mini-mx

User Manual

RGBlink®

Content

Thank you for choosing our product!

This User Manual is designed to show you how to use this video processor 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

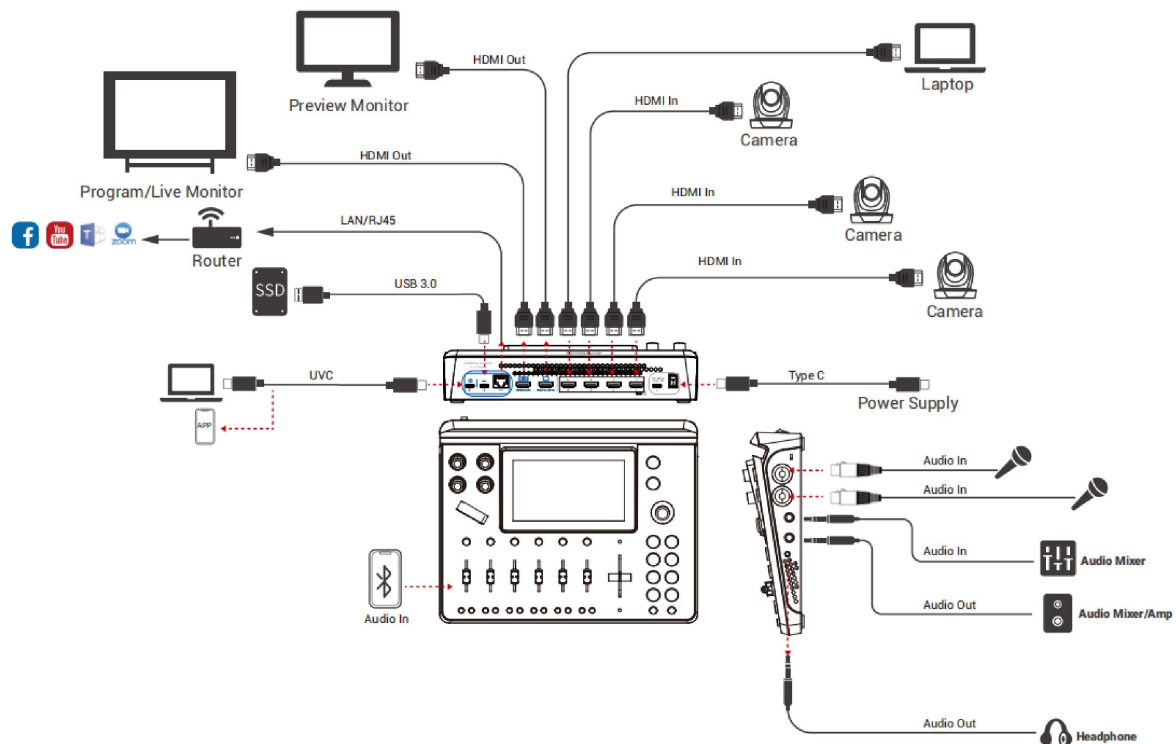| 1 x Power Adapter	1 x USB-C to USB-C Cable	1 x USB-C to USB-A Cable

1.2 Product Overview

Mix to the max. The all-in-one mini-mx video enables accessible professional multi-source video productions with cameras, laptops and multiple audio sources.
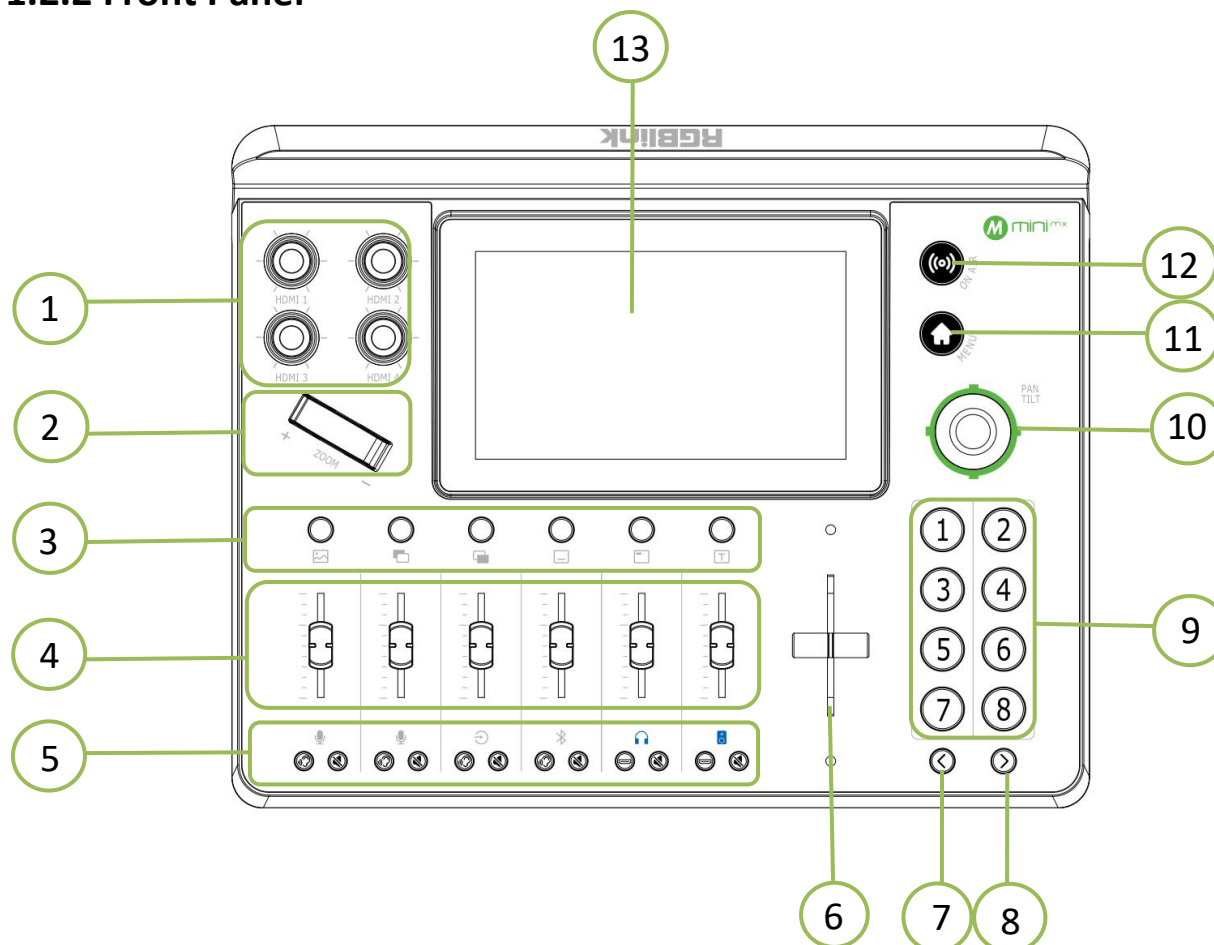
For live presentation and streaming, do it all with ease from the unique and fully featured mini-mx..

1.2.1 Key Features

● 4K multi-channel streaming video mixer

● Quad HDMI 2.0 inputs, dual HDMI 1.3 outputs

● Dual MIC In, Dual Audio Out for monitoring

● Mix for HDMI embedded and external audio

● One-key recording. Recording capacity of hard drive is up to 2T

● Quad HDMI 2.0 inputs, dual HDMI 1.3 outputs

● Stream to up to 4 platforms simultaneously over IP and 32 platforms via TAO APP

● Built-in 5.5 inch touch screen for menu operation

● Support multi-layer overlay, layer scaling and cropping

● 15 switch effect modes

● 5-direction joystick for controlling up to 4 PTZ cameras

● Save and store up to 16 scene presets. One-click for preset recall

● Control via computer and software

● Support Chroma Key

● One-key quick switch between portrait and landscape screen

1.2.2 Front Panel

1	HDMI IN 1-4 Audio Volume Control Knob	● Embedded audio volume adjustment of HDMI 1-4 inputs. User can check audio status via touch screen. ● Knob color adjustable.
2	Adjuster	● Zoom in/out when PTZ control is enabled. ● Adjust size of sub-picture when it is under position and scale adjustment.
3	Layer Selection Button	● Indicate BG, Layer A, Layer B, STILL, LOGO and TEXT from left to right. ● Light turns blue in PVW. Light flashes in green when selected. ● Button color adjustable.
4	Channel Fader	● To control audio volume level for each channel. ● Indicate MIC1/MIC2/LINE IN/Bluetooth/PREVIEW/PROGRAM from left to right.
5	Monitoring & Mute Button	● Click monitoring button to switch audio to monitoring port. ● Click mute button to stop adding audio to PGM if it turns red; click mute button again to add audio to PGM if it turns green then.
6	T-Bar	● PVW and PGM views can be transitioned manually by pushing the T-bar bidirectionally from the top to the bottom or from the bottom to the top.
7	Page UP	● Press to return to the previous page.
8	Page Down	● Press to enter the next page.
9	Buttons 1-8	● Click to choose enter interface of 8 selections in Main Menu correspondingly. ● Button color adjustable.
10	5-Direction Joystick	● Set pan, tilt and zoom for PTZ camera.

|		
		● Adjust position of sub-picture when it is under position and scale adjustment.
11	MENU	● Press to return to the previous menu; press and hold to return to the main menu. ● Button color adjustable.
12	ON AIR	● Click to start or end streaming. ● Streaming status can be checked on LCD screen through indicator light: steady red shows ON AIR; flashing red shows unstable network ON AIR; unlit shows streaming is finished.
13	5.5-inch Touch Screen	● For menu operation. ● For multi-view window monitoring.

1.2.3 Interface Panel
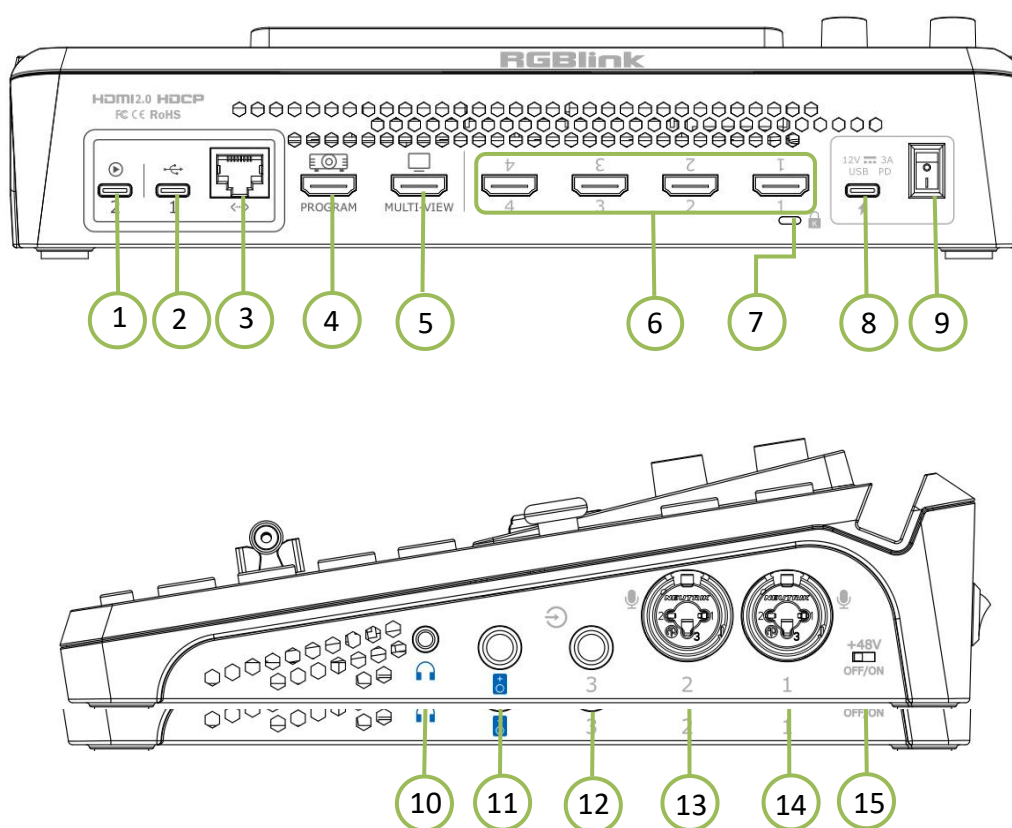
1	UVC (WEBCAM)	● Audio and video stream output port. ● Connect mini-mx to a laptop for instant recognition as webcam for streaming or video conference.
2	USB-C	● Insert SSD or U disk to USB 3.0 recording output interface for recording. ● Insert a U disk to import audio, video and pictures.
3	LAN	● Gigabit network port for web streaming, PTZ control and firmware upgrade.
4	HDMI-A (PROGRAM)	● PROGRAM output port.
5	HDMI-A (Multi-VIEW)	● Multi-view output port. MULTI-VIEW / HDMI 1/2/3/4 / PROGRAM optional.
6	1-4 HDMI IN	● 1-4 HDMI inputs to connect HDMI video sources, up to 4K resolution and downward compatible with all resolution.
7	Locking Hole	● Use with T-lock to fix the device.

8	Power Socket	● PD 12V, 3A USB-C power input.
9	Power Switch	● Rocker switch to power on or off device.
10	3.5mm mini-Jack	● Audio Jack for PREVIEW or PROGRAM monitoring.
11	6.35mm TRS Jack	● Balanced 6.35mm XLR AUDIO OUT Jack.
12	LINE IN	● Balanced 6.35mm XLR Jack to connect to mobile phone, computer or audio console.
13	MIC 2 IN	● XLR/TRS NEUTRIK MIC IN Port.
14	MIC 1 IN	● XLR/TRS NEUTRIK MIC IN Port with 48V Phantom Power supported.
15	+48V Dip Switch	● 48V Phantom Power supported. (Defaults to OFF)

1.2.4 Dimension

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

280mm x 222.6mm x 63.5mm
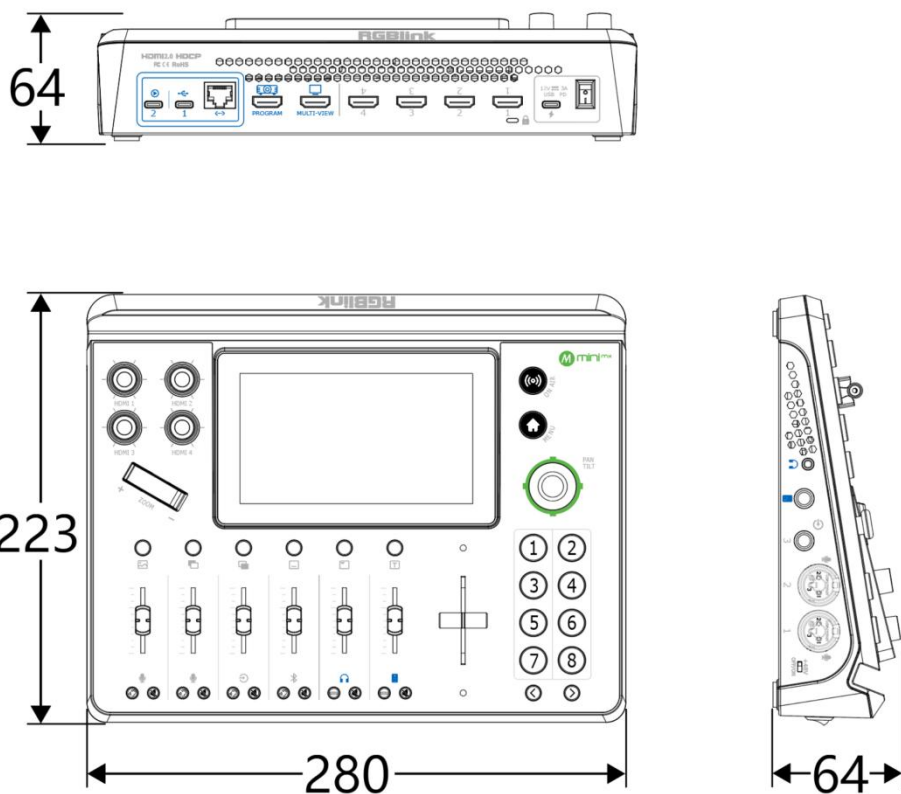
Chapter 2 Install Your Product

2.1 Plug in Power

RGBlink mini-mx is packaged with a PD power adapter (power cable included) , when linking the power supply, please check the power supply standard used in your country/region.

Connect mini-mx to power plug by the link cable

> **Note:**
>
> The Power Supply included with mini-mx is the recommended power supply for use with the device. In the event the power supply is mislaid or otherwise not available, following needs should be met :
>
> 1.Support PD "Fast Charge" capability;
>
> 2.Interfaces are the same as the adapter provided;
>
> 3.The power supply is rated for a minimum of 36W.

2.2 Input HDMI Signal Source

Users can use any camera, computer or other HDMI device as the input source of the mini-mx.

mini-mx supports up to 4 sources of different formats and resolutions at the same time via 4 HDMI ports, and **4 HDMI inputs support up to 4K@60Hz**. If users are using interlaced signal, mini-mx supports de-interlacement through HDMI 1 automatically.

Users can see the input views on the mini-mx screen when there is active signal plug in. Connect mini-mx to a monitor with HDMI output interface to see PVW views and output resolutions.

Note: The HDMI cable is not included in the mini-mx package and needs to be purchased separately. Some camcorders use a mini HDMI port, you need to buy a mini HDMI-HDMI cable separately when you use these camcorders.

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

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

Users can **switch screen mode** for Multi-view and Program by pressing【OUTPUT】setting on the main menu. **Multi-view** supports output in multi-view, signal source (HDMI 1/2/3/4) or program. **Program** supports output in preview, program and test pattern.

HDMI output supports resolution setting . After pressing the MENU button, tap 【OUTPUT】 setting on the menu to select HDMI output resolution.

2.4 Connect Microphone and External Monitoring Devices

On the right panel of mini-mx, there are **5 Audio Ports**, which includes **3 Audio IN Ports** and **2 Audio OUT Ports**.

For Audio IN Ports, two input ports adopt XLR/TRS NUTRICK audio jack (one supports 48V Phantom

Power Supply) ; one adopts 6.5mm TRS jack, which can be directly connect to the computer and console.

For Audio Out Ports, the PGM port adopts 6.5mm TRS jack; the other one adopts 3.5mm mini-jack, which can be directly connect to the headphone for audio monitoring.

For laptops or mobile phones with no audio output ports, mini-mx provides a **built-in Bluetooth module**. Users can connect to devices with Bluetooth function to input high-quality audio signals in real time. (More details please refer to *3.10 Settings*)

In addition, the **four HDMI input ports all support embedded audio**. Turn on **AFV**, the audio follows the video switch to perform a soft gradual transition when video is switched.

There are 8 audio inputs in total, which can be controlled via operation board to achieve audio mixing and monitoring.

If the sound and the video are not synchronous, it is necessary to do **audio delay setting**. Users can also increase or reduce the Delay value for HDMI and MIC audios to ensure audio and video synchronization. (More details please refer to *3.8 Audio*)

2.5 Connect USB for Streaming and Recording

Connect one USB 3.0 port (with number 2 silk screen) on mini-mx to computer by USB 3.0 cable, and computer will capture mini-mx USB output as a webcam source which can be pushed to Facebook, YouTube, Zoom, Twitter and other streaming media platform.

Insert a U disk to the other USB 3.0 port (with number 1 silk screen) on mini-mx by USB 3.0 cable to perform recording. The SSD storage can reach up to 2T, and the USB storage can support up to 64G. The supported format is exFAT.

Note:

1. For U disk, please use one with USB 3.0 port.
2. For SSD, Please check if it needs extra power supply.

2.6 Connect Computer

Software Control: Connect computer and mini-mx with CAT6 cable.

Record: Insert U disk to mini-mx's USB-C port (with number 1 silk screen)

Stream: Connect mini-mx's USB-C (with number 2 silk screen) and computer's USB 3.0 port with USB 3.0 cable. (Note: the color of USB 3.0 port is blue or with SS silkscreen)

Minimum System Requirements for macOS

● macOS 11.0 Big Sur or later

● macOS 10.15 Catalina

Minimum System Requirements for Windows

● Microsoft Windows 10 64-bit

> **Note：**
> 1. The IP address of the mini-mx must be in the same LAN as the computer.
> 2. Please use a switch with multiple ports for controlling of several cameras.

2.7 Turn on Your mini-mx

After mini-mx is connected to power supply, push the power button on the rear panel, the device will enter to the boot interface and enter operation interface within 10S.

Chapter 3 Use Your Product

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

3.1 Standby Interface

As shown above, once powering on mini-mx, the 5.5 inch display will show mini-mx logo firstly and then come into the standby interface. Operator can refer to the description below.

No.	Area	Description
1	PREVIEW	●Show PVW (Preview) monitoring screen.

2	Layer Selection	●Indicate BG, LAYER A, LAYER B, STILL, LOGO and TEXT from bottom to top; ●For no layer in PVW before, user can add layer by one click; layer in green shows selected; ●For layer added in PVW before but not been selected, layer shows in blue; ●For layer in green, tap it to close; for layer in blue, press and hold it for 3s to close. Tap layer needed again for re-adding.
3	PROGRAM	●Check PGM screen and output audio status; ●Streaming and recording status can be viewed with a touch.
4	Source or Preset Selection	●Use【1】-【8】 buttons on the front panel for selection; ●Use 4 windows in the upper to monitor HDMI 1-4 sources; use 【1】-【4】 buttons to switch sources; use 4 windows at the bottom for material selection. Videos, pictures can be added and saved by using a USB flash drive.
5	Audio Status Monitoring	●Monitor 3 analog audio inputs, 1 Bluetooth audio input and 4 HDMI inputs.
6	Icons	●To Enter MENU, Return to Standby Interface, Page up and Page down.

3.2 Touch Screen Operation

Touch Screen Introduction

There is a 5.5" touch screen on mini-mx operation board, through which most operation can be done.

Before introducing the operation of the touch screen, we need to introduce the button【MENU】, the MENU and back key. Push the button and the LCD screen will quickly return to the main menu interface.

As shown in the figure above the UI style on the touch screen is similar to current smart phone operating interface. The first-level menu is in icon. Users can quickly enter the corresponding function management interface by tapping the corresponding icon.
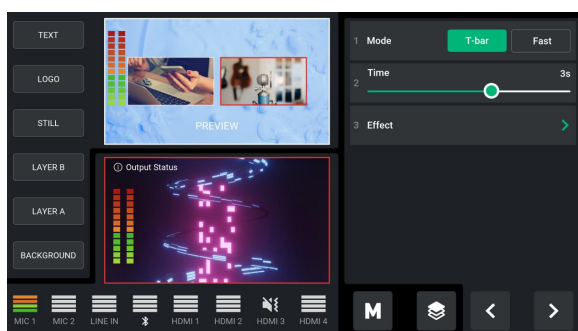
8 functions are available in main menu, which include **Transition, PIP, PTZ, Scene, Chroma Key, Audio, Output and Setting.**

3.3 Switch Effect Setting

Click【EFFECT】or Button【1】to enter effect setting menu.

Switch Mode Setting

There are **T-Bar Mode and Fast Mode available**.

mini-mx defaults to T-Bar Mode. Users can also switch to Fast Mode by using buttons ①②③④ on the operation board to switch 4 HDMI inputs. The buttons ①②③④ on the operation board corresponds to the 4 HDMI inputs one-to-one.

For some important occasions, users might need to **preview and preset the next scene** to ensure the accuracy and stability of the screen. mini-mx provides **T-Bar Preview mode** to allow switch after editing and confirmation.

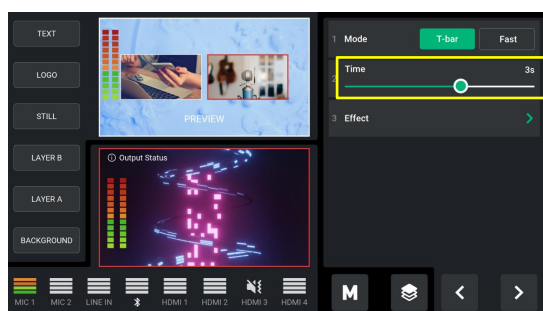Return to the 【EFFECT】 menu interface to choose T-Bar Mode or Fast Mode.

When T-Bar Mode is enabled, all operation could be checked on PVW window. Slide T-Bar to switch
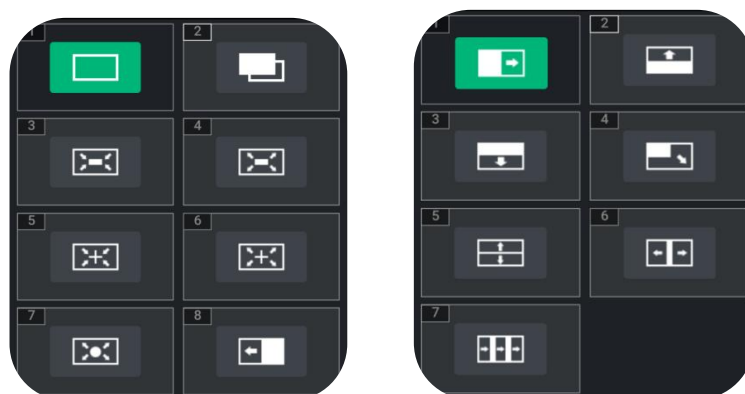
between PVW and PGM.

Switch Time Setting

In【EFFECT】menu interface, switch time can be customized by sliding the time bar.

Switch Effect Setting

If users want to use more transition effects, tap【EFFECT】icon on the touch screen to enter the 【Effects】selection interface, where 15 transition effects in total can be selected.

3.4 PIP

If users need to use PIP, push button【MENU】to return to the main menu, then tap【PIP】icon or button【2】to enter the PIP setting interface.
Users can also tap the layer used in Standby Interface for quick enter of PIP setting.
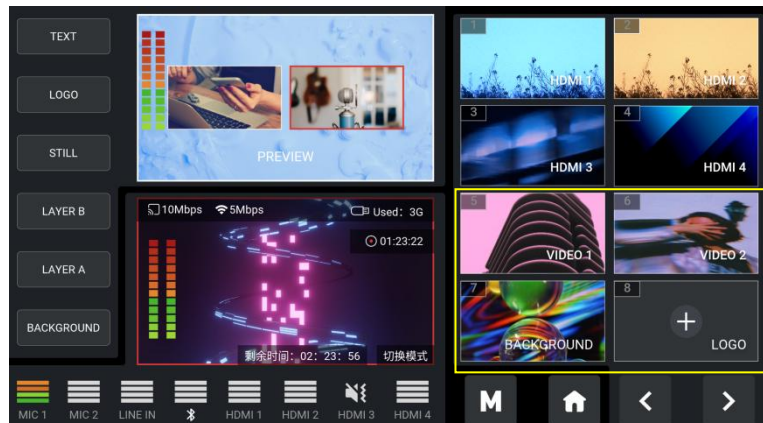
PIP Layout Setting

Layout offers 7 layout options for picture-in-picture. Enter layout interface shown as follow and choose the layout needed.
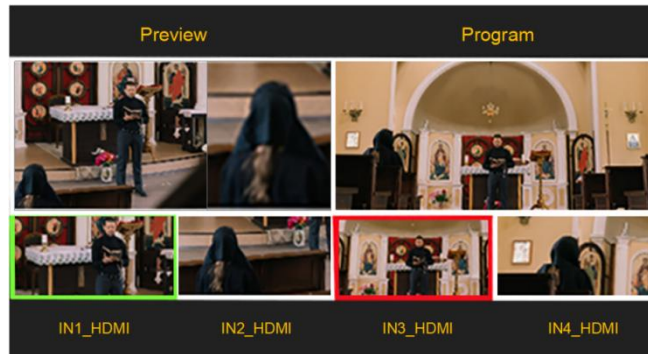

Layer Size and Position Setting

After PIP layout selection is completed, users can use the adjuster on the front panel to adjust picture size and the joystick to quickly adjust the position for more detailed adjustment.

If the layout 【4】 is selected, use the adjuster to achieve a better view of the picture ratio.

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Layer Cropping and Scaling

In【PIP】interface, click option 【8】 Advanced Settings to set more specific parameter setting for layer cropping and scaling.

As shown in the figure below, settings can be done by sliding the bar or clicking ⊘ ⊘.

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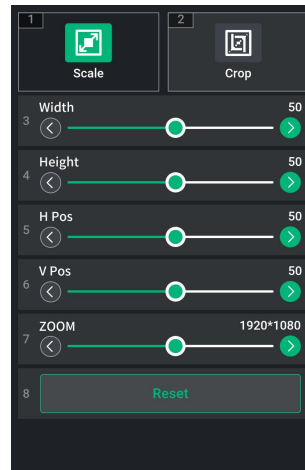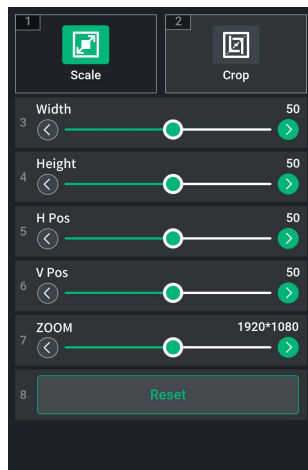

Click **Reset** at the bottom of the interface to clear wrong settings so as to restore to the default values.

3.5 PTZ

mini-mx can control the camera's lens moving horizontally and vertically, focus and zoom via **IP VISCA protocol**. Not only that, the mini-mx can also save the position and zoom information of the camera for quick calling for next use.

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

Tap the button【MENU】to return to the main menu, tap【PTZ】icon or press button【3】to enter the menu.
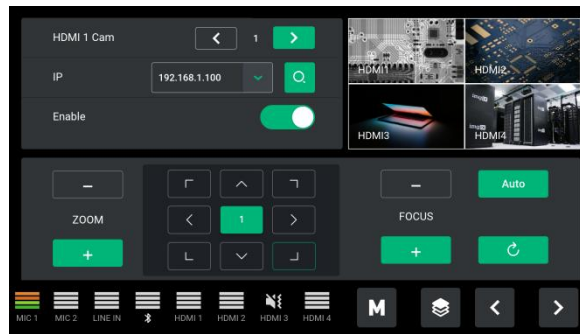
When PTZ Enable Switch is triggered, click ⊙ ⊙ to select the corresponding PTZ camera channel and then key in IP address. A numeric keyboard will pop up for typing , shown as below.
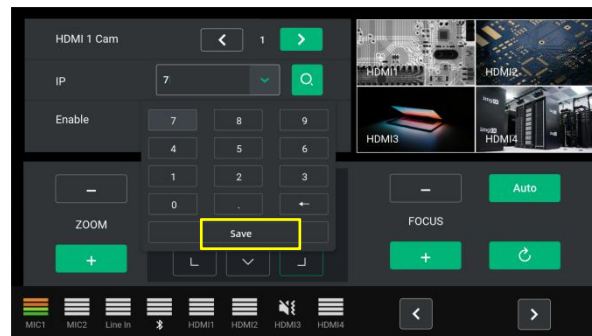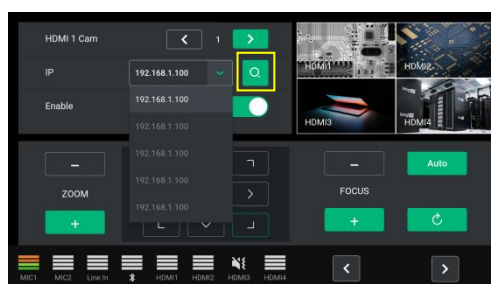

After entering the number, click **Save** to confirm.

> **Notice：** The IP address of mini-mx and camera controlled should be in the same LAN.

In addition to manual IP setting, mini-mx supports **automatic IP identification**.

When mini-mx is connected to the network, click ⊙ icon to select the IP address of the camera to be controlled through the drop-down box.

On the PTZ menu interface, automatic focus can be achieved by clicking **Auto**. Furthermore, the rotation angle of the PTZ can be adjusted by the joystick, and the focal length adjusted by the adjuster on the front panel.

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

3.6 Scenes

mini-mx **save presets to Scene in real time**. If users want to **quickly load** current preset next time,

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just save it to corresponding View.

The Scene will save all the currently set parameters including PIP layout, Chroma Key setting, PTZ presets, therefore when user needs to load any preset, push corresponding Scene for quick calling.

(1) After setting the effect, tap 【Scene】 or press button 【4】 or click ⬡ icon in the main menu to quickly enter following interface for preset calling or saving.
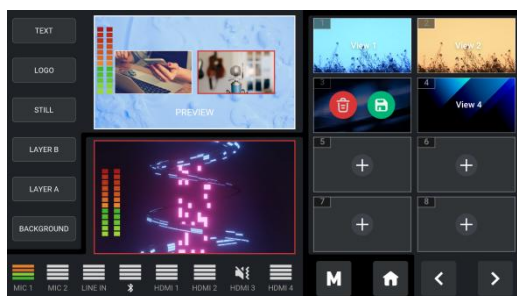
(2) mini-mx allows user to save 16 presets in total to the corresponding View 1-16. Click icon ◀▶ to return to previous page or enter the next page for preset selection. Click 🖫 icon to form a static picture of the current PREVIEW scene and save it in the current scene. Click 🗑 icon to delete scenes no longer needed.

(3) Tap the View needed for direct loading.
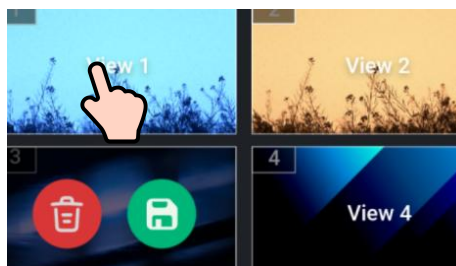
(4) After loading Scene, if PIP layout needs to change, users can select main screen or sub screen by pushing the middle button on joystick which default selects sub screen. After selecting sub screen or main screen, select input source for them by pushing the signal source button, adjust sub screen size by pushing button Up/Down and position by joystick. All the setting is saved to in real time to make sure it can be used next time the device is turned on.

(5) If you want the modified preset to be loaded from the Scene, you need to re-save it to the current Scene or a new Scene. Please repeat the above save operation.

3.7 Chroma Key

mini-mx supports matting, the Chroma Key in the menu, removing the pure color background and overlaying it on another signal to realize the application of virtual reality. Matting can be done on software or simple settings and adjustments can be made on the Chroma Key in the menu.

(1) Tap 【Chroma Key】 or push button 【5】 to enter the setting menu.

(2) Users can choose on or off to enable/disable the function (off by default). Select the background color which is default in green to be removed and make adjustments according to application.
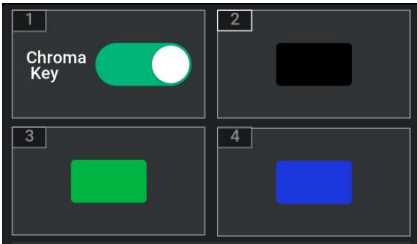
(3) Similar to PIP, the size, position and cropping of the main/sub-screen can be set.

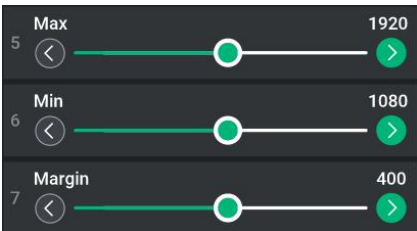(4) After the Chroma Key is set, the parameters can be saved directly on the device. Next time when the the device is on no matter on the software or the touch screen itself, users can directly load the preset.

(5) After loading the Chroma Key preset, users can use the joystick to switch the selection of the main/sub-screen, push the signal source to switch between different signals, adjust the size of the screen through the adjuster on the front panel, adjust the position of the screen through the joystick, and all the re-adjusted settings will be saved to the current Scene in real time.

3.8 Audio

mini-mx supports mixed output of multiple channels, and also supports to check volume meter and set audio delay.

Tap【Audio】or push button【6】to enter the audio setting interface.

As shown in the figure below, the audio setting interface is divided into nine parts. Please refer to the following table for operation.

| No.	Name	Description
1	Input Audio Meters	● 1-8 input audio columns indicate MIC 1，MIC 2，LINE IN，Bluetooth，HDMI 1，HDMI 2，HDMI 3，HDMI 4 one-by-one. ● 4 HDMI inputs all support embedded audio adjustment via control knob on front panel. ● Volume of MIC1/MIC2/LINE IN/Bluetooth can be adjusted via channel fader on front panel.
2	Analog Input Monitoring Switch	● Default to OFF. ● Press to turn on the switch with button light in green.
3	Mute Buttons	● Press to turn on/off mute mode. Light in green: non-mute mode; light in red: mute mode. ● If the analog input is in mute, the channel is muted only on PGM. ● If the HDMI input is in mute, the HDMI channel is muted on PGM out; users can also monitor audio if there is HDMI input in the PVW out. ● Set mute mode for PVW out, audio cannot be captured in PVW out. ● Set mute mode for PGM out, audio cannot be captured in PGM out.
4	AFV	● Set AFV for any HDMI embedded audio so the audio switches with the video source to PVW and PGM automatically.
5	Page UP/Down	● Click page up/down icon to enter different pages for more audio clip selection.
6	Audio Clips	● For audio clip storage and playback. ● Tap audio clip needed to play it in PGM.
7	Output Audio Meters	● 1-2 output audio columns indicate PGM out and monitoring.
8	HDMI 1 Delay	● Configure audio delay for a camera input to keep audio in sync with the video. ● Range: 0~300mm, increase or reduce 10mm each time.
9	MIC 1 Delay	●Configure audio delay for MIC 1 input to keep audio in sync with the video. ●Range: 0~300mm, increase or reduce 10mm each time.

3.9 Video Output

Tap【Output】or push button【7】to set parameters for video output.
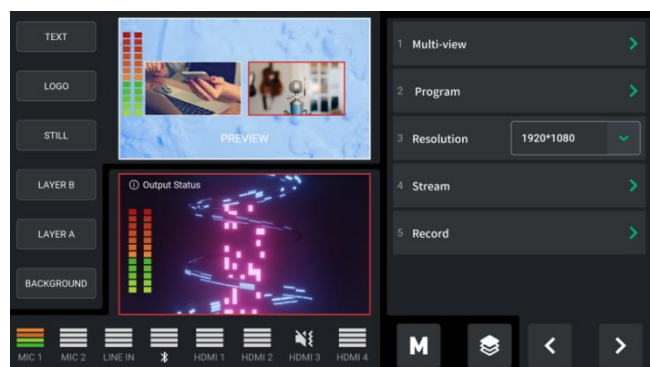
Multi-view

Push button【MENU】to return to main menu and click Multi-view in【Output】interface to set parameters .
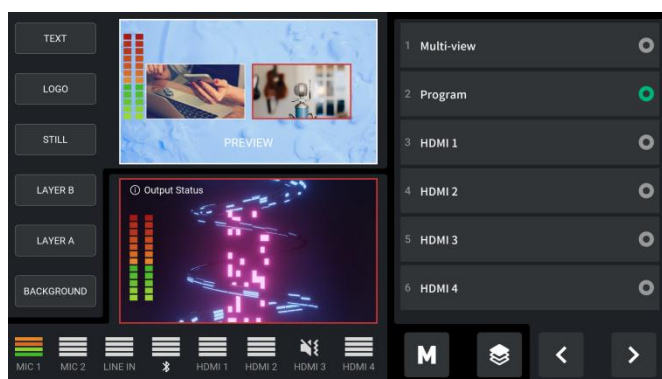
Default to be Multi-view preview, which can be switched to Program or 1-4 HDMI inputs for various applications.
Users can return to standby interface to check 4-screen input source preview on the touch screen.

Program

Push button【MENU】to return to main menu and click Program in【Output】interface to set parameters .
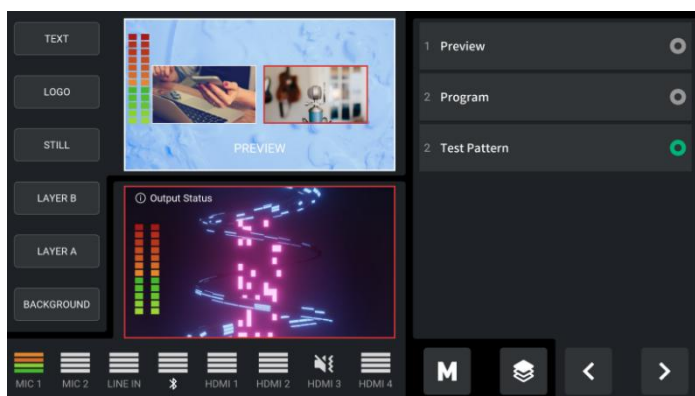
Default to be Program, which can be changed to multi-view Preview or Test Pattern.

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Resolution

Tap ">" on the right to choose output resolution from the drop-down box.
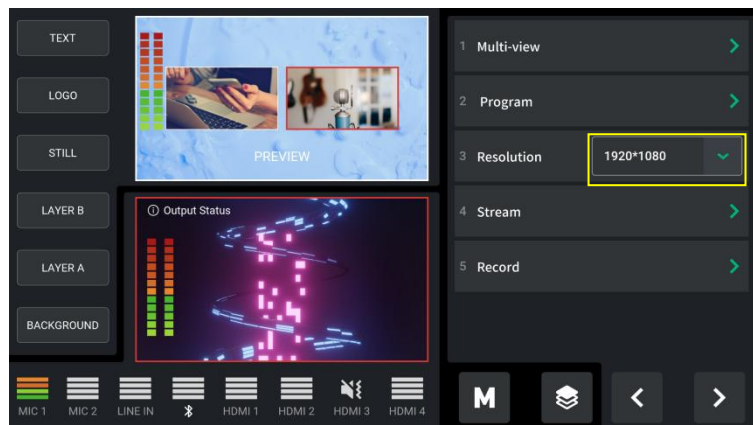
Stream

Tap Stream in 【Output】 menu to enter streaming configuration interface.
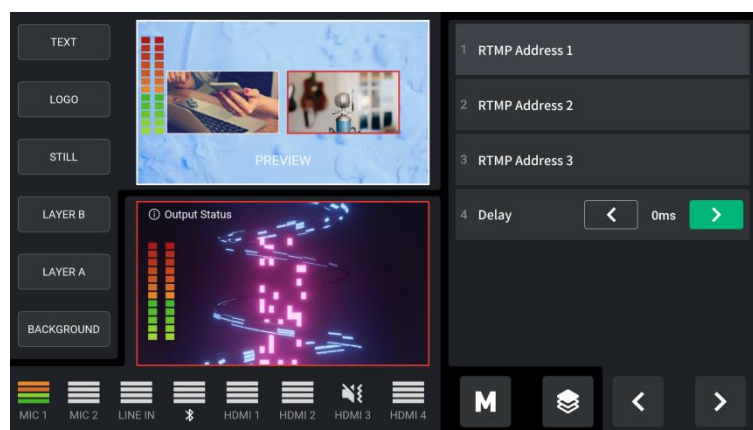
In this interface, users can import RTMP address and set the delay time as needed.

Record

The mini-mx **supports recording streaming media content** to an external SSD or USB storage through the USB 3.0 interface.

The SSD storage can reach up to 2T, and the USB storage can support up to 64G. The supported formats is exFAT. The recorded video will be sectioned after storage up to 4G with each section lasting about 60min.

Before recording, format the SSD or U-disk first. The steps of format as below:

1. Connect the SSD or U-disk to your computer;
2. Open"my computer";
3. Right-click your computer and select"format";
4. Set the file system to exFAT and the size of allocation unit to 128kb;
5. Select "quick format"and start.

Then insert the SSD or USB storage into the USB 3.0 recording port.

> **Note: If the SSD could not be recognized when inserting into mini-mx,then use a dual USB cable to power the SSD**

After inserting the SSD or USB disk, tap Record in【Output】menu to enter recording configuration interface.
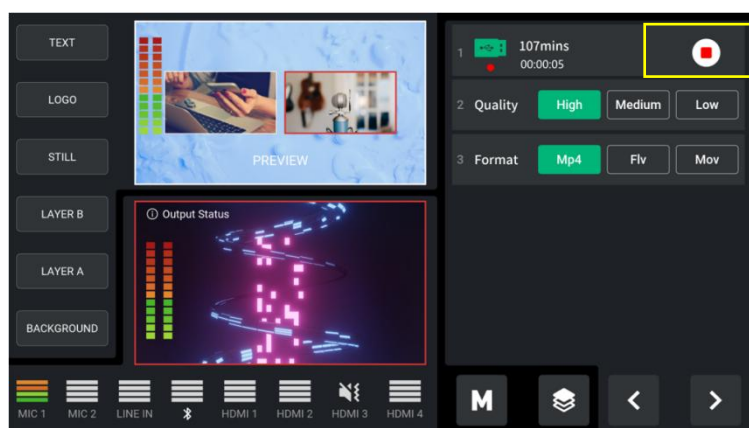
mini-mx supports settings of recording quality and format. Click recording switch to start/stop recording.

Tap PGM Output Status window in the left to view the recording status, including disk info and remaining time for recording.

3.10 Settings

Tap【Setting】or push button【8】to enter system setting interface.

As shown in the figure below, 7 functions are available, including **Fan**, **System**, **Key Color**, **Bluetooth**, **Language**, **T-Bar Calibration** and **Screen Brightness**.

Fan

Tap **Fan** in 【Setting】 menu for fan speed adjustment.
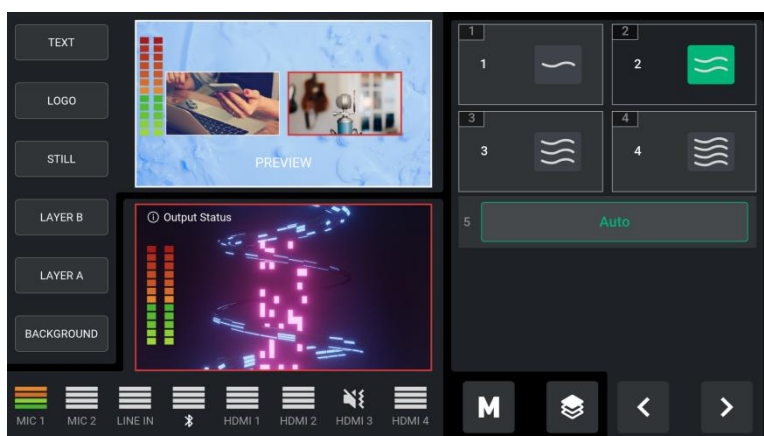
In the fan control interface, four levels of fan speed for users to choose from. Tap **Auto** to achieve automatic adjustment of the fan speed.

System

Tap **System** in 【Setting】 menu to enter the interface below.
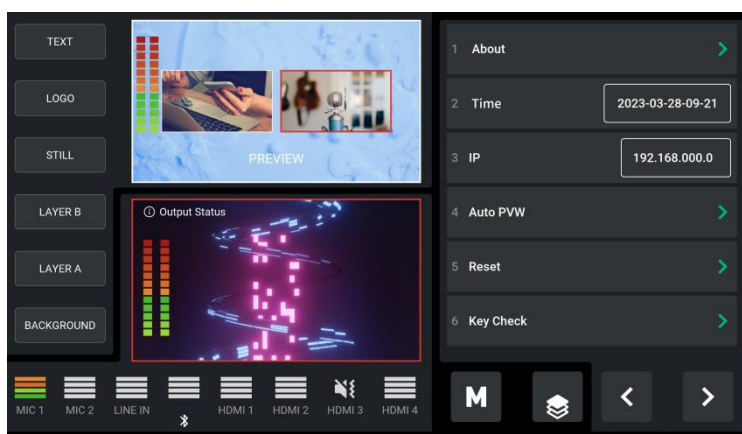
Click **About** to check information about mini-mx. As shown in the figure below, users can view Device Name and SN. Click Device Version to check current version and upgrade mini-mx.
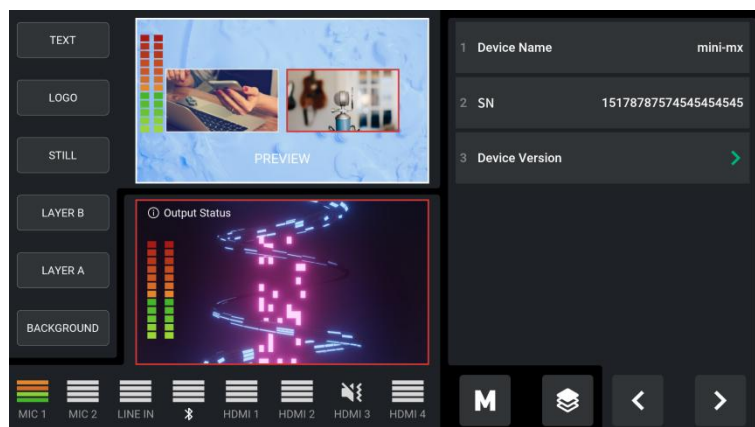
Click **Auto PVW** to switch this function on and set interval.
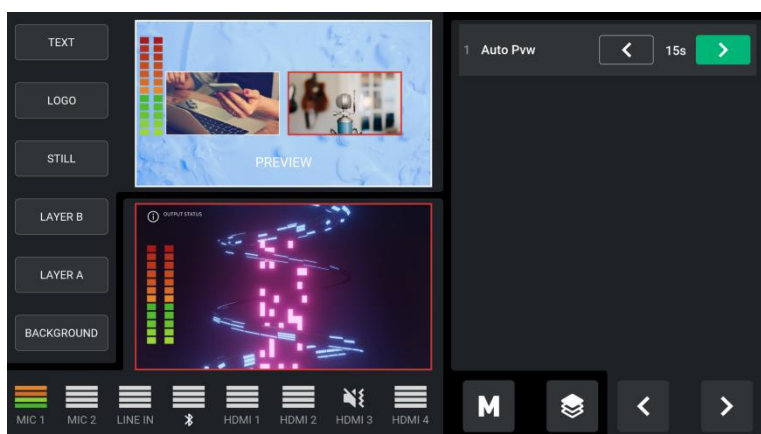
Tap **Reset** to check current version of mini-mx and perform factory reset.
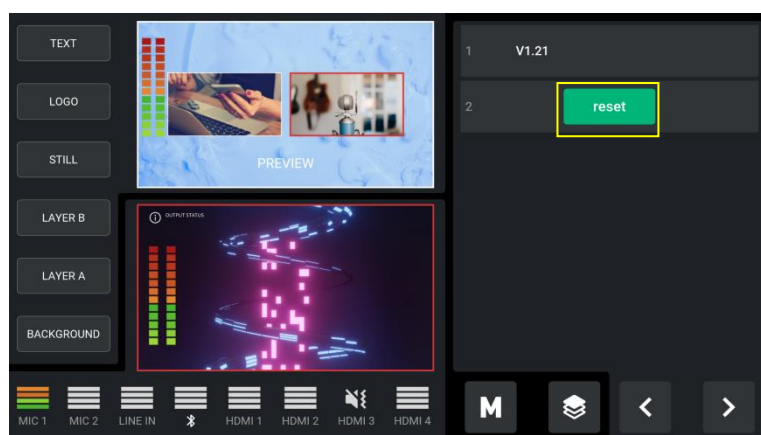
Key Color

Tap **Key Color** in 【Setting】 menu to adjust button color on the front panel.
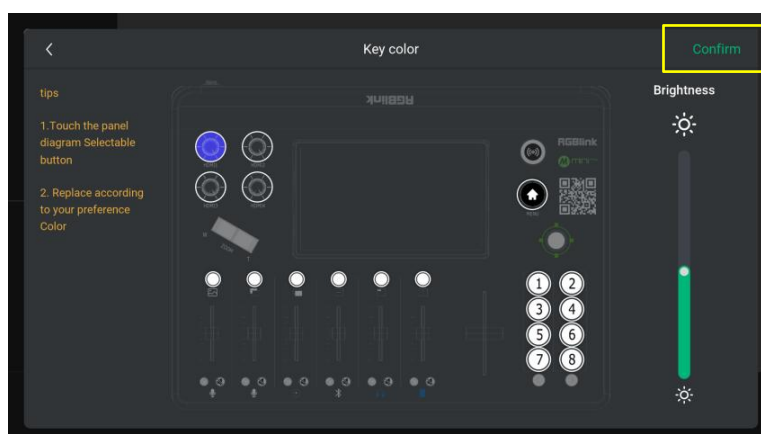
Users can set the color and whole brightness of keys as needed. After adjustment, click **Confirm** to complete settings.

Bluetooth

Tap **Bluetooth** in【Setting】menu to enter the following interface.
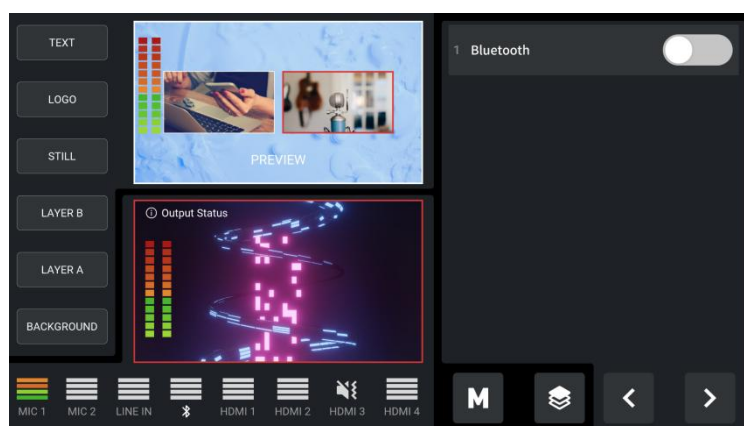
Switch **Bluetooth** on to check devices available currently. Choose the phone needed to be paired then play music via Bluetooth.
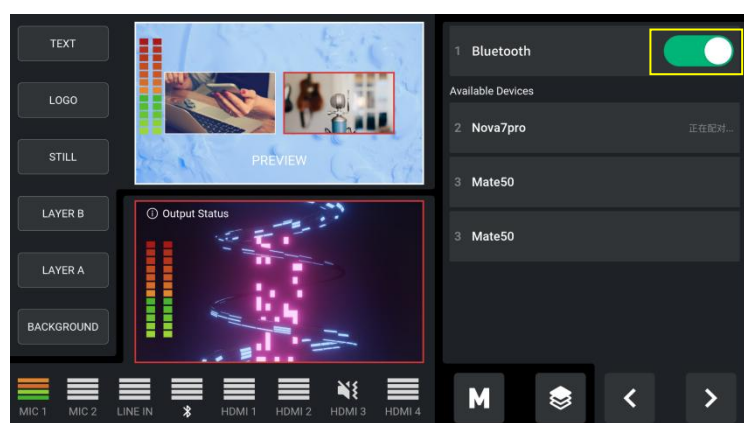
In addition to above settings, users can also set Chinese, English or German as the interface language.
mini-mx also supports setting T-Bar calibration and the overall brightness of LCD screen.

Chapter 4 Ordering Codes

4.1 Product Code

230-0004-01-0   mini-mx

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Chapter 5 Appendix

5.1 Specification

Connectors	Input	HDMI 4K	4×HDMI-A
	Output	HDMI 2K	1×HDMI-A
		USB (Stream)	1×USB-C
		USB (Record)	1×USB-C
	Audio	In	2×6.35mm XLR/6.35mm TRS 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	SMPTE	720p@50/60 |1080i@50 | 1080p@23.98/24.97/50/59.94/60
		VESA	1024×768@60 | 1280×720@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 | 1920×1080@60 | 1920×1200@60 | 3840×2160@60 | 4096x2160@60
	Output Resolutions	SMPTE	720p@50/60 | 1080p@24/25/30/50/60
		VESA	1024×768@60 | 1280×720@60 | 1280×768@60 | 1280×1024@60 | 1360×768@60 | 1920×1080@60
	Video	Video Formats	HDMI 2.0 | HDCP 2.2
		Color Space	YUV2
		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	

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	Input Voltage	Type-C 12V/3A	
	Maximum Power	36W	
Working Environment	Temperature	0℃~45℃	
	Humidity	10%~85% RH	
Physical	Weight	Net	TBC
		Packaged	TBC
	Dimension	Net	280mm × 222.6mm × 63.5mm
		Packaged	332mm × 238.5mm × 109mm

5.2 FAQ

1. Fail to power on mini-mx?

A: Please check whether the power supply is connected first, and use it correctly according to the power supply standard of your country/region. If still failed to power on mini-mx, 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.

A：Please try to change the power adapter (support 36W).

3. mini-mx upgrade notes.

A：Please disable the other adapters(except mini-mx LAN adapter) on Network and Internet, turn off the DHCP on setting of mini-mx, after upgrading successfully, remember to reset and restart the device.

4. mini-mx cannot control PTZ.

A：Please make sure that the IP address of mini-mx 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 to 192.168.5.X ((2~254) except163 Outside), 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 USB 3.0 RECORD cannot recognize U disk.

A：Please format the U disk (exFAT, FAT32).

6. mini-mx 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

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 PVW output)

7. Does mini-mx support HDCP?

A: The HDMI input supports the 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 HDMI input what kind of YUV.

A：mini-mx supports 4:4:4，not supports 4:2:0.

9. When mini-mx input is i format signal will be half-screened or cut with the P format signal, the height of the P format will be cut.

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

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

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

5.3 Upgrade

1.Copy upgrade package to root directory of USB disk.
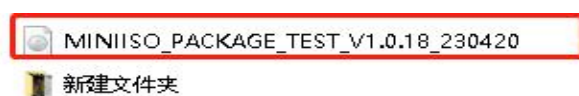
2.Power on the device and connect USB disk to USB-C port (with number 1 silkscreen) by a OTG cable.

3. Tap【System】in【Setting】menu to enter the interface below.

4.Tap【Device Version】to check current system version and upgrade file version imported via USB disk; tap 【Upgrade】to upgrade mini-mx：
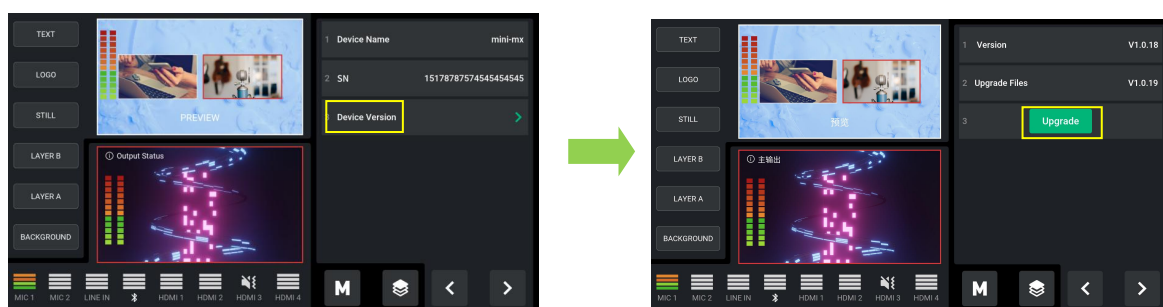
5.The upgrade interface is shown in the figure below. Please DO NOT power off the device during upgrade. Please restart mini-mx after upgrade is completed.
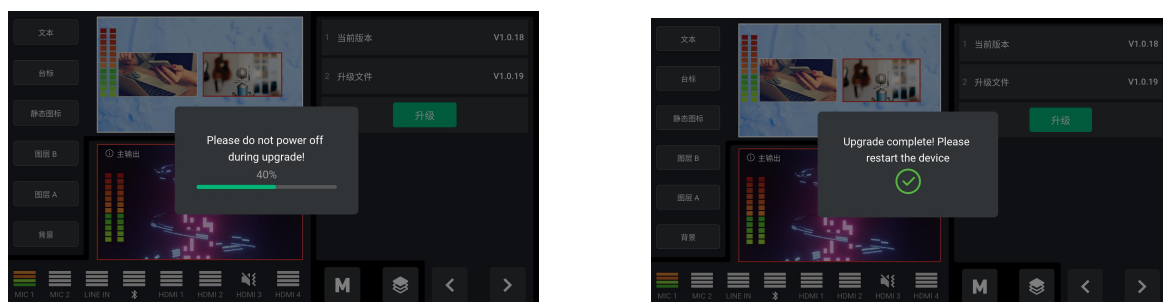
5.4 Terms & Definitions

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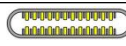
●**USB:** Universal Serial Bus is a standard that was developed in the mid-1990s that defines cables, connectors and communication protocols. This technology is designed to allow a connection, communication and power supply for peripheral devices and computers.

●**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

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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.

●**Colour Burst:** 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	2023-03-28	0000#	Release	Aster
V1.1	2023-04-21	0001#		Aster

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Chapter 6 Support

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