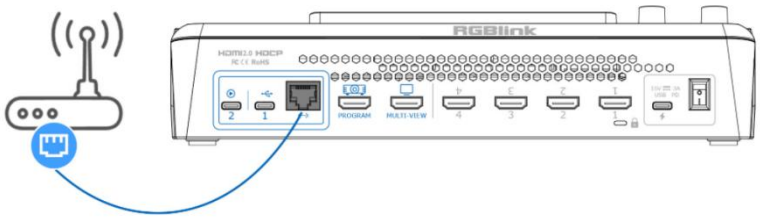
The device can perform push streaming without the need of a computer or mobile phone as long as the network is working. Used with live-streaming platforms, the device can distribute the content up to four 4 platforms at the same time.

3.12.1.1 Network connection

The network connection should be normal before enabling the streaming. Two ways are available for providing network connection for mini-mx SDI: 1. cable connection; 2. smartphone tethering.

1. Direct Cable Connection

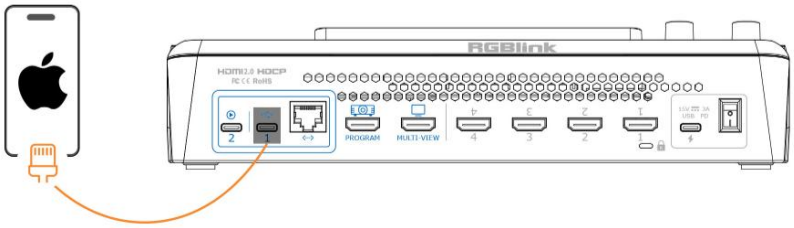
mini-mx SDI switcher's Ethernet connector lets you stream directly. Connect mini-mx SDI to the internet by plugging a network cable from the Ethernet port to an internet router or a network switch. It is recommended to use RGBlink CAT6 cable with order code as 940-0001-00-11-0.



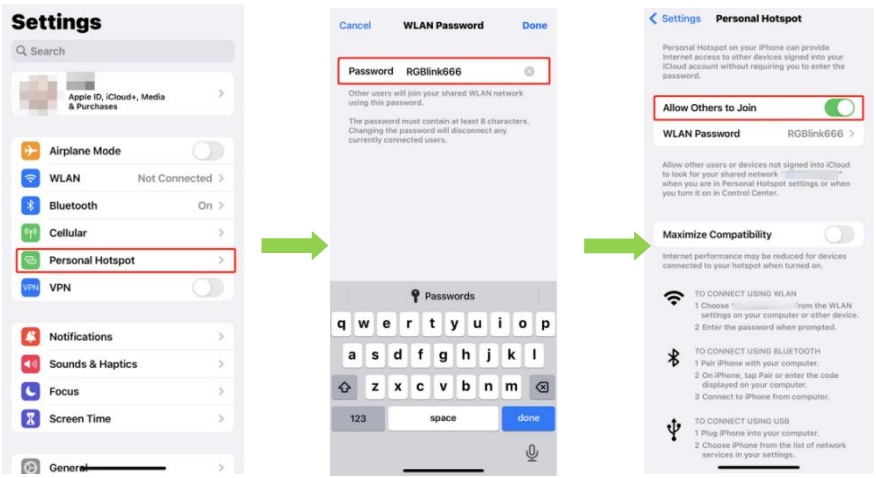
2. Smartphone Tethering

2.1 For iOS system, please do as follows:

a. Simply connect a standard power cord from your smartphone to the USB-C port labeled number 1 on your mini-mx.



b. Then the 'Trust This Computer' alert message will appear on your device. Tap‘Trust’ on your device and do as followings: Open ‘Settings’ > Select ‘Personal Hotspot’ > Enter ‘WLAN Password’ > Turn on ‘Allow Others to Join’.



c. Tap SETTING in MENU or Button 8 to enter following interface. You can also access to Setting Interface by clicking icon. Tap Network in Setting and then select **Mobile** to stream by using the hotspot of mobile phone.

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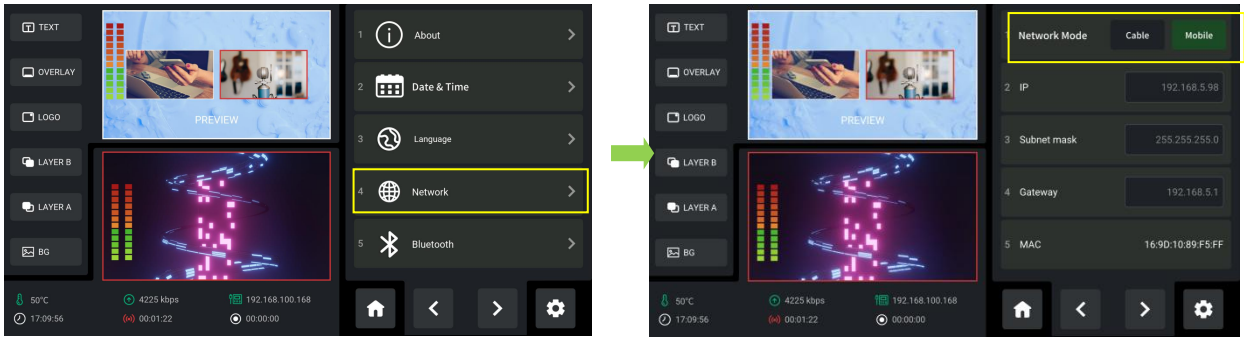
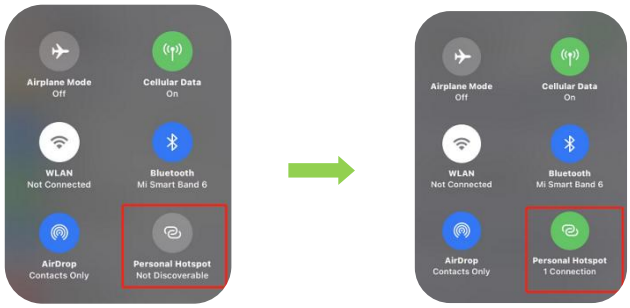
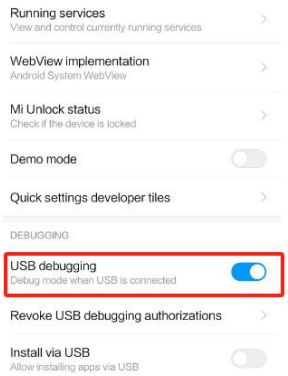


d. As shown in figures below, if the status changes from "Not Discoverable" to "Connection", it means that the mini-mx and your mobile phone have achieved network sharing.

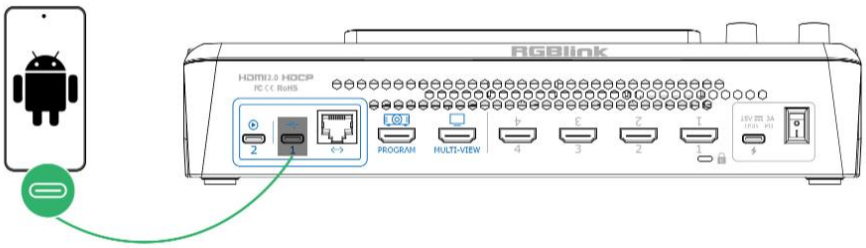


2.2 For Android system, please do as follows:

a. Open ‘Settings’> ‘Additional settings’> ‘Developer options”> Turn on ‘USB debugging’.

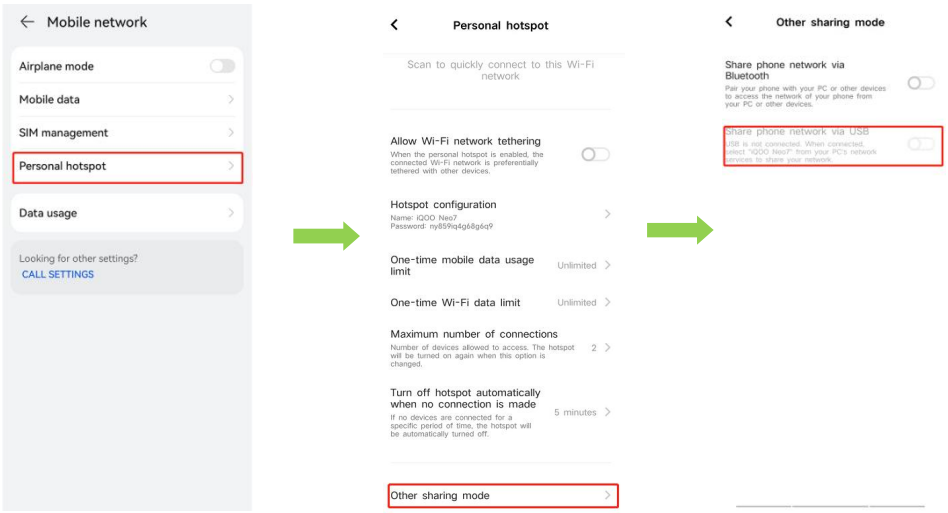


b. Simply connect a standard power cord from your smartphone to the USB-C port labeled number 1 on your mini-mx.

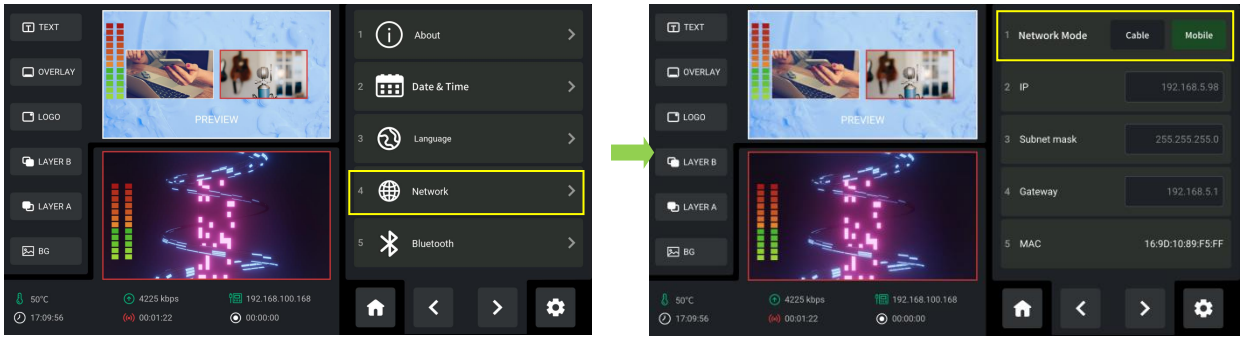


c. Open ‘Settings’ > Select ‘Mobile Network’ > ‘Personal Hotspot’ > ‘Other Sharing Mode’ > Turn on

'Share Phone Network via USB'.



d. Tap SETTING in MENU or Button 8 to enter following interface. You can also access to Setting Interface by clicking icon. Tap Network in Setting and then select **Mobile** to stream by using the hotspot of mobile phone.



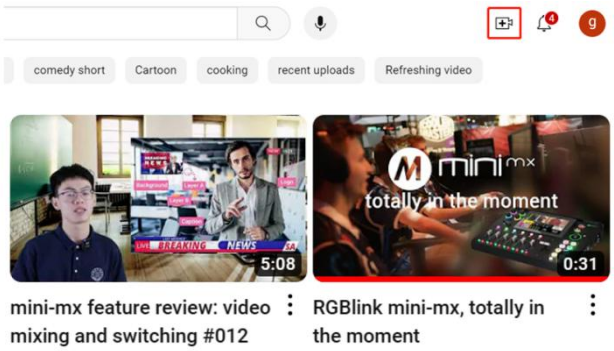
Warning:

1. Make sure the DHCP is enabled when using the Smartphone Tethering.
2. If failed to use network sharing, please operate as follows: Connect USB-C interface of OTG cable to mini-mx SDI, then use standard data cable to connect your phone to USB-A interface of OTG cable.
3. The user interface may vary according to mobile phone types, please refer to the actual use.

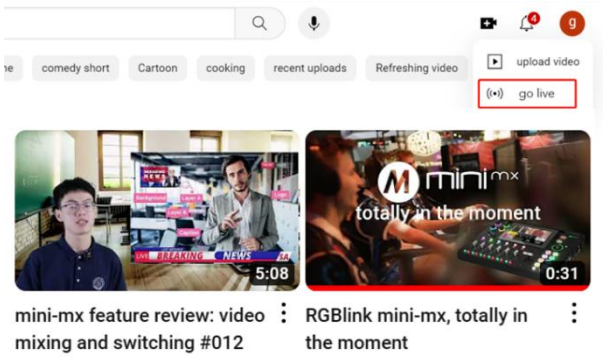
3.12.1.2 Copy the Streaming Address (Take YouTube as an Example)

In above operations, mini-mx SDI has been connected to the network. Then TAO cloud can assign a streaming address. To stream the content to a platform, proceed as follows. This section takes YouTube Live as an example.

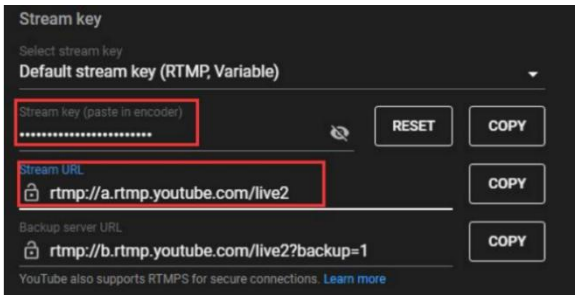
1. Log into your YouTube account on your computer;
2. Click the camera icon in the top right corner to create a video.



3. Select“go live”.



4. Type in a title and add a description in the dialogue box, click “create stream” and then copy the Stream URL and Stream Key.



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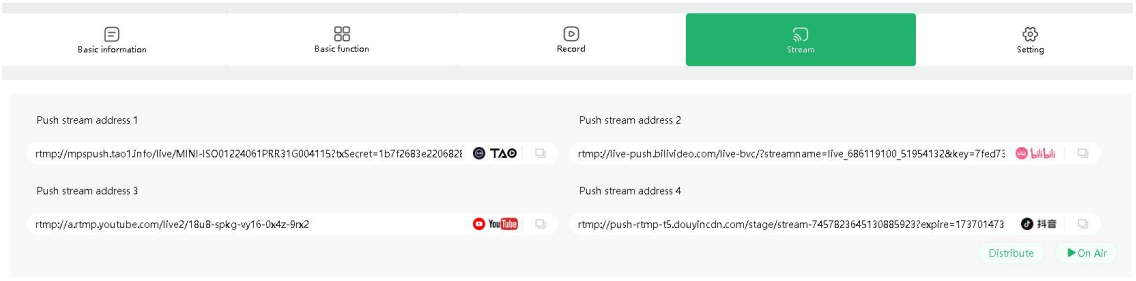
5. Open TAO Cloud, connect it to the mini-mx SDI device, fill in the copied Stream URL/Stream key into the “Push Stream Address Box”, click “Distribute”, and the mini-mx SDI device will automatically recognize the push stream address.



3.12.1.3 Select the Platforms to be Streamed

mini-mx SDI supports streaming to 4 platforms at the same time.

1. On the SETTING interface, select “OUTPUT”.

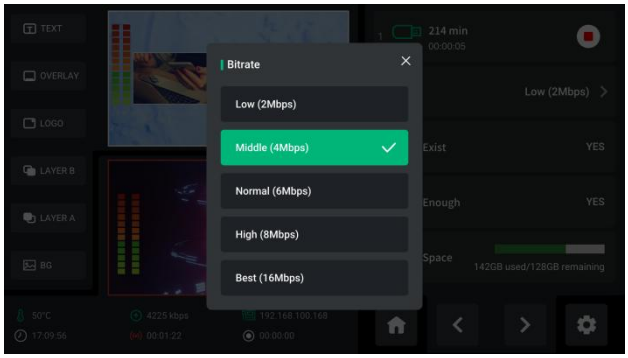
2. Tap “Stream” on the OUTPUT interface. The streaming address which are recognized successfully by the device will be shown on this interface for the users to select.

3.12.1.4 Streaming Setting

mini-mx SDI supports RTMP streaming protocol. Users can choose suitable bitrate and screen mode.

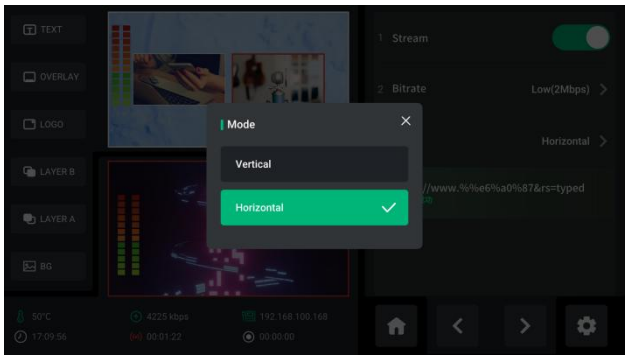
1. Bitrate

Users can adjust the bitrate of live video according to the actual situations. For example, if the network speed is slow, the bitrate can be switched to a lower level.



2. Screen Mode

Users can adjust the screen mode as needed. There are horizontal and vertical modes to be selected.



3.12.1.5 Enable Streaming

1. Enable the stream on the interface or press the “ON AIR” button on the front panel to start streaming. During the streaming, users can start or end the streaming by enable or disable the streaming address on the device. If there’s a address fails to be streamed, then the ON AIR button will flash.

3.12.2 TAO Cloud Streaming

On the TAO Cloud platform, a wider streaming platform selection awaits the users. The TAO Cloud supports streaming the content to 32 platforms worldwide.

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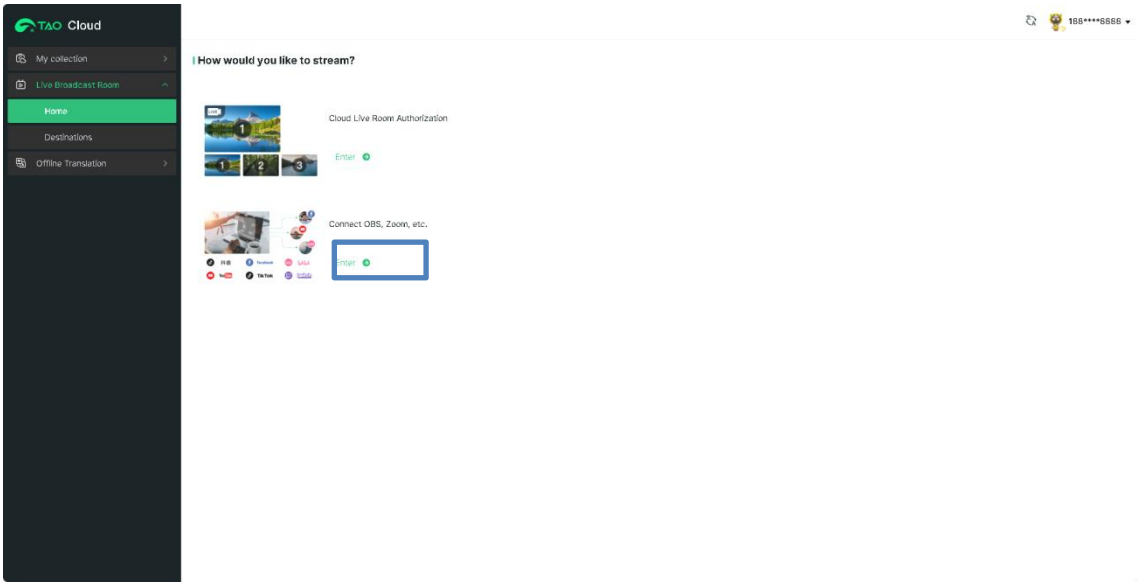
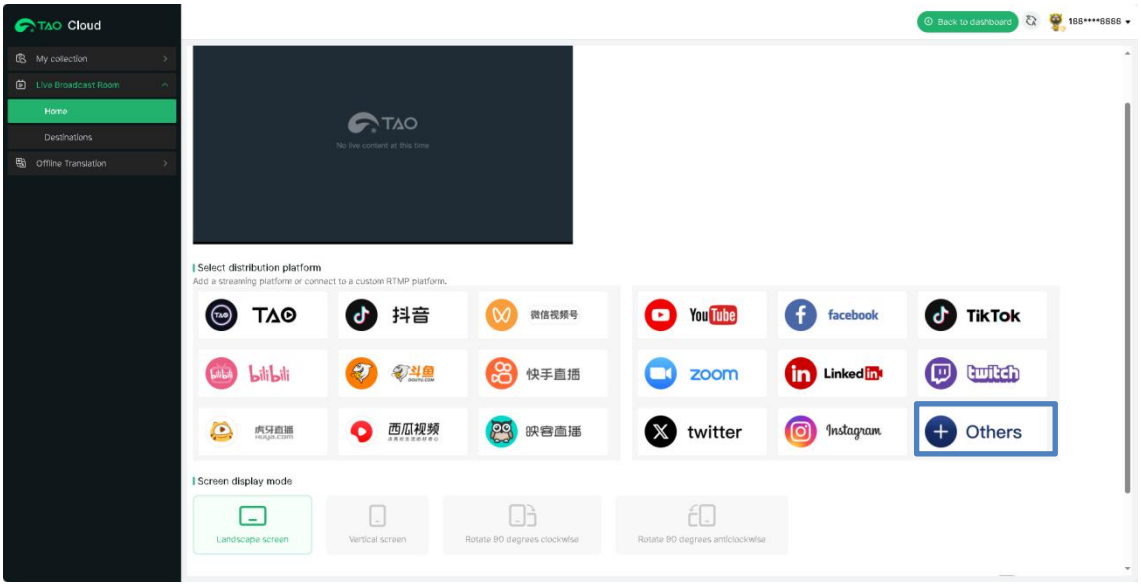
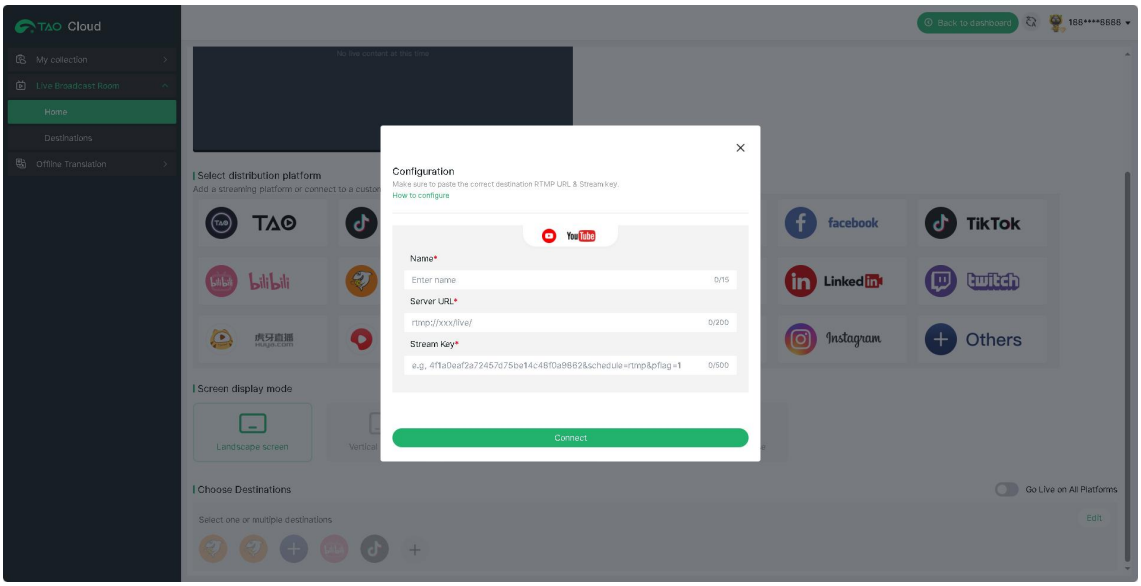
1. With device bound to the TAO Cloud (for the binding process, please refer to 3.11 TAO Cloud Device Access), users can have more platform options. Click “Home” on the navigation bar and click “Enter”to enter the streaming platform setting interface.



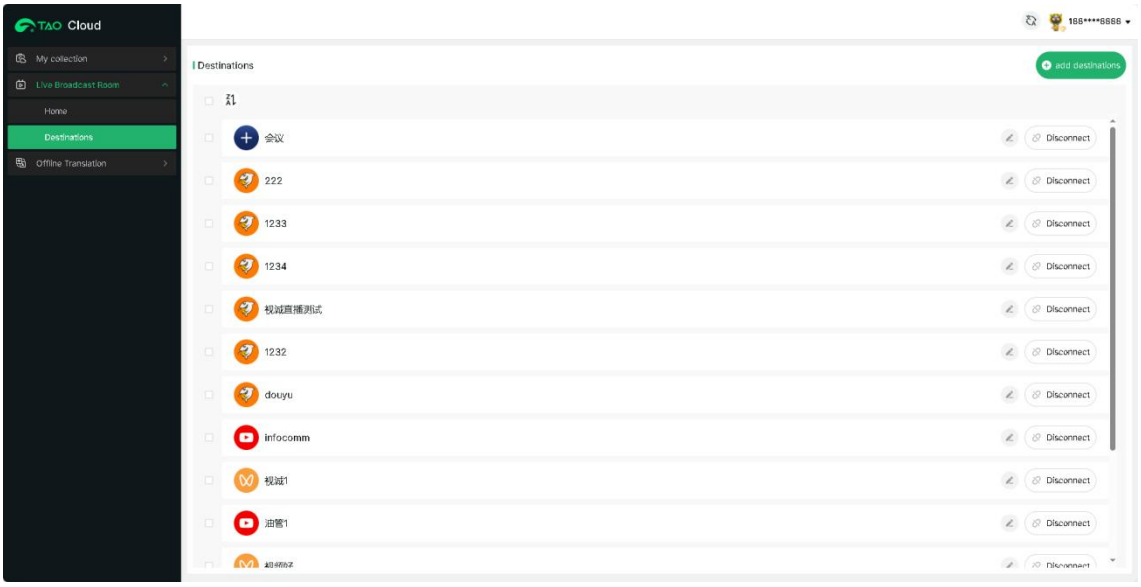
2. For the convenience of the users, the TAO Cloud provides the common streaming platforms worldwide. Users can click the platforms to be streamed or click “Others” to add a new platform. Users can also select the screen display mode on this interface.



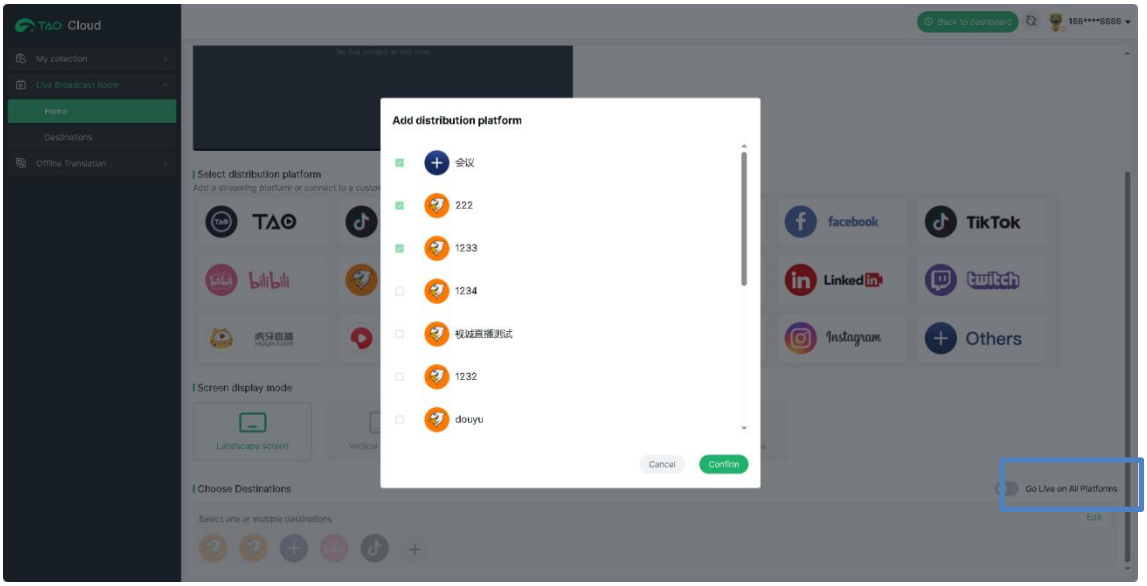
3. A setting interface will pop up after clicking any platform. Please enter the studio name (customizable), streaming address and streaming key as the the box informed. Then click “Connect”.



4. To manage the studios already set, click “Destinations” on the navigation bar and enter the management interface.



5. With all these done, press “+” on the “Choose Destination” column to add platforms to be distributed. The icons of the added platforms will be displayed. Users can click any icon to stream the content or simply click “Go Live on All Platforms” to stream the content to all the added platforms.

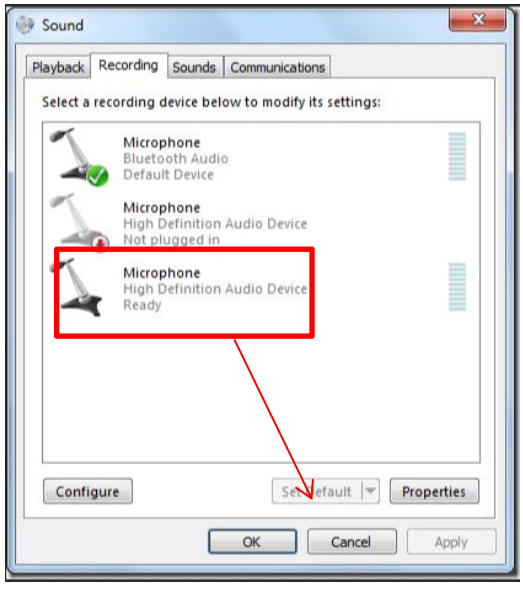


3.12.3 USB2 Capture Streaming

Users can also perform streaming via a third-party software when connecting a computer to a the USB port labeled number 2. This section takes OBS streaming as an example.

1. **Audio Setting**

a. When there is no audio playing, check the video source to see if it is set as default value.



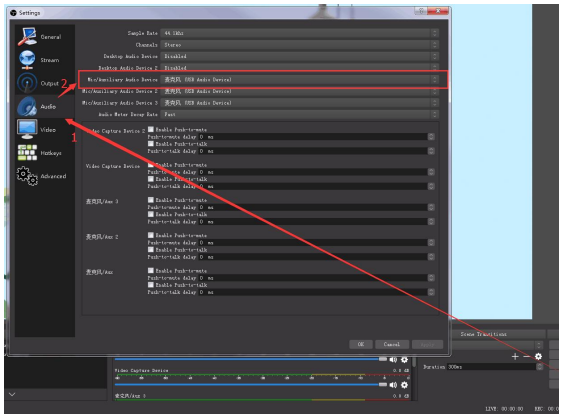
b. Check the audio setting on OBS.

Choose “Audio”, click “Setting“ and choose audio device (MIC/Auxiliary Audio Device).

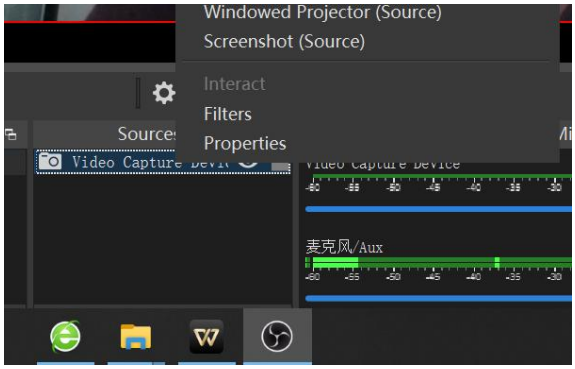
2. Synchronize Video with External Audio

When the video itself doesn’t have embedded audio and needs insert external audio, here are the steps:

a. Set the audio source: Setting→Audio→Mic/Auxiliary Audio Devices.



b. Right click the “Video Capture Device” in Source and choose “Filters”.



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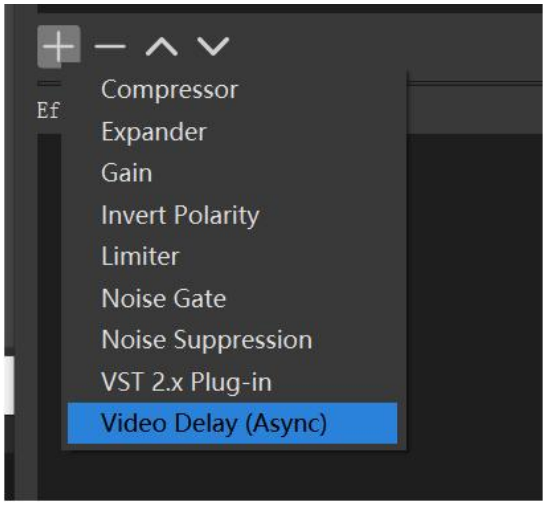
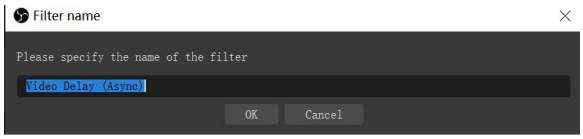
c. Click“+”under Audio/Video Filters and choose Video Delay (Async).



d. You can custom the filter name in the pop-up box. Click OK to confirm the filter name.

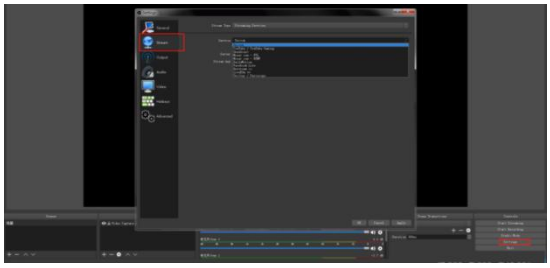


e. Input delay value in ms, the value needs to be adjusted until the video and audio are synchronous.

3. Streaming Setting

a. Find the RTMP URL and Stream Key provided by streaming broadcast website. Then Copy URL and Stream Key.

b. Back to OBS, click Setting in the lower right corner and click “Stream”. Choose Stream Type as “Streaming Service” or “Custom Streaming Server” . If “Streaming Service” is chosen, a list of streaming service names will be available in the drop-down list of Service. If the desired streaming service is in the list, select it from the list.For the Custom Service, simply fill in the URL and Stream Key. Paste the RMTP URL to Server or URL and Stream Key to Stream Key.



c. Click “Start Streaming”. Go back to live broadcast website and check the broadcasting.

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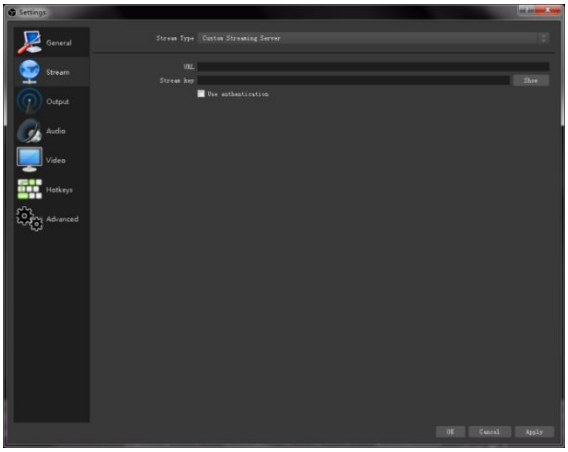

3.13 Recording

mini-mx SDI embeds two USB ports and users can select one of them to record the content of the program output by inserting a U disk or SSD, providing reliable assistance for live content production. The U disk storage supports up to 64G and SSD supportsup to 2T. Please proceed as follows:

1. Insert the U disk or SSD for recording into USB-C port labeled number 1.

2. Push MENU Button to enter Menu and tap OUTPUT.

3. Tap “OUTPUT” in MENU or push Button 7 to enter Video Output interface, then choose **Record** to enter recording configuration interface.

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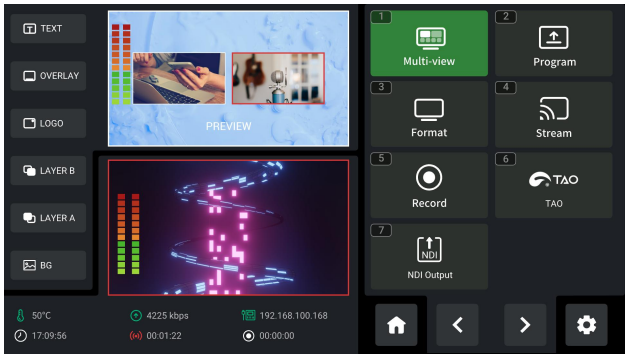
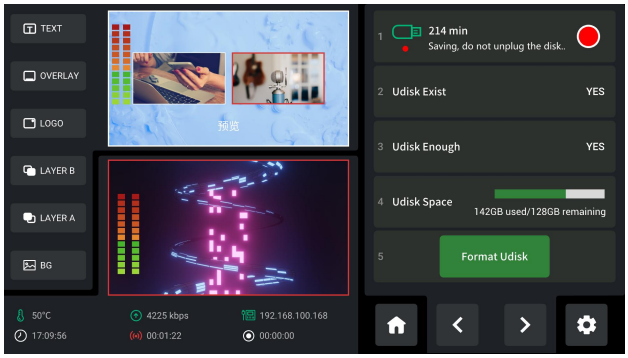
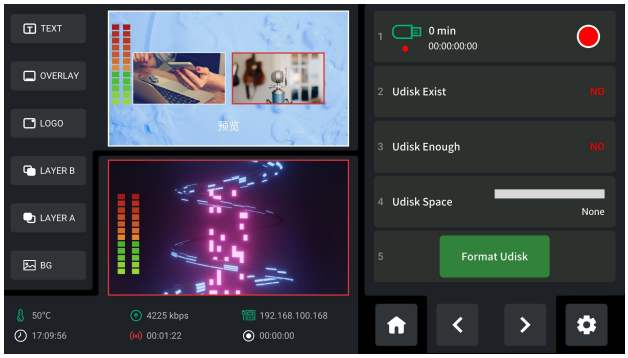


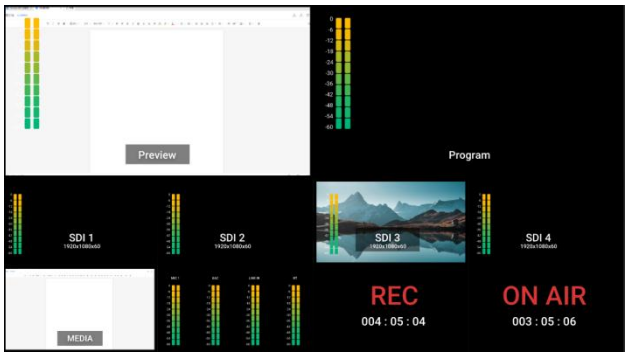


U disk detected by the device



U disk undetected by the device

4. During the recording, users can check the recording status and duration on the record setting interface, main interface and muti-view screen.



Notes:

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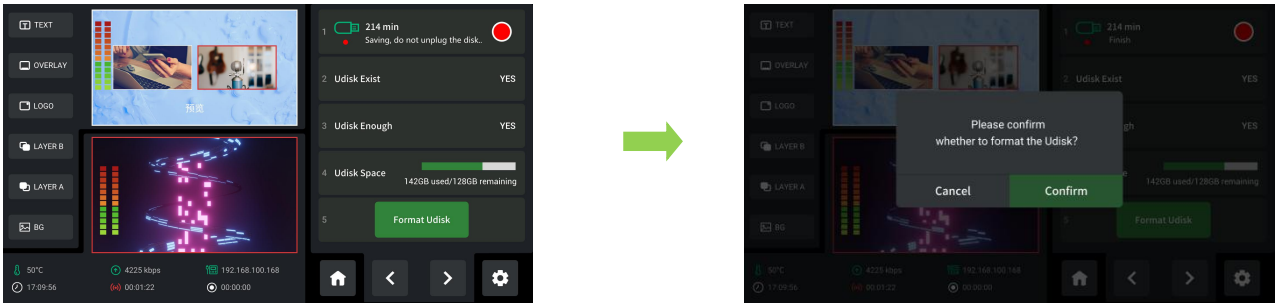
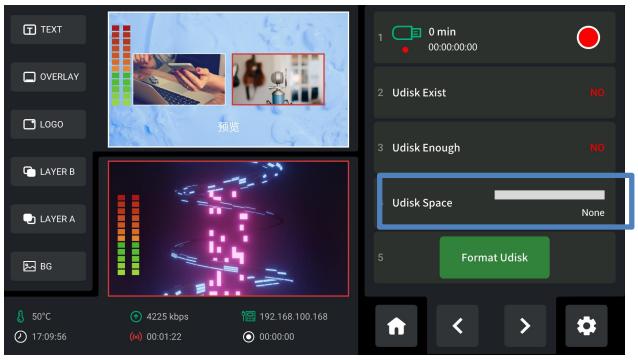
1. During the recording process, do not remove the U disk.
2. The format supported by the U disk is exFAT. Please format the U disk if it is not. Do the following steps: set the file format as “exFAT” on the computer and allocate the file 128kb each unit. Then select “Format U disk” and press “Confirm”.



3. The recording is partitioned and saved every 4G. The content saved will be overwritten by new content from the first segment saved when the U disk storage is full. To avoid unexpected overwrite, users can check the U disk storage at any time on the recording setting interface.

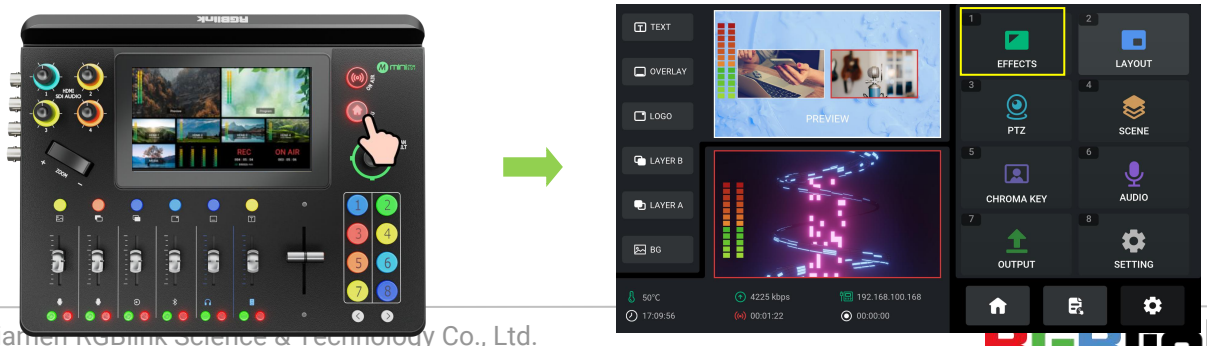


3.14 Transition Effects

mini-mx SDI provides 15 transition effects for dynamic views switching. Users can select effects and set transition duration according to different situations.

3.14.1 Transition Effects Selection

1. Push MENU Button to enter MENU. Then press “Transition EFFECTS” or press number 1 on the front panel to enter transition effects interface. Besides, long press the PROGRAM window can also enter the transition effects interface.



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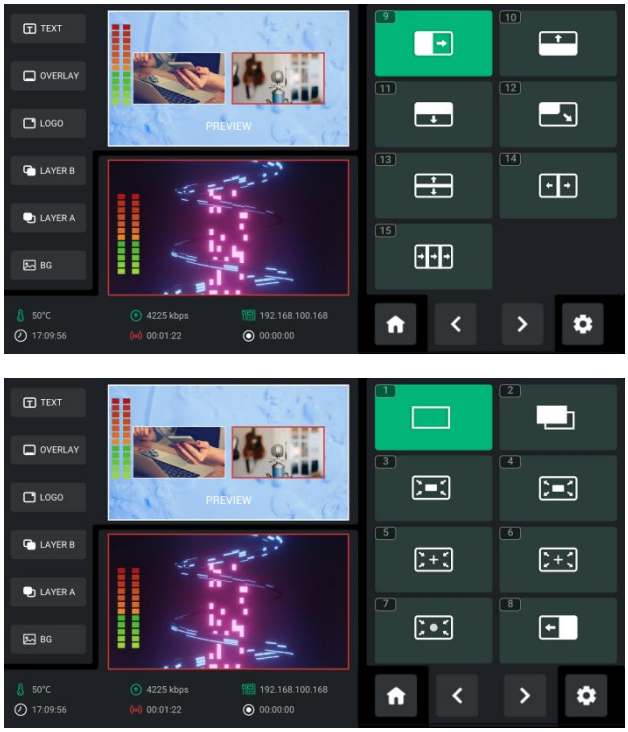
2. 15 transition effects in total can be selected. Use Button “Page Up” and “Page Down” to choose effect you need.



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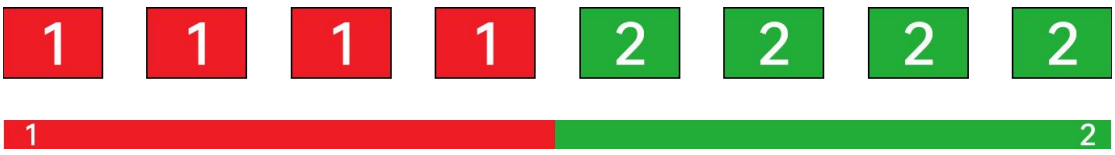
3.14.2 Transition Effects Illustration

For the illustrations of the effects, refer to the following table.

	Cut
	Fade
	Box Inwards
	Iris Box
	Cross Inwards
	Iris Cross
	Circle Inwards
	Wipe to Left
	Wipe to Right
	Wipe to Top
	Wipe to Bottom
	Wipe to Bottom Right
	Center Split Vertical
	Center Split
	Blinds Vertical

- **CUT:** The Picture 1 switches to Picture 2 instantly with no transition effect.



- **FADE:** FADE is a transition from Picture 1 to Picture 2 and two pictures are blended together during switching process.

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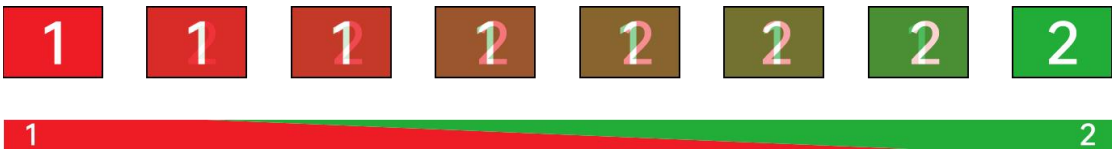
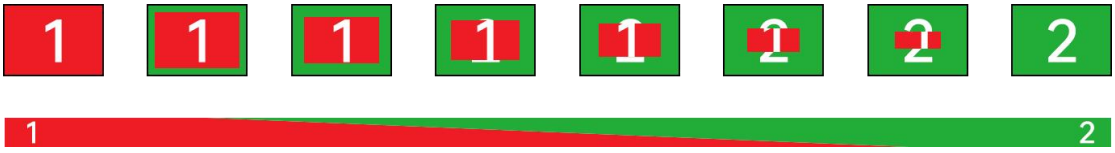
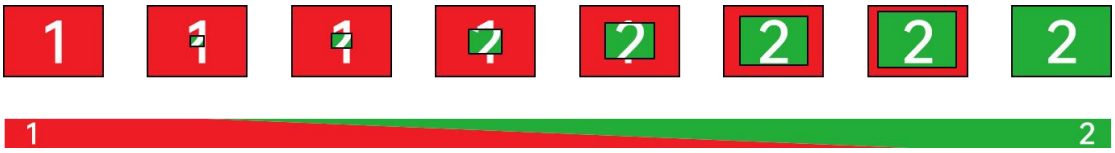


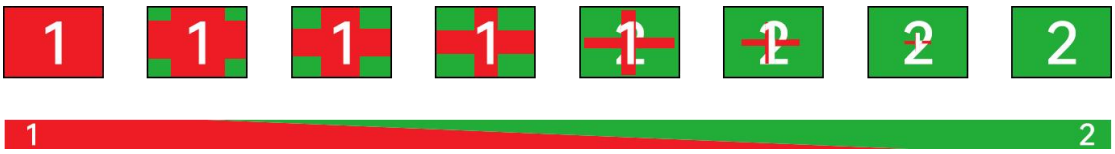
● **Box Inwards:** Box Inwards refers to replacing Picture 1 by Picture 2 and is achieved by using a box pattern closing in from the edge towards center.



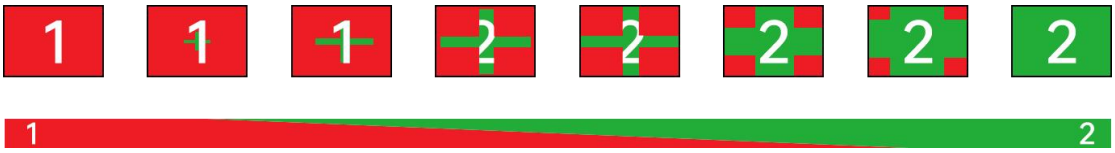
● **Iris Box**: Iris Box refers to replacing Picture 1 by Picture 2 and is achieved by using a box pattern growing from the center and progressing outward.



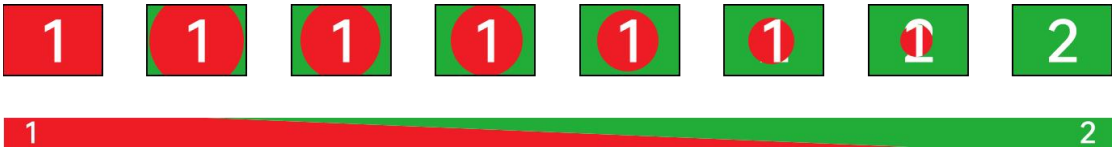
● **Cross Inwards:** Cross Inwards refers to replacing Picture 1 by Picture 2 and is achieved by using a cross pattern closing in from the edge towards center.



● **Iris Cross**: Iris Cross refers to replacing Picture 1 by Picture 2 and is achieved by using a cross pattern growing from the center and progressing outward.



● **Circle Inwards**: Circle Inwards refers to replacing Picture 1 by Picture 2 and is achieved by using a circle pattern closing in from the edge towards center.



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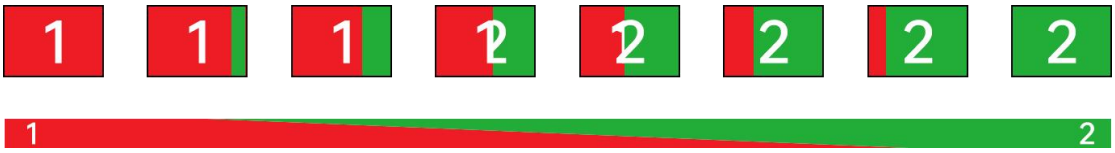
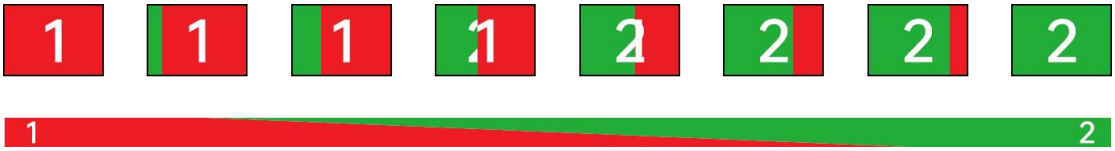
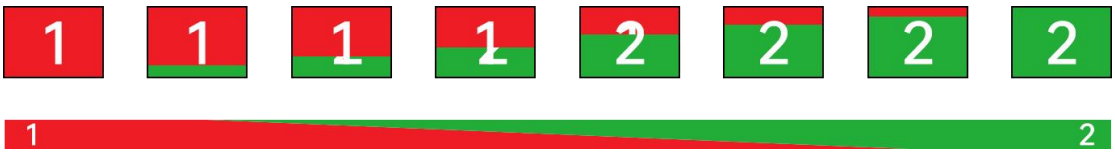
- **Wipe to Left:** The Picture 1 is unchanged, and the Picture 2 is gradually wiped in to replace Picture 1 from the leftward direction.



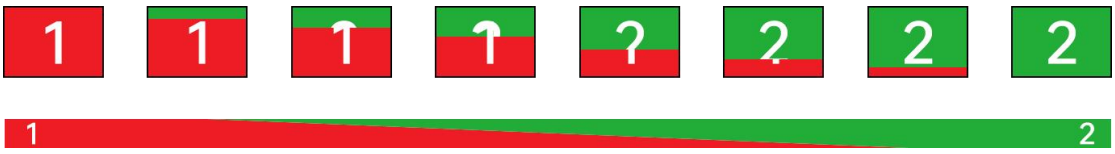
- **Wipe to Right:** The Picture 1 is unchanged, and the Picture 2 is gradually wiped in to replace Picture 1 from the rightward direction.



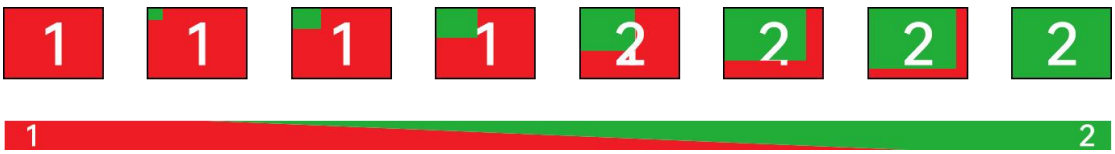
- **Wipe to Top:** The Picture 1 is unchanged, and the Picture 2 is gradually wiped in to replace Picture 1 from the upward direction.



- **Wipe to Bottom:** The Picture 1 is unchanged, and the Picture 2 is gradually wiped in to replace Picture 1 from the downward direction.



- **Wipe to Bottom Right:** The Picture 1 is unchanged, and the Picture 2 is gradually wiped in to replace Picture 1 from the diagonal direction.



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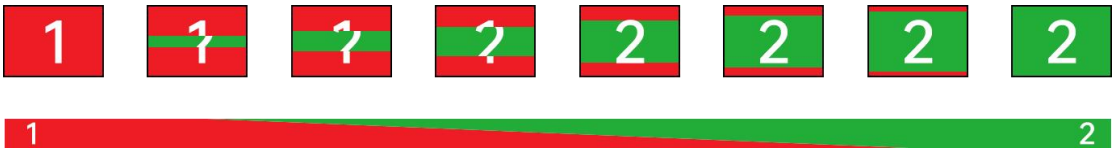
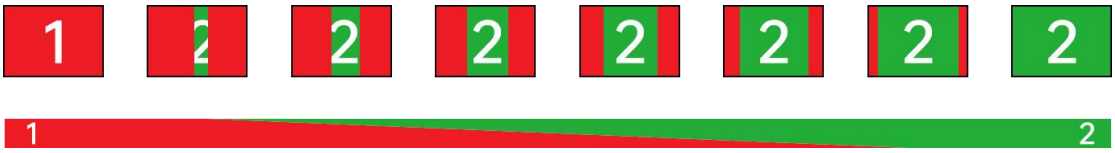
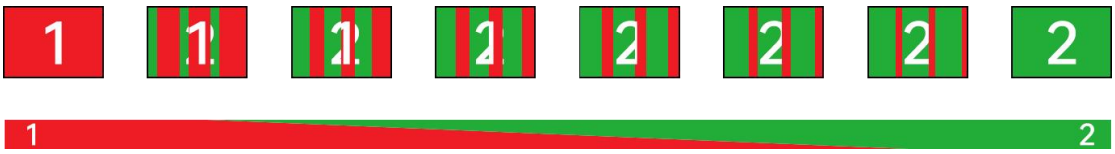
● **Center Split Vertical：** The Picture 1 is unchanged, and the Picture 2 grows from the center and extends vertically.



● **Center Split Horizontal:** The Picture 1 is unchanged, and the Picture 2 grows from the center and extends horizontally.



● **Blinds Vertical:** Blinds Vertical refers to an animation that imitates opening or closing blinds from a vertical direction. The Picture 1 is unchanged, and the Picture 2 which is divided into bars extend vertically.

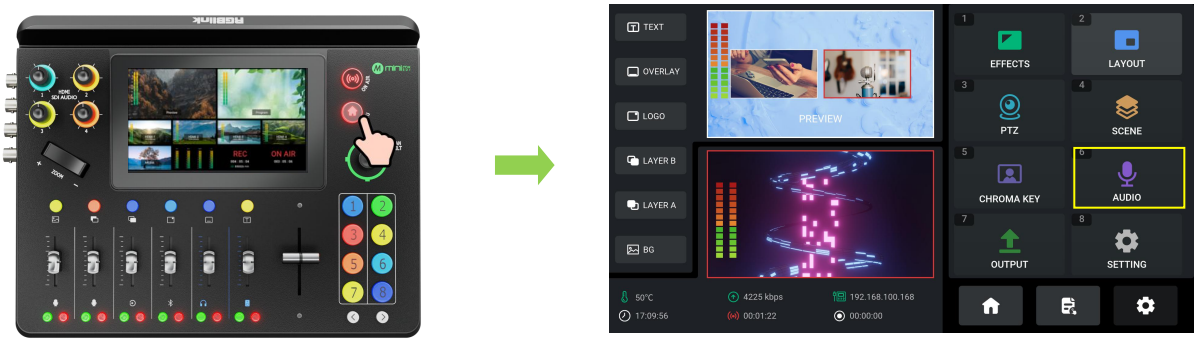


3.15 Audio

In addition to easy-to-use audio management on the front panel, the audio management interface on the screen provide a comprehensive audio functions, including mixed audio output, audio meter monitoring, volume setting, delay setting, audio effects and so on.

3.15.1 Audio Management Interface

Push MENU Button to enter MENU.



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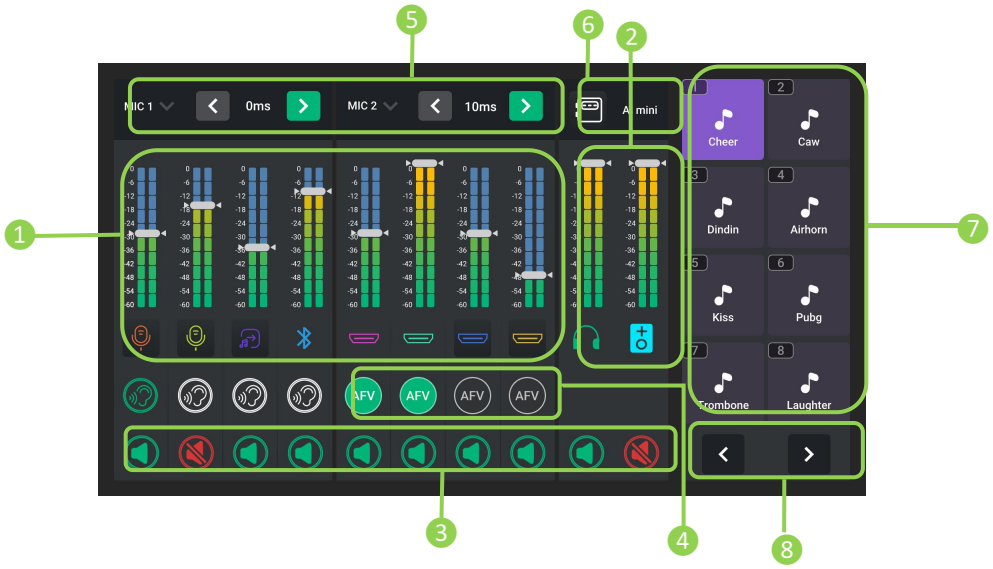
Tap “AUDIO” or push Button 6 to enter the Audio Management Interface. You can also access to the following interface by single click/double click/long press on Audio Monitoring Area on Main Interface. As shown in the figure below, the Audio Management Interface is divided into eight parts. Please refer to the following table for operation.



❶ Input Audio Meters	● Indicate MIC 1, MIC 2, Line-in, Bluetooth, HDMI 1~4/SDI 1~4. ● Use channel fader or white virtual slider to adjust volume. ● HDMI/SDI 1~4 inputs support embedded audio adjustment via control knob on front panel. MIC 1, MIC 2, Line-in, Bluetooth support audio adjustment vi a channel fader on front panel. ● The bluetooth icon is touchable only when the device pairs successfully. For more details, please refer to Section 3.16.6.
❷ Output Audio Meters	Indicate Headphone output and Program output.
❸ Mute Button	● Press to turn on/off: Icon illuminated green indicates OFF and red indicates ON. ● Mute analog input, the channel is muted only on Program out. ● Mute HDMI/SDI input, the HDMI/SDI channel is muted on Program out; users can also monitor audio if there is an HDM/SDI input in the Preview out. ● Mute PRE out, audio cannot be captured in Preview out. ● Mute PGM out, audio cannot be captured in Program out.

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❹ AFV Button	● AFV stands for audio-follow-video function. Enabling AFV, the audio will follow the video to make a soft gradual transition. Disabling AFV, the audio will remain on during and after video switching. ● The embedded audio of each HDMI/SDI can be configured as AFV so the audio switches with the video source to PRE and PGM automatically. ● Icon illuminated green indicates AFV ON. ● Icon unlit indicates AFV OFF.
❺ Audio Delay	● Configure audio delay for HDMI/SDI or MIC to keep audio in sync with the video. ● Range: 0~300ms, increase or reduce 10ms each time.
❻ AI mini Identification	mini-edge features MIC1 and MIC2 by default and a MIC3 will display when recognizing a camera signal. Attach the AI mini receiver to the device, the interface will display AI mini. If attaching other brand cameras, the inerface will display MIC3.
❼ Audio Effects Area	● Audio clip storage and playback area. ● Tap to play audio in Program out. ● Icon in green indicates playing status; icon in white indicates the audio clip has finished playing.
❽ Page up/Page Down	● Use ENTER knob to choose the right bottom icons to enter different audio clip storage page if the audio clips are more than eight. ● Use ENTER knob to choose **Next Page** icon to enter Media for audio management; Use ENTER knob to choose **Previous Page** or **Next Page** icon to back to Audio.

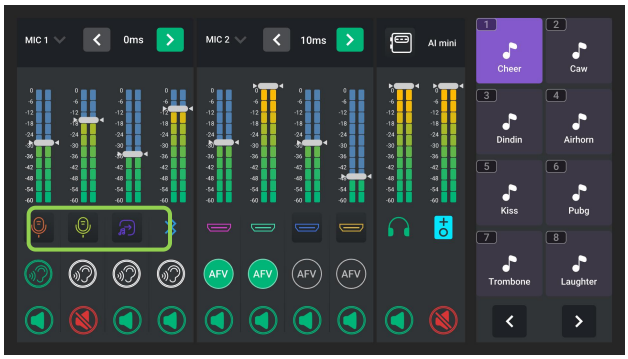
3.15.2 Selecting Microphone and Setting Level

The audio level setting can adjust the intensity of the audio signal to ensure it stays within an appropriate range. Audio level control is used when the sound is either too low or too high. The mini-mx SDI supports level setting for different types of microphones. Just tap the icons of microphones or line in to enter the level parameter setting interface.

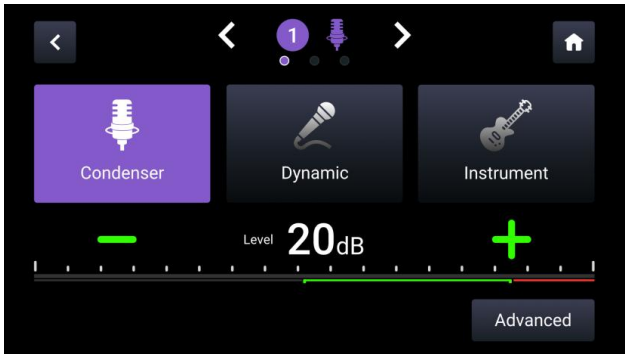
3.15.2.1 Selecting Microphone

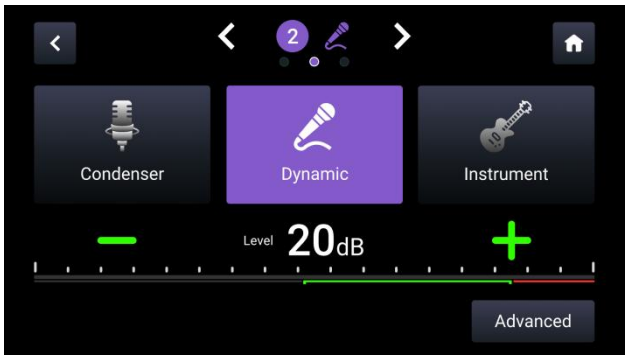
1. If the sound is too quiet or too loud, you need to control the audio level. Select MIC1, MIC2 or Line-in

input to set audio levels for microphone in different types.



2. "+" and " - " icons are used for increasing or decreasing the audio level for the respective source.





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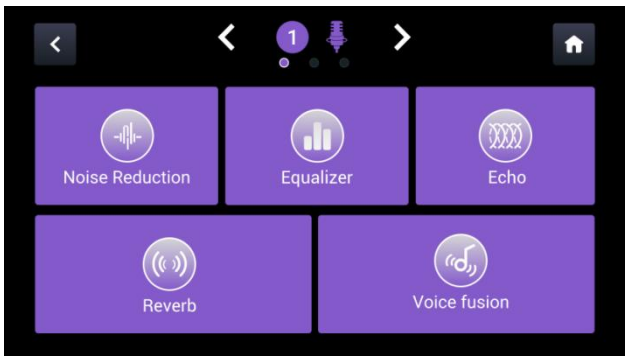
Notes:

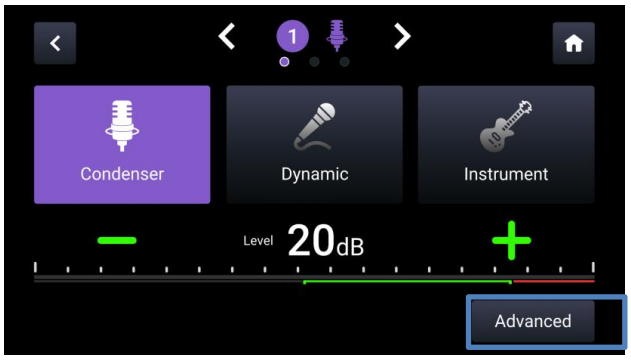
1. If the voltage of the connected condenser is 48V, users need to open the switch of the 48V Phantom power of MIC IN. For more details, please refer to Section 1.2.2.

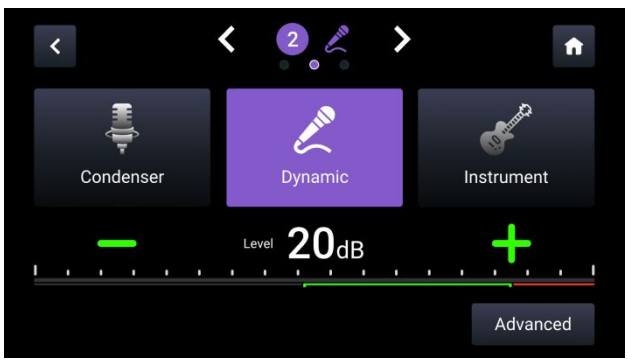
3.15.3 Advanced Functions

mini-mx SDI differs in audio performances from mini-edge. It provides noise reduction, equalizer, echo, reverberation, and voice fusion to the users. MIC1 and MIC2 feature five advanced audio functions: noise reduction, equalizer, echo, reverberation and voice fusion. Press to activate a function.



1. Select an input source on the microphone selection interface. Then tap “Advanced” to enter advanced function selection.





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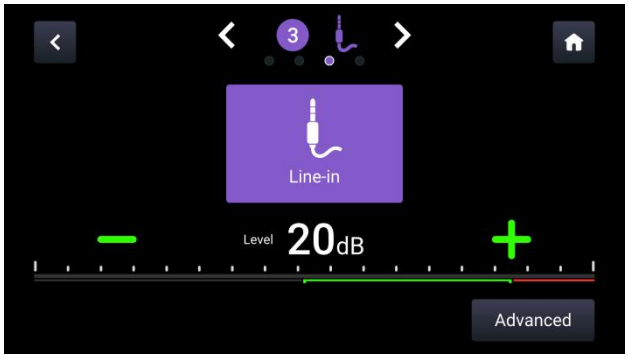
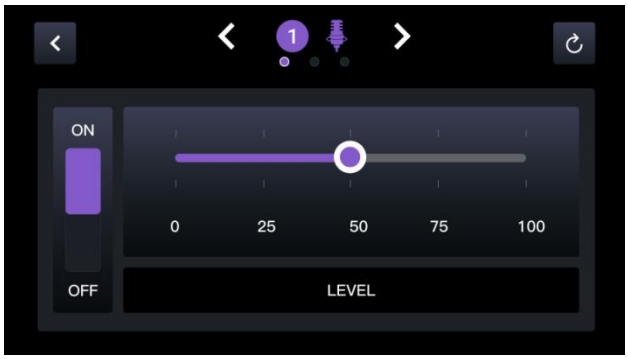


2. Noise Reduction: Slide the bar to adjust the level of noise reduction. Tap the button on the top right to reset the parameters.



3. Equalizer: For equalizer, press “-”or “+”to adjust the bell and gain. Tap the button on the top right to reset the parameters.

4. Echo: The definition of echo is the distinct repetition of sound. Press “-”or “+”to adjust the parameters. Tap the button on the top right to reset the parameters.

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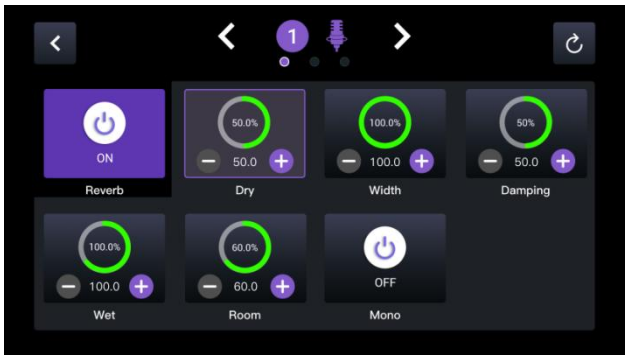
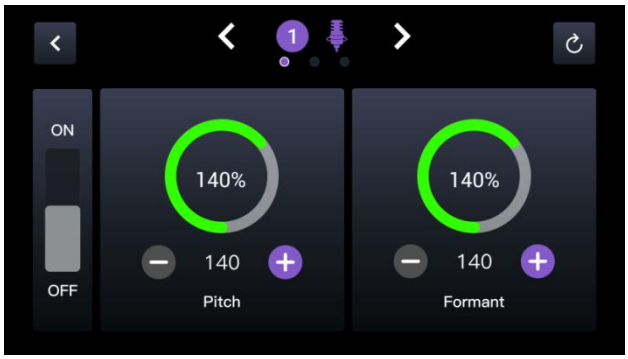
5. Reverberation: The definition of reverberation is blended and continuous sound. Press “-”or “+”to adjust the parameters. Tap the button on the top right to reset the parameters.



6. Fusion: Press “-”or “+”to adjust the parameters. Tap the button on the top right to reset the parameters.



7. Line in features four advanced audio functions: noise reduction, equalizer, reverberation and voice fusion. Press to activate a function. The parameter adjustments are the same as MIC1and MIC2.

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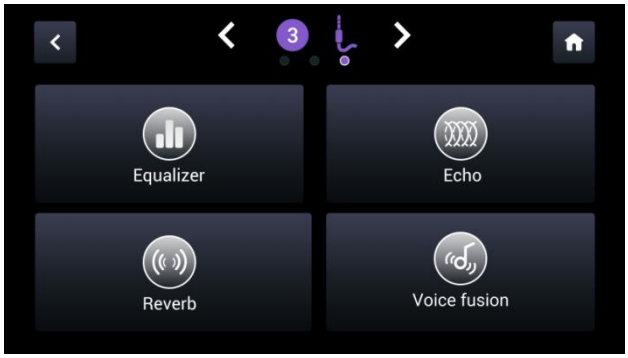
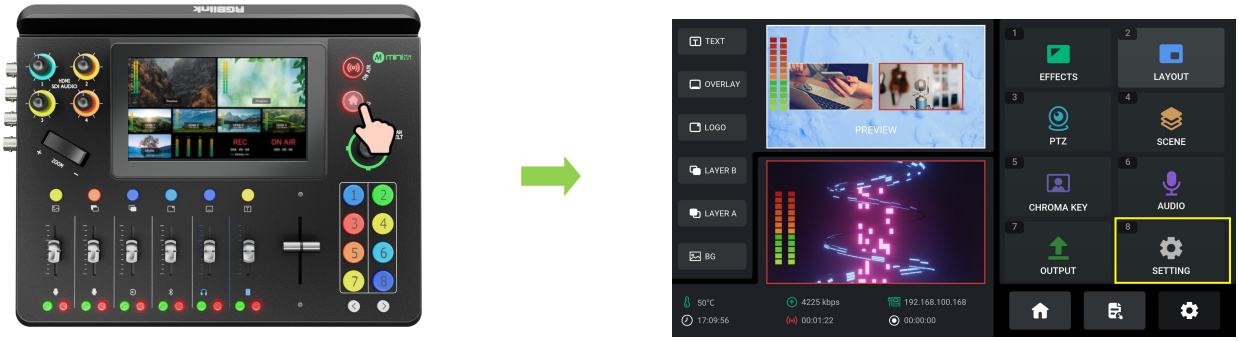
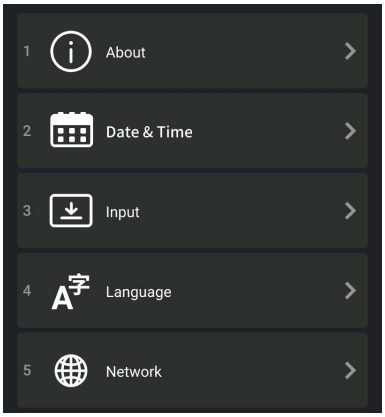


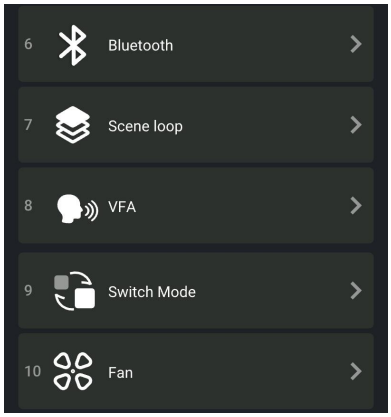
3.16 Setting

Push MENU Button to enter MENU.



Tap “SETTING” or press Button 8 to enter Setting Interface. You can also access to Setting Interface by clicking icon. As shown in the figure above, functions including **About, Date&Time, Input, Language, Network, Bluetooth, Scene Loop, VFA(Video Follow Audio), Switch Mode, Fan, Display, Color Management, PTZ Camera Protect, T-Bar Correction, Auto-return, and Reset** are available.





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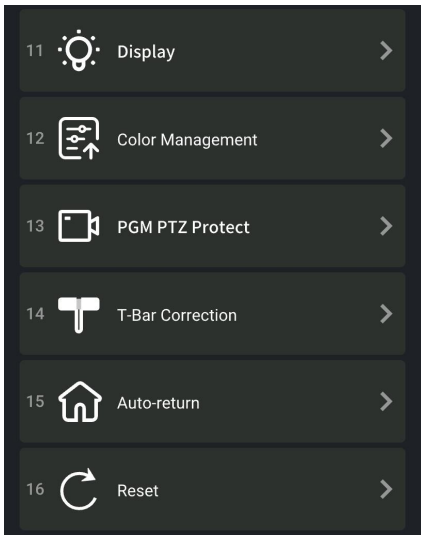
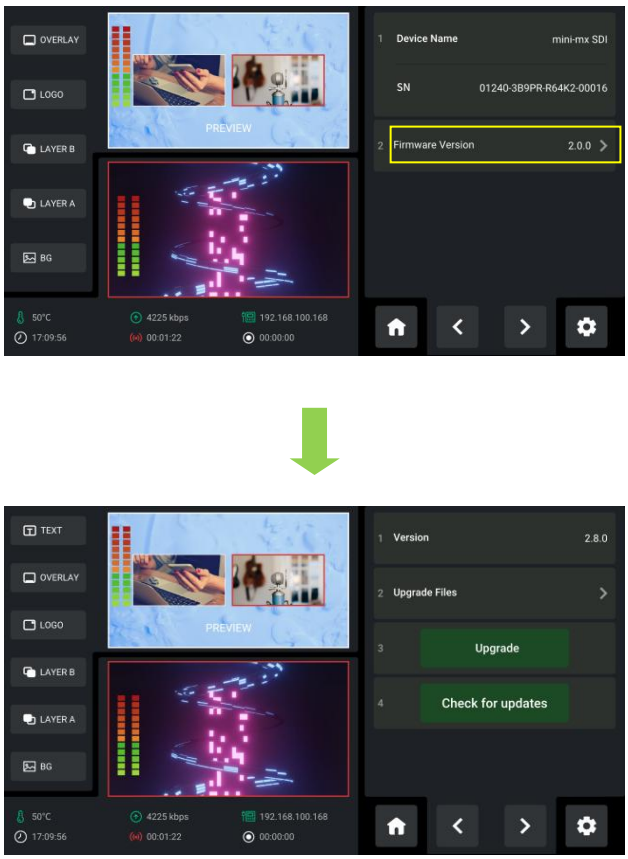


3.16.1 About

Click “About” to check information about mini-mx SDI. As shown in the figure below, users can view Device Name and SN serial number. Click Device Version to check current version and upgrade mini-mx SDI (For more details please refer to Upgrade).



3.16.2 Date and Time

Click “Date & Time” to check operating time and set time displayed in mini-mx SDI.

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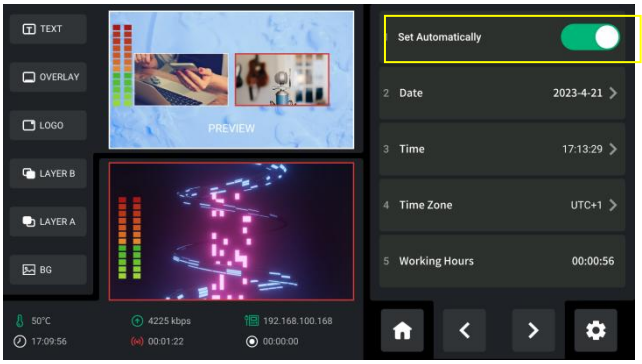
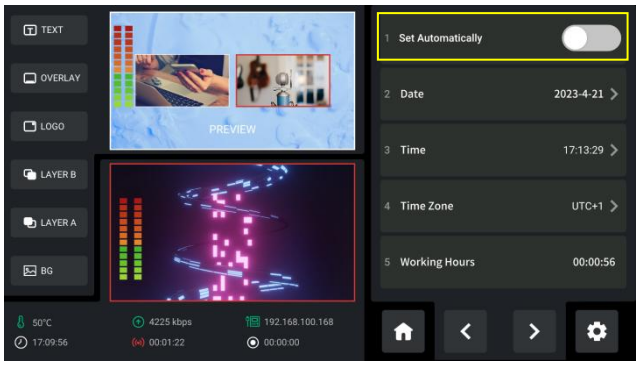
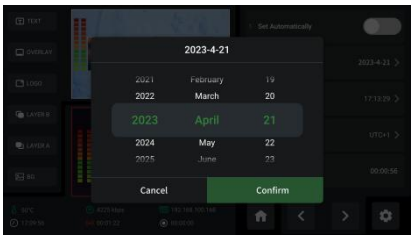
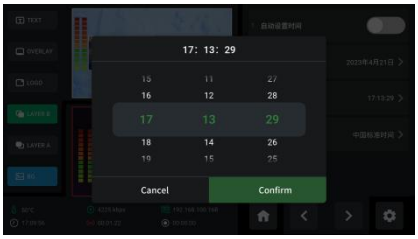
1. If the device is connected to network, turn on automatic setting switch to synchronize the time.

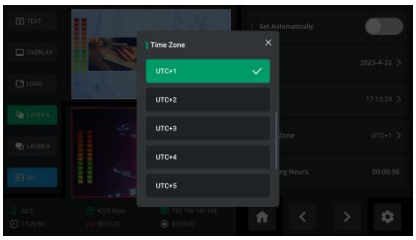


2. If the device is not connected to the network, users can set the time manually.









3.16.3 Input

mini-mx SDI provides ten input sources in total, including HDMI1~4, one UVC and one NDI.

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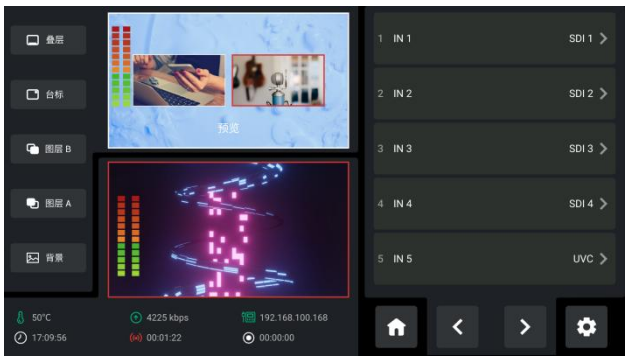
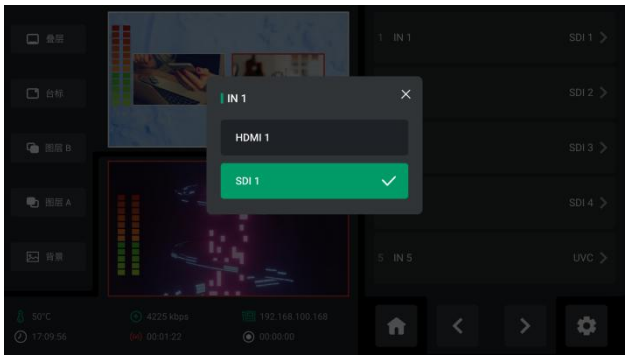
3.16.3.1 Input Selection

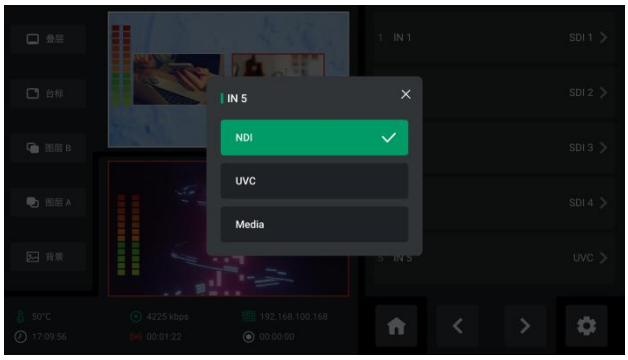
1. Press “Input” to enter input sources setting.



2. For IN1~IN4, each IN has a HDMI (HDMI IN1-IN4) and a SDI (SDI IN1-IN4) to select.



3. For IN5, there are NDI, UVC, and media to select.



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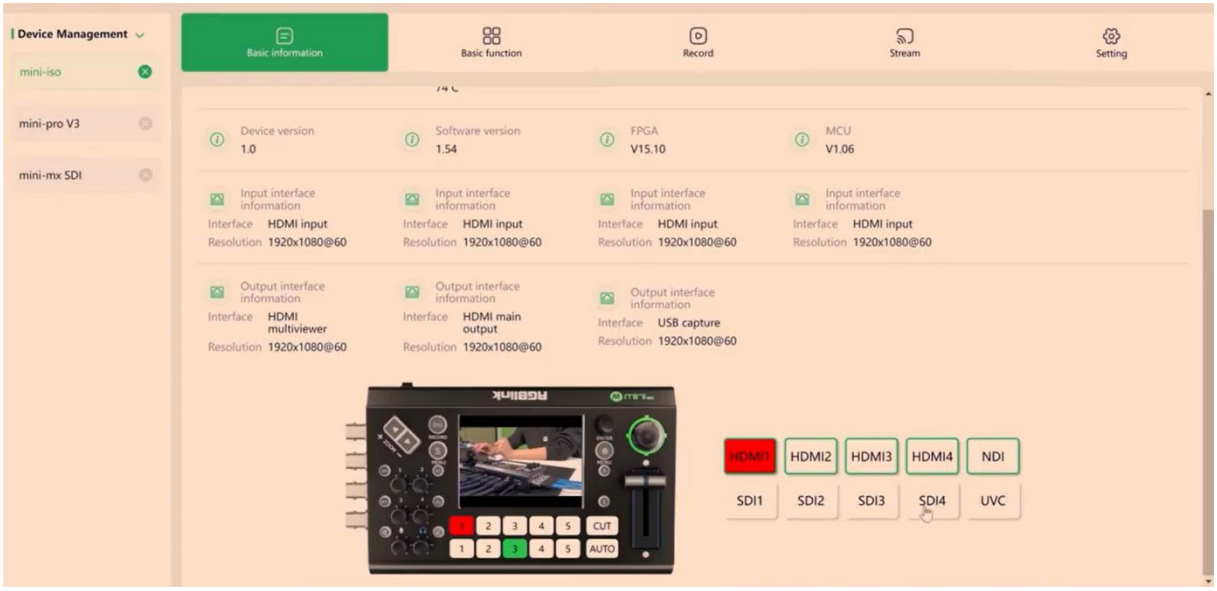
3.16.3.2 Signal Switching via TAO Cloud

In addition to operating directly on the device, you can also control mini - family devices and operate signal switching, saving the trouble of firmware installation. Follow the steps mentioned in Section 3.11 to bind your device to the TAO Cloud. Then you can check the basic information of your mini-family devices and operate signal switching. The device will respond correspondingly and immediately once you operate on the TAO Cloud.

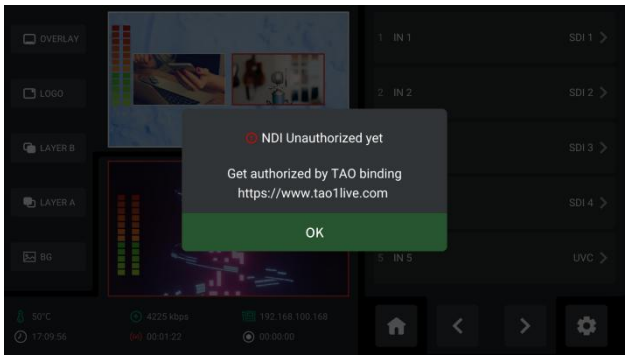


We have made a detailed video about channel switching via TAO Cloud. Click the following link to learn: https://youtu.be/VssE0FBItI4

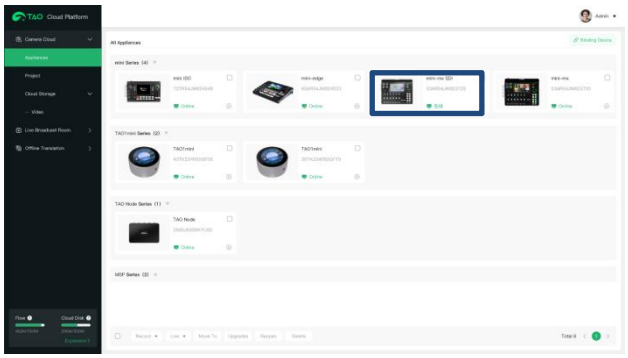
You can refer to this video for all channel-switching operations of mini-family products.

3.16.3.2 NDI Authorization

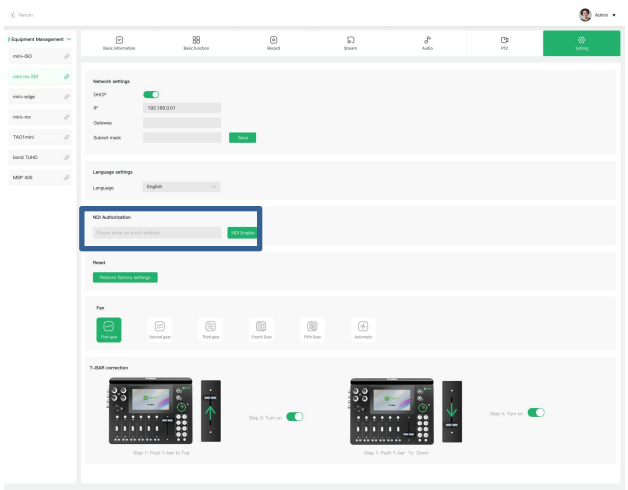
The NDI decorder is not available by default. If the NDI source is needed for IN5, users need to bind mini-ISO to TAO Cloud in advance. Follow the steps in Section 3.11 to log into the TAO Cloud.



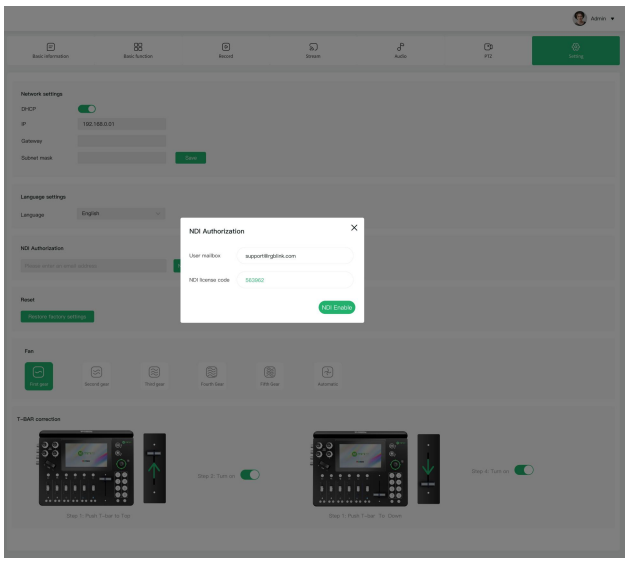
1. Click to enter the device management interface on the TAO Cloud.



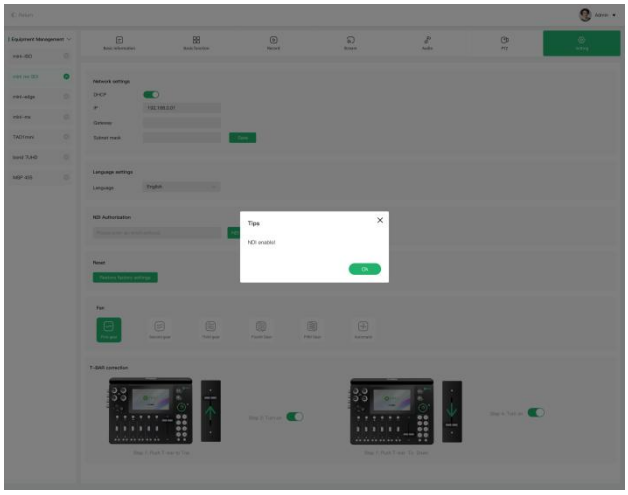
2. Users should first click “Enable” under the NDI Authorization column.



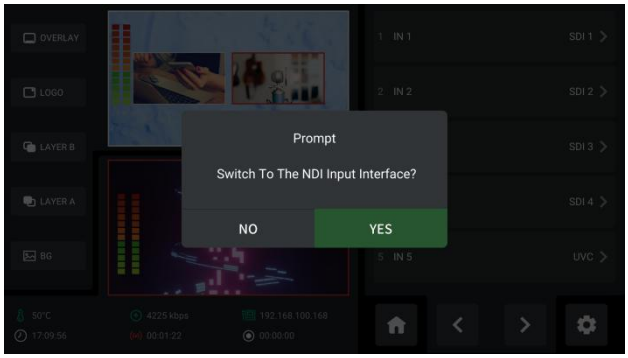
3. Enter the user mailbox and verification code into the box popped up . Then click “NDI enable”in the interface and a payment interface will pop up.



4. The interface will show “NDI enabled”



5. After the authorization, tap “NDI” and a prompt interface will appear. Tap “Yes” and then you can select or add NDI sources.



6. On the NDI input interface, users can search and select NDI sources. To select a NDI source, proceed as follows: Tap a window on the right column and the window border turn green. Select a NDI source and the window selected will display the image of the selected NDI source.

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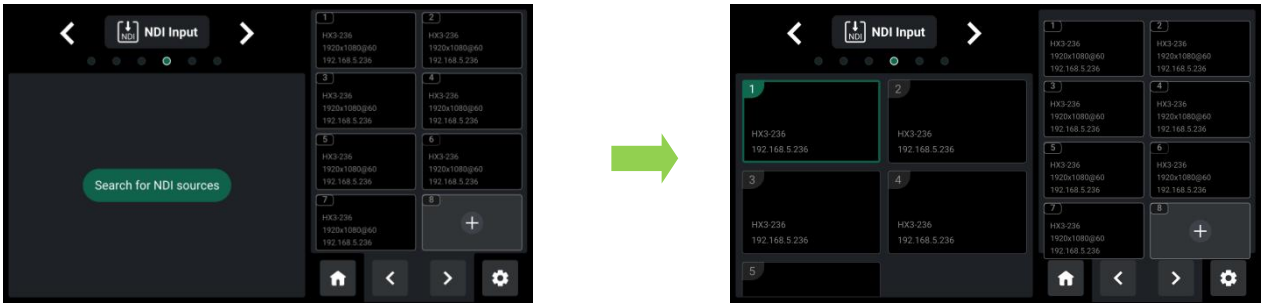
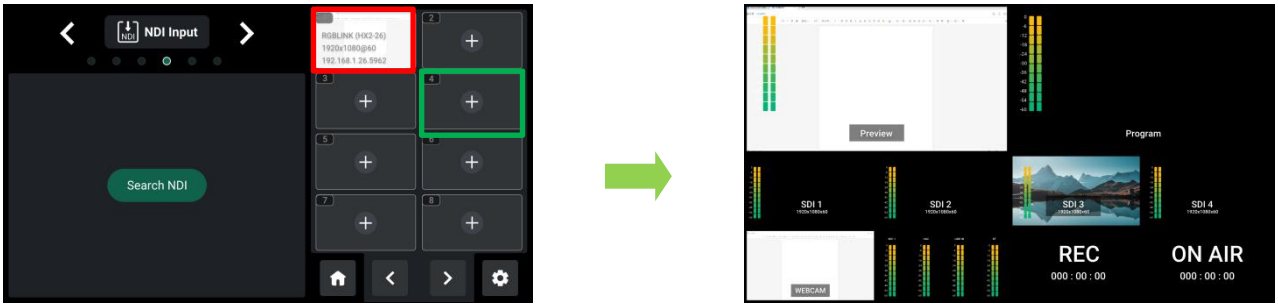
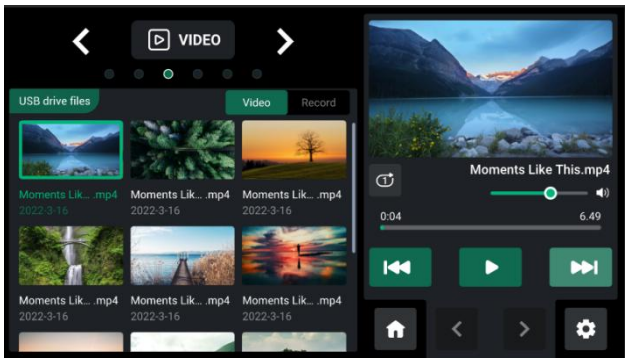


7. When selecting an NDI source window, the image will be synchronized to the IN5 window on the main interface. If the border of the window is red, it indicates the image of the window is on the IN5 monitoring window. If the border is green, it means the window is selected for editing. If users want to switch the input source of IN5, users can just select another configured window on the NDI source interface.



3.16.3.3 Media Library

Tap “Media” and a prompt interface will appear. Tap “Yes” and insert a U disk, then you can add media materials.



3.16.4 Language

For users in different regions, we may need to switch the language from English to Chinese or vice versa. mini-mx SDI supports language switch between English and Chinese.

Tap “Language” to enter the following interface. Set system language as English or Chinese. The

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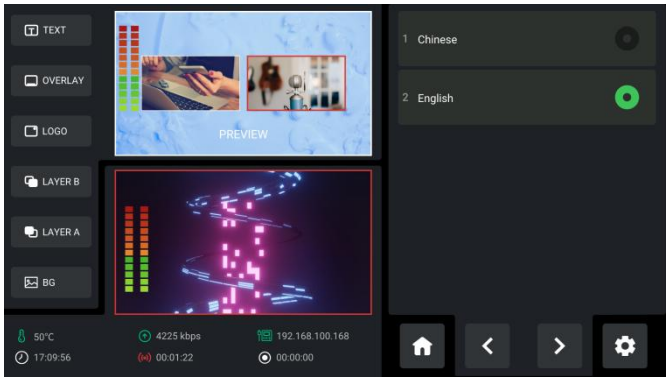
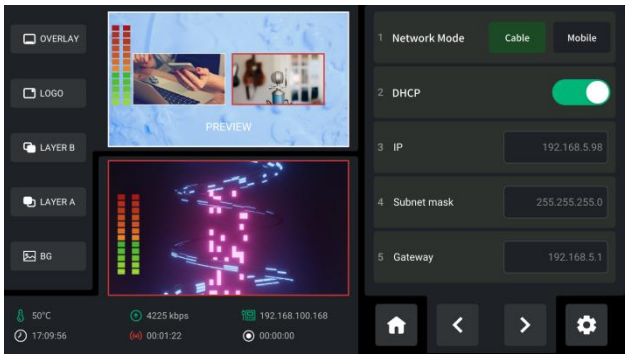
interface will switch to the set language immediately.



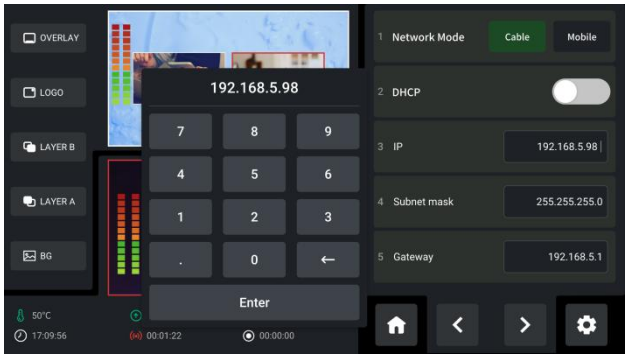
3.16.5 Network

mini - mx SDI offers two network modes: Cable and Mobile.

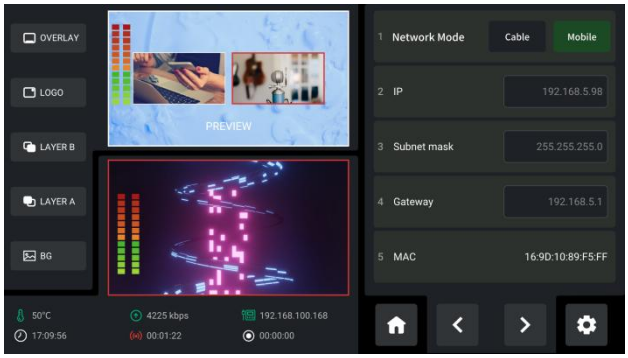
1. When choosing the cable network, users can open DHCP to let the device distribute the IP address automatically.



2. Users can also disable the DHCP and set the IP address manually.



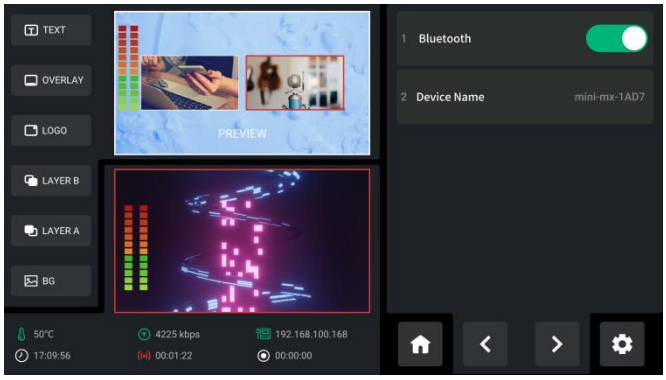
3. Besides, users can use a mobile phone to realize the network connection.


OVERLAY
LOGO
LAYER B
LAYER A
BG
PREVIEW
50°C
17:09:56
4225 kbps
00:01:22
192.168.100.168
00:00:00
1 Network Mode
Cable
Mobile
2 IP
192.168.5.98
3 Subnet mask
255.255.255.0
4 Gateway
192.168.5.1
5 MAC
16:9D:10:89:F5:FF

3.16.6 Bluetooth

1. Enable the Bluetooth

Tap “Bluetooth” to enter the following interface.



2. Pairing

Bluetooth is set to ON by default. Turn on the Bluetooth on mini-mx SDI and mobile phone to establish a Bluetooth connection. You can check the device name in this interface and then select the mini-mx SDI model that needs to be paired in the Bluetooth Setting Interface of the phone. After successful connection of mini-mx SDI and mobile phone, you can play music via Bluetooth.

Notes:

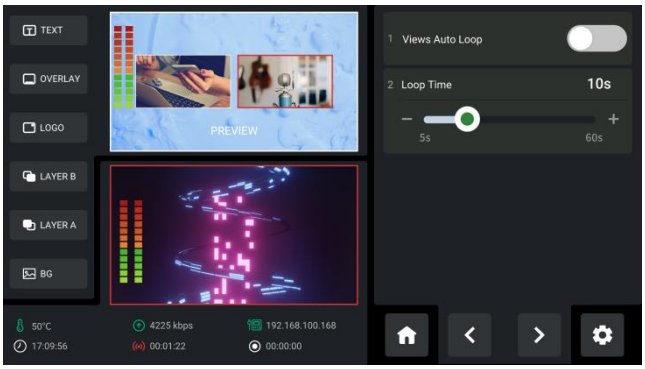
1. mini-mx SDI is generally named as **mini-mx SDI-XXXX**.
2. If there is no sound when playing music, please use the Channel Fader on the front panel to adjust the BLUETOOTH and PREVIEW volume to an appropriate level.

3.16.7 Scene Loop

Scene loop refers to the cyclic switching of saved scenes, allowing users to check multiple screens simultaneously.

1. Enable Scene Loop

Tap “Views Auto Loop” to enter the following interface.



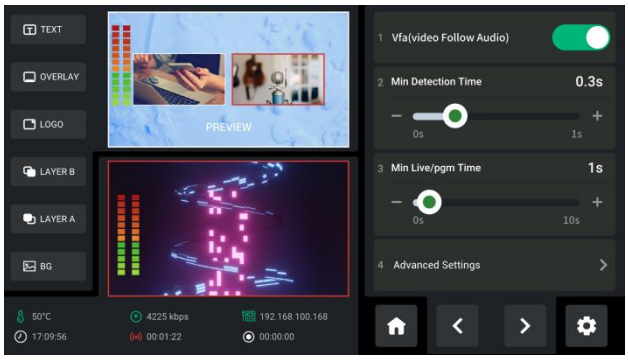
2. Loop Time Setting

Enable the function to set the loop time between views. For example, if the loop time is set to 10 seconds, each view will be displayed for 10 seconds before automatically switching to the next view in the loop. After displaying the last view, it will automatically jump to the first view and continue the loop.

3.16.8 VFA(Video Follow Audio)

The video follow audio (VFA) function means that the switcher automatically switches the video source according to the change of the audio signal. In practical applications, for example, in the recording or live broadcast of a multi-camera interview program, there are multiple microphones corresponding to different guests respectively. When the audio signal changes, the VFA function of the switcher will, based on this change, automatically switch the scene to the one captured by the camera corresponding to the current audio source. There is no need for manual video switching, which can achieve a more natural and smooth audio-visual effect and enhance the viewing experience of the audience.

1. Tap “VFA” on the setting interface and enable the VFA function.



2. Tap “Advanced Setting” for more detailed setting. Users can select audio input sources, adjust the threshold and scenes of the audio input sources.

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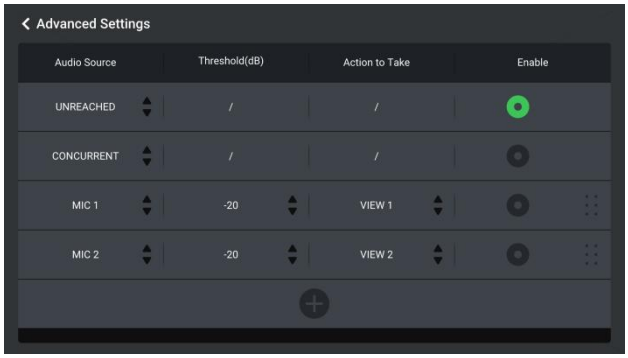
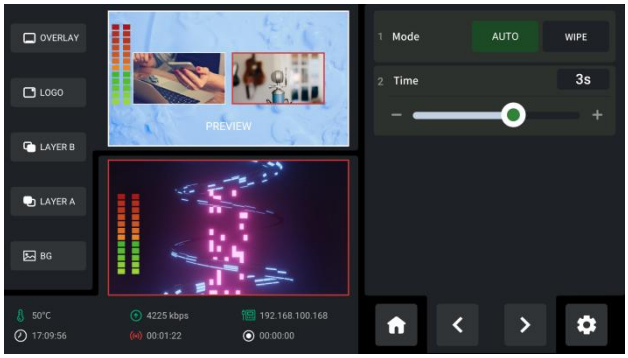


3.16.8 Switch Mode

The mini-mx SDI provides two switch modes: Auto mode and wipe mode.

1. Switch Mode interface

Select “Switch mode” on the SETTING interface and users can select the switch mode and duration.



2. Select a Switch Mode

2.1 WIPE Mode

For certain occasions, users may need to preview and edit the next scene to be switched out to ensure the accuracy and stability of the picture. To meet this need, the mini-mx SDI provides users with a wipe mode. After the wipe mode is turned on, all operations can be first viewed and confirmed in the PVW window. Users can switch between PVW and PGM by sliding the T-Bar.

2.2 AUTO Mode

If users need to quickly switch between the preview picture and the main output picture, they can select AUTO mode on the secondary interface. After completing the settings, you can simply press the PREVIEW preview output signal selection buttons 1-5 on the front panel to quickly switch the signal source to the main output.

3. Switch Duration

Switch time can be customized by sliding the time bar.

Notes:

Only CUT mode supports time setting.

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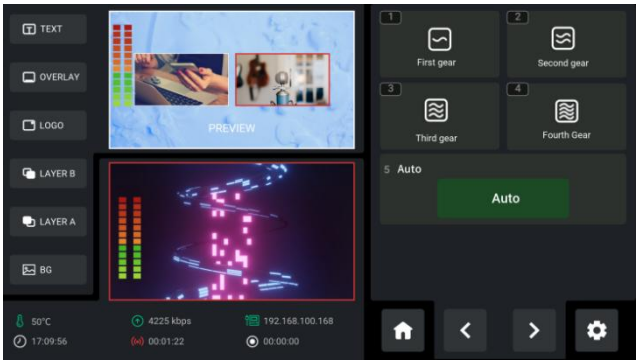
3.16.10 Fan

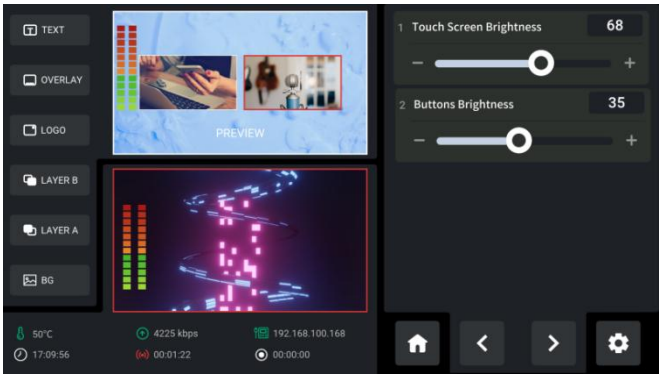
1. Tap **Fan** for fan speed adjustment.



2. In the fan control interface, four levels of fan speed for users to choose from. Tap **Auto** to achieve automatic adjustment of the fan speed.

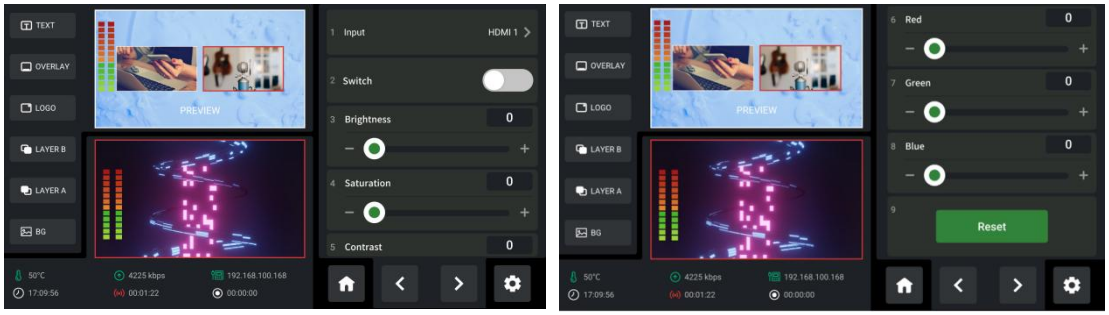
3.16.11 Display

Tap **Display** and use slider bar or adjuster to control brightness of touch screen and buttons.



3.16.12 Color Management

1. Tap **Color Management** to enter the interface below.



2. Enable switch to set brightness, saturation, contrast, red, green and blue values for four HDMI/SDI

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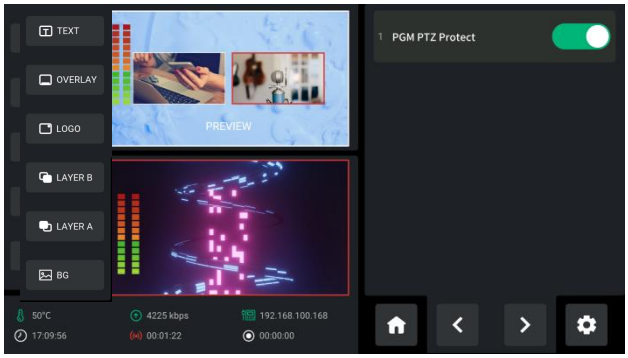
inputs.

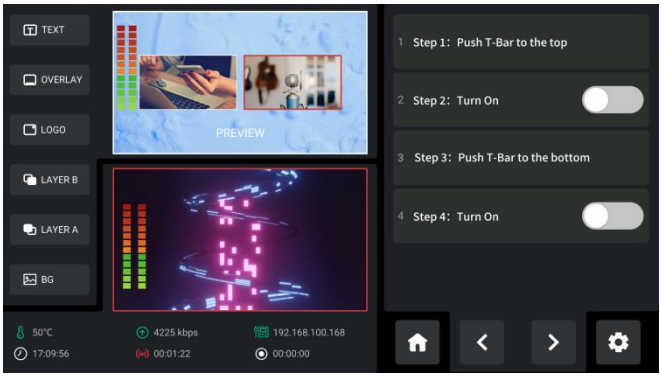
3.16.13 PGM PTZ Protect

When the PGM PTZ Protect is enabled, the preview scenes of the PTZ being controlled cannot be loaded to the Program if the PTZ content is displayed on the Program output.



3.16.14 T-Bar Correction

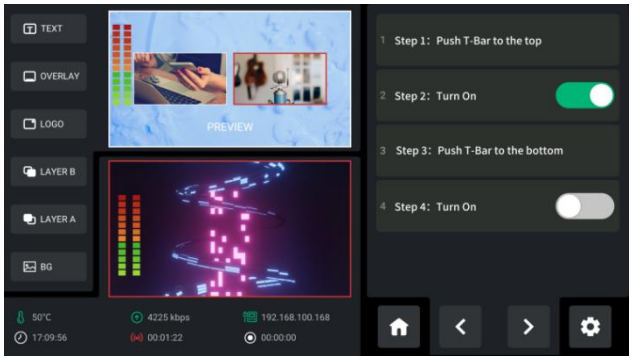
1. Tap **T-Bar Correction** to enter the interface below.



2. To ensure accuracy during use, T-Bar calibration is necessary before using.

2.1 Push the T-bar to the very top.

2.2 Enable switch on Step 2.



2.3 Push the T-bar to the very bottom.

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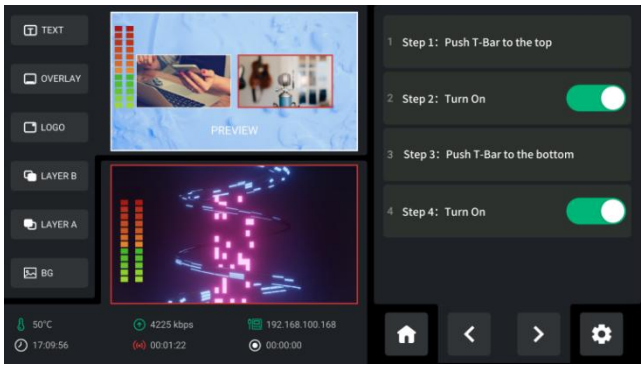
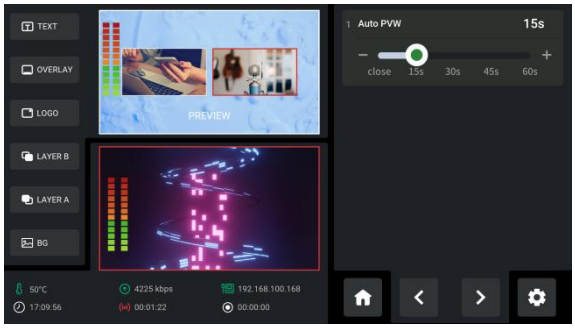
2.4 Enable switch on Step 4.

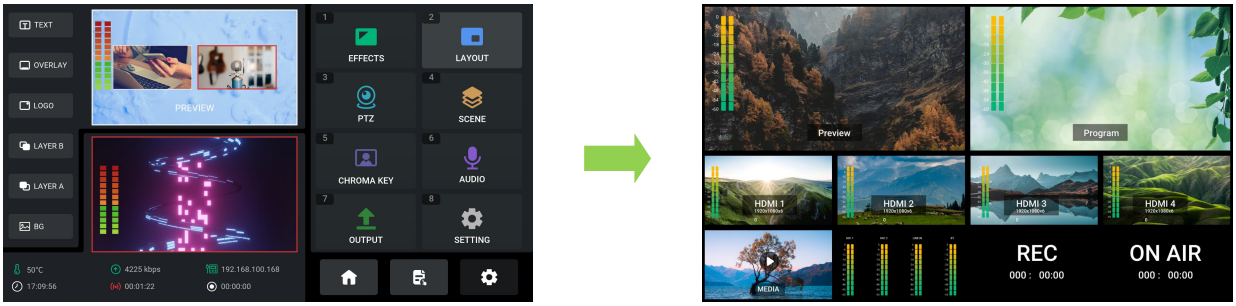


3.16.15 Auto Return

1. Click **Auto Return** to enter following interface. Use slider to disable Auto PRE or set interval to 15s, 30s, 45s or 60s.



2. As shown in the figure below, if interval is set to 15s, the screen will automatically return to the Main Interface.



3.16.16 Reset

Tap **Reset** to check current version of mini-mx SDI and perform factory reset.

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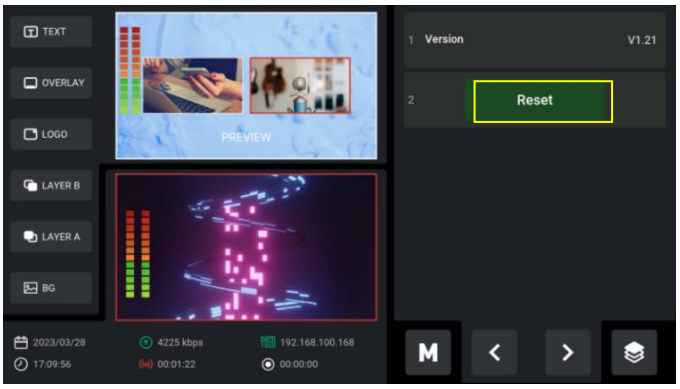

TEXT
OVERLAY
LOGO
LAYER B
LAYER A
BG
PREVIEW
2023/03/28
17:09:56
4225 kbps
00:01:22
192.168.100.168
00:00:00
1 Version
V1.21
2
Reset
M

Chapter 4 Ordering Codes

4.1 Product Code

230-0009-01-0	mini-mx SDI

Chapter 5 Appendix

5.1 Specification

Connectors	Input	HDMI 4K	4×HDMI-A
		3G SDI	4× SDI
		NDI	1× NDI
	Output	HDMI 2K	1×HDMI-A
		USB (Stream)	1×USB-C
		USB (Record)	1×USB-C
		NDI	1× NDI
	Audio	In	2×6.35mm XLR + TS Jack 1×6.35mm TRS Jack
		Out	1×6.35mm TRS Jack 1×3.5mm mini-Jack
	Communication	LAN	1×RJ45
	Power		1×USB-C
Performance	Input Resolutions	HDMI	1280×720@50/59.94/60 | 1024×768@60 | 1280×768@60 | 1280×800@60 | 1280×1024@60 | 1360×768@60 | 1366×768@60 | 1440×900@60 | 1600×1200@60 | 1680×1050@60 | 1920×1200@60 | 1920×1080i@50/59.94/60 | 1920×1080p@ 23.98/24/25/29.97/30/50/59.94/60 | 3840×2160p@30/50/60 | 4096x2160@30/50/60
	Output Resolutions	HDMI/ USB(webcam)	1280×720@50/60 | 1920×1080@24/25/30/50/60
	Video	Video Formats	HDMI 2.0 | HDCP 2.2
		Color Space	RGB 8bit
		Video Sampling	4:4:4 YUV
		Video Latency	<4 frames
	Audio	Line In Delay	up to 8 frames
		Audio Format	HDMI Linear PCM, 24 bits/48 kHz, 2 ch USB Linear PCM, 16 bits/48 kHz, 2 ch
	Record/Storage	Record Formats	MP4 | WAV
		Disk Formats	FAT32(≤32 GB) | exFAT(64GB~2T)
	Supported Standards	HDMI	2.0

		USB	3.0
		H.265	ITU-T H.265/ ISO/IEC 23008-2
Power	Compatibility	USB Power Delivery (PD) 3.0	
	Supported Cables	Certified USB PD Aware	
	Input Voltage	Type-C 12V/3.3A	
	Maximum Power	40W	
Working Environment	Temperature	0℃~45℃	
	Humidity	10%~85% RH	
Physical	Weight	Net	1.48kg
		Packaged	2.80kg
	Dimension	Net	291.0mm × 222.6mm × 71.3mm
		Packaged	332.0mm × 238.5mm × 109.0mm

5.2 FAQ

1. Fail to power on mini-mx SDI?

A: The power adapter included in mini-mx SDI is the recommended power supply to use. If you use other power supply, make sure the power supply supports 12V 3.3A. Then check whether the power supply is connected, and use it correctly according to the power supply standard of your country/region. If the device still fails to power on, please check whether the power cord is damaged. Please contact us if the device is damaged during transportation.

2. If there is a power supply problem with the mini-mx SDI.

A： Please try to change the power adapter (support 40W).

3. mini-mx SDI upgrade Notes.

A： Please connect a U disk with standard OTG cable for upgrade. If the upgrade file cannot be recognized, please check whether it is in .img format; If the file still cannot be recognized, please replace the OTG cable or contact us..

4. mini-mx SDI cannot control PTZ.

A: Please make sure that the IP address of mini-mx SDI and PTZ are in the same network segment. For example, the IP address of PTZ is 192.168.5.163. Please also set the IP address of mini-mx SDI to 192.168.5.X (X should be a number within the range of 2 to 254, excluding 163)., confirm on mini XPOSE whether the Visca port number in the PTZ settings is the corresponding port number, for example, the Visca port number of the PTZ of RGBlink is 1259.

5. mini-mx SDI USB 3.0 RECORD cannot recognize U disk.

A： Please format the U disk (exFAT).

6. mini-mx SDI USB 3.0 WEBCAM cannot be recognized/recognized without picture(black picture).

A：Please confirm whether the computer configuration meets the following conditions, if not, please select one of the following methods 6.1)-6.5) for testing:

Windows：

CPU: i5 and above
Memory: 8 GB or more
Operating System: Windows 10 64 bit processor or above
Graphics: Support Direct X9 128M or above (open AERO effect)
Hard disk space: Above 16G (primary partitions, NTFS format)
Connector: USB 3.0 or type c
Others: do not run multiple video capture or editing software simultaneously

MAC：

CPU：i5 and above

Connector: USB 3.0 or type c
Operating System: macOS 11.0 Big Sur or later macOS 10.15 Catalina
Others: do not run multiple video capture or editing software simultaneously

6.1)Or use typeC to USB3.0 hub to connect the computer and mini-mx SDI

6.2)Or use USB software->ProcessControl_1.0.0.2 to improve performance of computer(in the attachment)

6.3)Lower the output resolution

6.4)Unplug and plug the USB3.0 cable and re-enter the streaming software.

6.5)Change the USB2.0 cable to do streaming (note that the picture quality is lower than the USB3.0 cable, and the USB2.0 cable is not recommended to use the PRE output)

7. Does mini-mx SDI support HDCP?

A: The HDMI input supports HDCP protocol, HDMI input 1 port supports HDCP2.X, the other input ports support HDCP1.X, and the output does not support HDCP protocol encryption

8. mini-mx SDI HDMI input what kind of YUV.

A：mini-mx SDI supports 4:4:4 and does not support 4:2:0.

9. When inputting i signals, half of the mini-mx SDI screen flickers./ When switching from i signals to P signals, the height of the P signal is cut.

A： At present, the latest program can automatically judge the i/P signal source and automatically adjust the cropping value.

10. Can mini-mx SDI control PTZ of Pelco protocol?

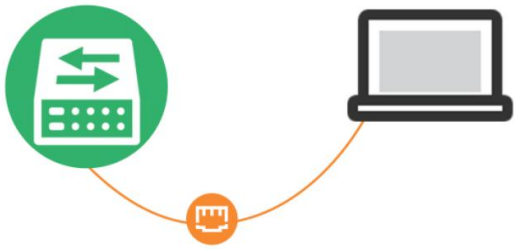
A：Currently, the PTZ controlling Pelco protocol is not supported, The mini-mx SDI supports to control Visca protocol PTZ.

11. Insert a USB disk for recording into mini-mx SDI and mini-mx SDI turns black?

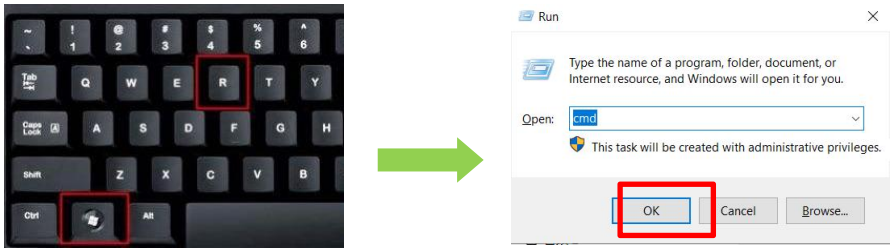
A：It means that the USB disk is in a read-only state, please use computer to unlock the USB disk.

12. Connection is normal but failed to search or recognize the camera?

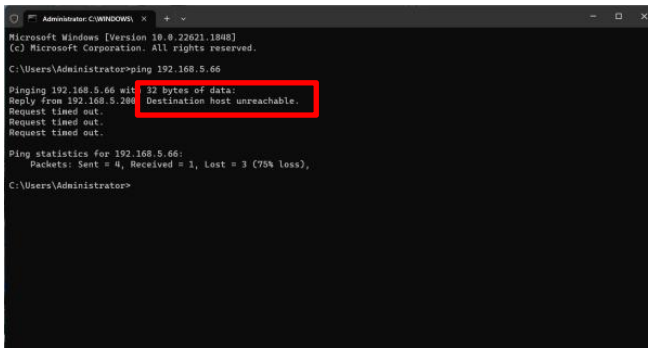
A: 12.1) Connect the switcher to the computer.



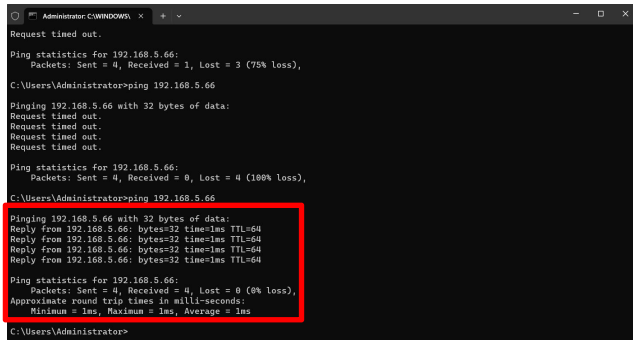
12.2) Press the "Windows" key and the "R" key to open the "Run" dialog box. Type "cmd" and click the "OK" .



12.3) Enter "ping + IP address", for example, "ping 192.168.5.66". If the interface shows "Destination host unreachable," it means that the IP has not been occupied.



12.4) Then enter "ping 192.168.5.66" in the "Run" dialog box again. Press "Enter" on the keyboard to access this IP address.



13. Video playing via fifth input?

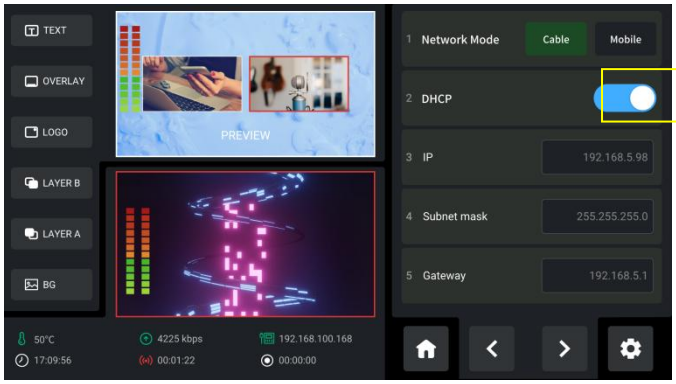
A：The fifth input supports video playing only in .mp4 format and 1080p resolution.

14. Controlling PTZ Camera During Live

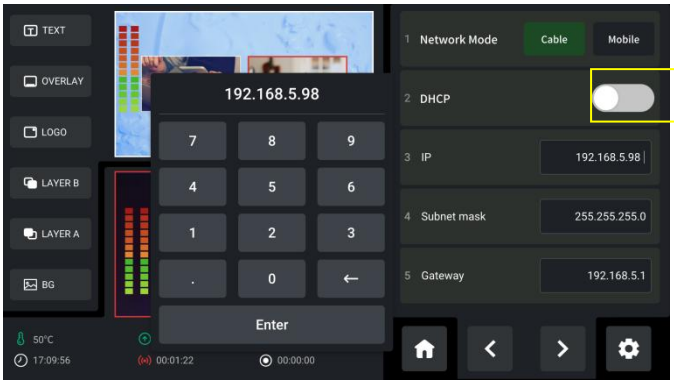
A: To control PTZ camera while performing live streaming, please make sure PTZ, mini-mx SDI and network are in the same LAN, then turn on DHCP of mini-mx SDI in Network Interface at the same time. (Turning off DHCP will not affect live streaming if the IP address does not conflict)

Click "Network" on Setting Menu to configure IP address.

IP Setting:
Dynamic (IP configured by router) : Connecting mini-mx SDI with a router with DHCP features. Turn on DHCP of mini-mx SDI and the router, then mini-mx SDI will capture an IP address automatically.



Static (set IP freely by yourself): Turn off DHCP to manually set IP address. Then click "Enter" to conform your setting.



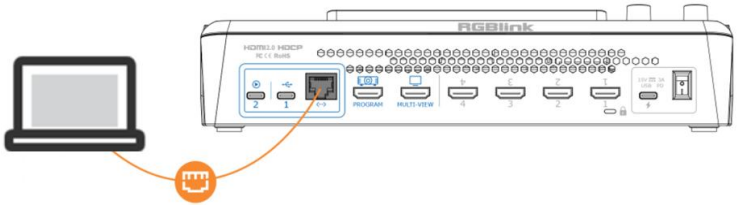
Subnet mask: Set the subnet mask. The default setting is 255.255.255.0.
Gateway: Set the Gateway according to the IP address and subnet mask. For example, if the IP address of mini-mx SDI is 192.168.5.98 and the subnet mask is 255.255.255.0, please set the gateway to 192.168.5.1.

5.3 Upgrade

5.3.1 Online Upgrade

Upgrade Method: online upgrade
Steps:

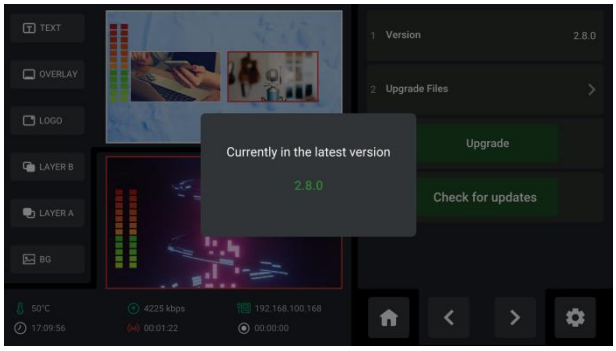
1. Connect mini-mx SDI and your PC via an Ethernet cable;



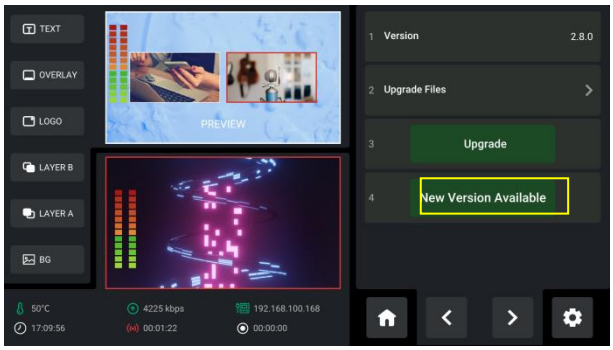
2. Open “Network Settings” on your PC and ensure that the PC has connected to the local area network where the device is located (such as enable DHCP to for auto IP address capture;

3. Tap “SETTING” > “About” > “Device Version” one by one.

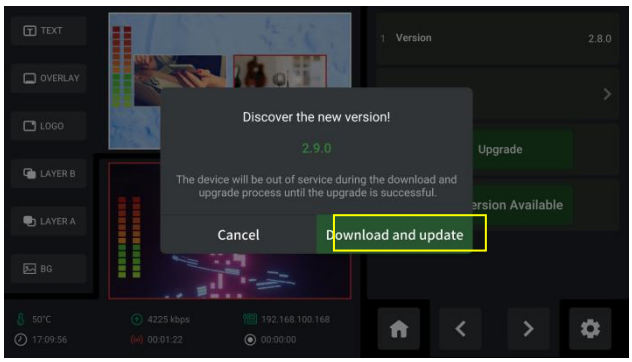
4. For no new version available, press “Check for updates”, then the interface will display "Currently in the latest version".



5. "New Version Available" indicates that a new version has been captured.



6. Tap “New Version Available” to check the new version discovered. Choose “Download and update” to download the firmware.



7. It takes about 10 minutes to download the file (depending on the network).

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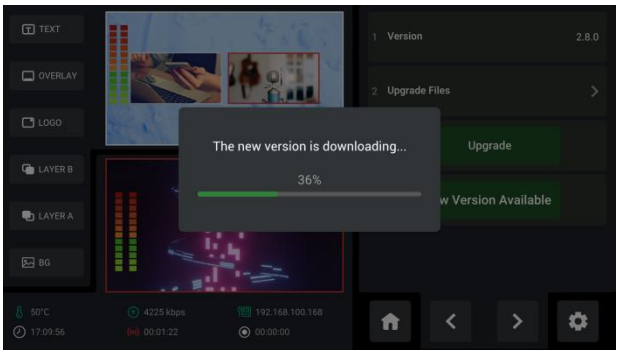
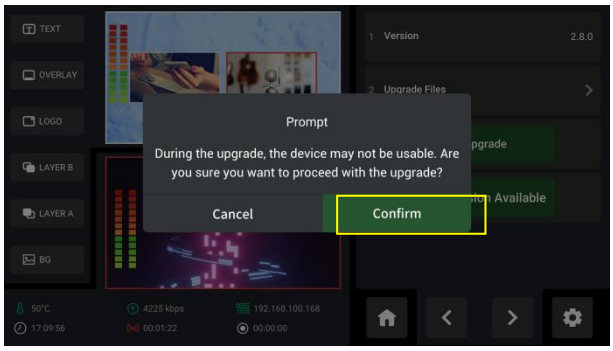
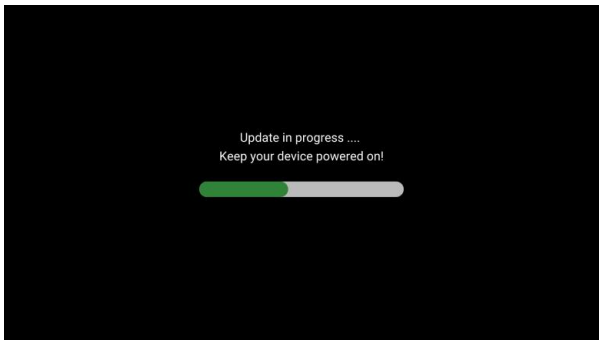


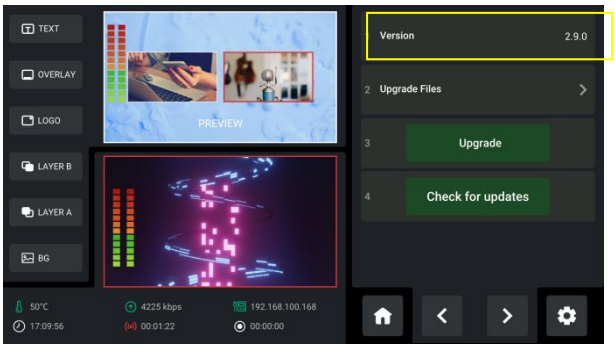
8. Rotate ENTER knob to move the cursor to “Confirm”, then press the knob again to perform the upgrade process.



9. DO NOT power off during upgrade process. mini-edge will reboot after the upgrade is completed.



10. Check the new version in the following interface.



5.4 Terms & Definitions

●**RCA:** Connector used primarily in consumer AV equipment for both audio and video. The RCA connector was developed by the Radio Corporation of America.

●**BNC:** Stands for Bayonet Neill-Concelman. A cable connector used extensively in television (named for its inventors).

A cylindrical bayonet connector that operates with a twist-locking motion .

●**CVBS:** CVBS or Composite video, is an analog video signal without audio. Most commonly CVBS is used for transmission of standard definition signals. In consumer applications the connector is typically RCA type, while in professional applications the connector is BNC type.

●**YPbPr:** Used to describe the colour space for progressive-scan. Otherwise known as component video.

●**VGA:** Video Graphics Array. VGA is an analog signal typically used on earlier computers. The signal is non-interlaced in modes 1, 2, and 3 and interlaced when using in mode.

●**DVI:** Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Work Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video.

●**SDI:** Serial Digital Interface. Standard definition video is carried on this 270 Mbps data transfer rate. Video pixels are characterized with a 10-bit depth and 4:2:2 color quantization. Ancillary data is included on this interface and typically includes audio or other metadata. Up to sixteen audio channels can be transmitted. Audio is organised into blocks of 4 stereo pairs. Connector is BNC.

●**HD-SDI:** High-definition serial digital interface (HD-SDI), is standardized in SMPTE 292M this provides a nominal data rate of 1.485 Gbit/s.

●**3G-SDI:** Standardized in SMPTE 424M, consists of a single 2.970 Gbit/s serial link that allows replacing dual link HD-SDI.

●**6G-SDI:** Standardized in SMPTE ST-2081 released in 2015, 6Gbit/s bitrate and able to support 2160p@30.

●**12G-SDI:** Standardized in SMPTE ST-2082 released in 2015, 12Gbit/s bitrate and able to support 2160p@60.

●**U-SDI:** Technology for transmitting large-volume 8K signals over a single cable. a signal interface called the ultra high definition signal/data interface (U-SDI) for transmitting 4K and 8K signals using a single optical cable. The interface was standardized as the SMPTE ST 2036-4.

●**HDMI:** High Definition Multimedia Interface: An interface used for the transmission of uncompressed high definition video, up to 8 channels of audio, and control signals, over a single cable.

●**HDMI 1.3:** Released on June 22 2006, and increased the maximum TMDS clock to 340 MHz (10.2 Gbit/s). Support resolution 1920 × 1080 at 120 Hz or 2560 × 1440 at 60 Hz). It added support for 10 bpc, 12 bpc, and 16 bpc color depth (30, 36, and 48 bit/px), called deep color.

●**HDMI 1.4:** Released on June 5, 2009, added support for 4096 × 2160 at 24 Hz, 3840 × 2160 at 24, 25, and 30 Hz, and 1920 × 1080 at 120 Hz. Compared to HDMI 1.3, 3 more features added which are HDMI Ethernet Channel (HEC) , audio return channel (ARC),3D Over HDMI, a new Micro HDMI Connector, an expanded set of color spaces.

●**HDMI 2.0:** Released on September 4, 2013 increases the maximum bandwidth to 18.0 Gbit/s. Other features of HDMI 2.0 include up to 32 audio channels, up to 1536 kHz audio sample frequency, the HE-AAC and DRA audio standards, improved 3D capability, and additional CEC functions.

●**HDMI 2.0a:** Was released on April 8, 2015, and added support for High Dynamic Range (HDR) video with static metadata.

●**HDMI 2.0b:** Was released March, 2016, support for HDR Video transport and extends the static metadata signaling to include Hybrid Log-Gamma (HLG).

●**HDMI 2.1:** Released on November 28, 2017. It adds support for higher resolutions and higher refresh rates, Dynamic HDR including 4K 120 Hz and 8K 120 Hz.

●**DisplayPort:** A VESA standard interface primarily for video, but also for audio, USB and other data. DisplayPort (orDP) is backwards compatible with HDMI, DVI and VGA.

●**DP 1.1:** Was ratified on 2 April 2007, and version 1.1a was ratified on 11 January 2008. DisplayPort 1.1 allow a maximum bandwidth of 10.8 Gbit/s (8.64 Gbit/s data rate) over a standard 4-lane main link, enough to support 1920x1080@60Hz

●**DP 1.2:** Introduced on 7 January 2010, effective bandwidth to 17.28 Gbit/s support increased resolutions, higher refresh rates, and greater color depth, maximum resolution 3840 × 2160@60Hz

●**DP 1.4:** Publish on 1 Mar, 2016.overall transmission bandwidth 32.4 Gbit/s ,DisplayPort 1.4 adds support for Display Stream Compression 1.2 (DSC), DSC is a "visually lossless" encoding technique with up to a 3:1 compression ratio. Using DSC with HBR3 transmission rates, DisplayPort 1.4 can support 8K UHD (7680 × 4320) at 60 Hz or 4K UHD (3840 × 2160) at 120 Hz with 30 bit/px RGB color and HDR. 4K at 60 Hz 30 bit/px RGB/HDR can be achieved without the need for DSC.

●**Multi-mode Fiber:** Fibers that support many propagation paths or transverse modes are called multi-mode fibers, generally have a wider core diameter and are used for short-distance communication links and for applications where high power must be transmitted.

●**Single-mode Fiber:** Fiber that support a single mode are called single-mode fibers. Single-mode fibers are used for most communication links longer than 1,000 meters (3,300 ft).

●**SFP:** Small form-factor pluggable , is a compact, hot-pluggable network interface module used for both telecommunication and data communications applications.

●**Optical Fiber Connector:** Terminates the end of an optical fiber, and enables quicker connection and disconnection than splicing. The connectors mechanically couple and align the cores of fibers so light can pass. 4 most common types of optical fiber connectors are SC, FC, LC,ST.

●**SC:** (Subscriber Connector), also known as the square connector was also created by the Japanese company – Nippon Telegraph and Telephone. SC is a push-pull coupling type of connector and has a 2.5mm diameter. Nowadays, it is used mostly in single mode fiber optic patch cords, analog, GBIC, and CATV. SC is one of the most popular options,

as its simplicity in design comes along with great durability and affordable prices.

●**LC：** (Lucent Connector) is a small factor connector (uses only a 1.25mm ferrule diameter) that has a snap coupling mechanism. Because of its small dimensions, it is the perfect fit for high-density connections, XFP, SFP, and SFP+ transceivers.

●**FC:** (Ferrule Connector) is a screw type connector with a 2.5mm ferrule. FC is a round shaped threaded fiber optic connector,mostly used on Datacom, telecom, measurement equipment, single-mode laser.

●**ST:** (Straight Tip) was invented by AT&T and uses a bayonet mount along with a long spring-loaded ferrule to support the fiber.

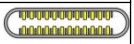
●**USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

●**USB 1.1:** Full–Bandwidth USB, specification was the first release to be widely adopted by the consumer market. This specification allowed for a maximum bandwidth of 12Mbps.

●**USB 2.0:** or Hi–Speed USB, specification made many improvements over USB 1.1. The main improvement was an increase in bandwidth to a maximum of 480Mbps.

●**USB 3.2:** Super Speed USB with 3 varieties of 3.2 Gen 1(original name USB 3.0), 3.2Gen 2(original name USB 3.1), 3.2 Gen 2x2 (original name USB 3.2) with speed up to 5Gbps,10Gbps,20Gbps respectively.

USB version and connectors figure:

	Type A	Type B	Mini A	Mini B	Micro-A	Micro -B	Type C
USB 2.0							
USB 3.0							
USB 3.1&3.2							

●**NTSC:** The colour video standard used in North America and some other parts of the world created by the National Television Standards Committee in the 1950s. NTSC utilizes an interlaced video signals.

●**PAL:** Phase Alternate Line. A television standard in which the phase of the colour carrier is alternated from line to line. It takes four full images (8 fields) for the colour-to-horizontalimages (8 fields) for the colour-to-horizontal phase relationship to return to the reference point. This alternation helps cancel out phase errors. For this reason, the hue control is not needed on a PAL TV set. PAL, is widely used in needed on a PAL TV set. PAL, is widely used in Western

Europe, Australia, Africa, the Middle East, and Micronesia. PAL uses 625-line, 50-field (25 fps) composite colour transmission system.

●**SMPTE:** Society of Motion image and Television Engineers. A global organization, based in the United States, that sets standards for baseband visual communications. This includes film as well as video and television standards.

●**VESA:** Video Electronics Standards Association. An organization facilitating computer graphics through standards.

●**HDCP:** High-bandwidth Digital Content Protection (HDCP) was developed by Intel Corporation an is in wide use for protection of video during transmission between devices.

●**HDBaseT:** A video standard for the transmission of uncompressed video (HDMI signals) and related features using Cat 5e/Cat6 cabling infrastructure.

●**ST2110:** A SMPTE developed standard, ST2110 describes how to send digital video over and IP networks. Video is transmitted uncompressed with audio and other data in a separate streams.
SMPTE2110 is intended principally for broadcast production and distribution facilities where quality and flexibility are more important.

●**SDVoE:** Software Defined Video over Ethernet (SDVoE) is a method for transmission, distribution and management AV signals using a TCP/IP Ethernet infrastructure for transport with low latency. SDVoE is commonly used in integration applications.

●**Dante AV:** The Dante protocol was developed for and widely adopted in audio systems for the transmission of uncompressed digital audio on IP based networks. The more recent Dante AV specification includes support for digital video.

●**NDI:** Network Device interface (NDI) is a software standard developed by NewTek to enable video-compatible products to communicate, deliver, and receive broadcast quality video in a high quality, low latency manner that is frame-accurate and suitable for switching in a live production environment over TCP (UDP) Ethernet based networks. NDI is commonly found in broadcast applications.

●**RTMP:** Real-Time Messaging Protocol (RTMP) was initially a proprietary protocol developed by Macromedia (now Adobe) for streaming audio, video and data over the Internet, between a Flash player and a server.

●**RTSP:** The Real Time Streaming Protocol (RTSP) is a network control protocol designed for use in entertainment and communications systems to control streaming media servers. The protocol is used for establishing and controlling media sessions between end points.

●**MPEG:** Moving Picture Experts Group is a working group formed from ISO and IEC developing standards that allow audio/video digital compression and Transmission.

●**H.264:** Also known as AVC (Advanced Video Coding) or MPEG-4i is a common video compression standard. H.264 was standardized by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC JTC1 Moving Picture

Experts Group (MPEG).

●**H.265:** Also known as **HEVC** (High Efficiency Video Coding) H.265 is the successor to the widely used H.264/AVC digital video coding standard. Developed under the auspices of ITU, resolutions up to 8192x4320 may be compressed.

●**API:** An Application Programming Interface (API) provides a predefined function which allows access capabilities and features or routines via a software or hardware, without accessing source code or understanding the details of inner working mechanism. An API call may execute a function and/or provide data feedback/report.

●**DMX512:** The communication standard developed by USITT for entertainment and digital lighting systems. The wide adoption of the Digital Multiplex (DMX) protocol has seen the protocol used for a wide range of other devices including video controllers. DMX512 is delivered over cable of 2 twisted pairs with 5pin XLR cables for connection.

●**ArtNet:** An ethernet protocol based on TCP/IP protocol stack, mainly used in entertainment/events applications. Built on the DMX512 data format, ArtNet enables multiple "universes" of DMX512 to be transmitted using ethernet networks for transport.

●**MIDI:** MIDI is the abbreviation of Musical Instrument Digital Interface. As the name indicates the protocol was developed for communication between electronical musical instruments and latterly computers. MIDI instructions are triggers or commands sent over twisted pair cables, typically using 5pin DIN connectors.

●**OSC:** The principle of Open Sound Control (OSC) protocol is for networking sound synthesizers, computers, and multimedia devices for musical performance or show control. As with XML and JSON, the OSC protocol allows sharing data. OSC is transported via UDP packets between devices connected on an Ethernet.

●**Brightness:** Usually refers to the amount or intensity of video light produced on a screen without regard to colour. Sometimes called black level.

●**Contrast Ratio:** The ratio of the high light output level divided by the low light output level. In theory, the contrast ratio of the television system should be at least 100:1, if not 300:1. In reality, there are several limitations. Well-controlled viewing conditions should yield a practical contrast ratio of 30:1 to 50:1.

●**Colour Temperature:** The colour quality, expressed in degrees Kelvin (K), of a light source. The higher the colour temperature, the bluer the light. The lower the temperature, the redder the light. Benchmark colour temperature for the A/V industry include 5000°K, 6500°K, and 9000°K.

●**Saturation:** Chroma, Chroma gain. The intensity of the colour, or the extent to which a given colour in any image is free from white. The less white in a colour, the truer the colour or the greater its saturation. Saturation is the amount of pigment in a colour, and not the intensity.

●**Gamma:** The light output of a CRT is not linear with respect to the voltage input. The difference between what you should have and what is actually output is known as gamma.

● **Frame:** In interlaced video, a frame is one complete image.A video frame is made up of two fields, or two sets of interlaced lines. In a film, a frame is one still image of a series that makes up a motion image.

● **Genlock:** Allows synchronisation of otherwise video devices. A signal generator provides a signal pulses which connected devices can reference. Also see Black Burst and Color Burst.

● **Blackburst:** The video waveform without the video elements.It includes the vertical sync, horizontal sync, and the Chroma burst information. Blackburst is used to synchronize video equipment to align the video output.

● **ColourBurst:** In colour TV systems, a burst of subcarrier frequency located on the back part of the composite video signal. This serves as a colour synchronizing signal to establish a frequency and phase reference for the Chroma signal. Colour burst is 3.58 MHz for NTSC and 4.43 MHz for PAL.

● **Colour Bars:** A standard test pattern of several basic colours (white, yellow, cyan, green, magenta, red, blue, and black) as a reference for system alignment and testing. In NTSC video, the most commonly used colour bars are the SMPTE standard colour bars. In PAL video, the most commonly used colour bars are eight full field bars. On computer monitors the most commonly used colour bars are two rows of reversed colour bars

● **Seamless Switching:** A feature found on many video switchers. This feature causes the switcher to wait until the vertical interval to switch. This avoids a glitch (temporary scrambling) which often is seen when switching between sources.

● **Scaling:** A conversion of a video or computer graphic signal from a starting resolution to a new resolution. Scaling from one resolution to another is typically done to optimize the signal for input to an image processor, transmission path or to improve its quality when presented on a particular display.

● **PIP:** Picture-In-Picture. A small image within a larger image created by scaling down one of image to make it smaller. Other forms of PIP displays include Picture-By-Picture (PBP) and Picture- With-Picture (PWP), which are commonly used with 16:9 aspect display devices. PBP and PWP image formats require a separate scaler for each video window.

● **HDR:** is a high dynamic range (HDR) technique used in imaging and photography to reproduce a greater dynamic range of luminosity than what is possible with standard digital imaging or photographic techniques. The aim is to present a similar range of luminance to that experienced through the human visual system.

● **UHD:** Standing for Ultra High Definition and comprising 4K and 8K television standards with a 16:9 ratio, UHD follows the 2K HDTV standard. A UHD 4K display has a physical resolution of 3840x2160 which is four times the area and twice both the width and height of a HDTV/FullHD (1920x1080) video signal.

● **EDID:** Extended Display Identification Data. EDID is a data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device. The source device will then output the provided EDID data, ensuring proper video image quality.

5.5 Revision History

The table below lists the changes to the User Manual.

Format	Time	ECO#	Description	Principal
V1.0	2025-03-25	0000#	Release	Alyssa

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Chapter 6 Support

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6.2 Operation Videos

Below are the tutorial videos of operating mini family's products. Click the link to learn how to operate your device.

https://www.youtube.com/@rgblink/playlists