Colorlight

reddot winner 2026

Universe Series

Video Splicer

User Manual V2.3

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SAFETY INFORMATION

Please read and follow the instructions carefully before use to ensure safety and prevent personal injury, device damage, and property loss.

Electrical Safety

- This device supports a wide input voltage range (AC 100-240V). Please use the included power cord or one that meets the device's electrical specifications.
- To avoid electric shock that could cause personal injury or equipment damage, ensure the device is properly grounded before use. Unplug the power cord before moving the device.
- Do not attempt to repair a damaged power supply yourself. Please contact a qualified technician or your dealer for assistance.

⚠ Warning

Electric Shock: Do not disassemble the device while it is powered on.

Multiple Power Inputs: This device is powered by multiple sources. To completely power off the device, all power cords must be disconnected.

Operation Safety

- Before using this device, check the included packing list to ensure all parts are present. If any parts are missing or incomplete, contact the seller immediately.
- This is an electronic device. To prevent damage to the circuit components and ensure proper operation, avoid contact between the functional interfaces and any charged objects.
- Please ensure the device is used at altitudes of 5,000 meters (16,404 feet) or lower.
- This device is not waterproof. Do no expose it to liquids or use it in humid environments.
- For device specifications and more detailed instructions, please contact technical support.
- Please contact technical support to download the appropriate software to avoid configuration issues that may affect normal use.

⚠ Note

It is highly recommended that you change the password regularly to ensure system security. To protect your privacy and your company's data security, and to avoid cyber security issues, please set a strong password that complies with the security rules.

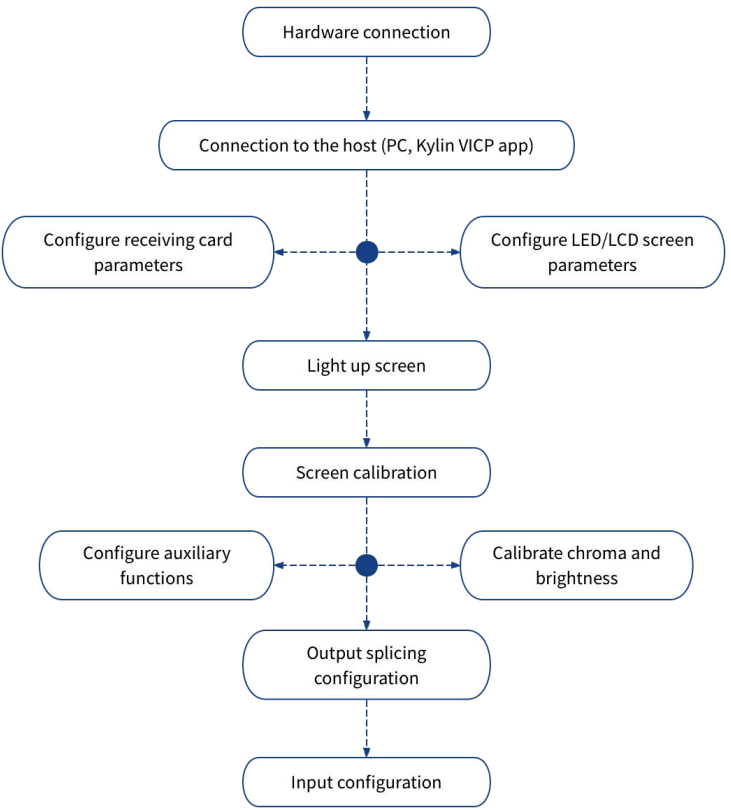
Grounding Instructions

- This product must be grounded. When equipment fails, the protective grounding contact in the power socket should be reliably connected to the protective grounding terminal in the equipment. This product is equipped with a power cord with a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- Improper connection of equipment grounding is able to result in a risk of electric shock. Check with a qualified electrician if you are in doubt as to whether the product is properly grounded. Do not modify the plug included with the product. If the plug is not suitable for the socket, please have a qualified electrician install a suitable socket.

FCC Statement

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CONFIGURATION PROCESS



01 PRODUCT INTRODUCTION

1.1 Overview

The Universe Series products are Colorlight's next-generation video splicers, featuring an integrated video processing and splicing solution. Powered by a robust FPGA architecture, this series offers a secure, stable and reliable software system, making it ideal for diverse applications. Whether for large-scale events, convention centers, stadiums, airports, railway stations, stage performances, advertising, traffic monitoring, or commercial exhibitions, the Universe Series delivers unparalleled reliability and performance.

Compatible with multiple operating systems such as Windows, macOS, and Linux, the Universe series supports cross-platform control and management via a web browser. The series offers practical features such as real-time multi-user collaboration and modular permission management. Combined with an intuitive user interface, it offers a smooth human-machine interaction experience.

1.2 Features

- Enhanced load capacity: Up to 520 million pixels.
- LED screen solutions: 10G/5G/2.5G fiber output and 5G/1G Ethernet output.
- Projection and LCD screen solutions: HDMI 2.0/HDMI 1.4/HDMI 1.3/DVI/HDBaseT output.
- Versatile input and output: Supports 32 types of input and output boards.
- Supports audio input, ambient light sensor access, and automatic brightness adjustment via a multi-function card.
- UHD screen management: Supports management of multiple screens with 4K HDR display and 10-bit video input and processing.
- Preset management: Save, switch between, and loop through presets with ease.
- Flexible splicing: Supports multi-source splicing, in any direction and size.
- Custom display: Crop and scale video sources; add display elements such as background images, subtitles, and signal logos.
- Seamless splicing: Supports screen seam correction for a uniform display with no black or bright lines.
- Enhanced display quality: Supports high brightness, contrast, and saturation, together with hue adjustment and better grayscale at low brightness.
- Wide frame rate range: Input and output frame rates range from 23.98Hz to 240Hz, providing ultra-high screen refresh rates for smoother and more detailed video playback.
- Multiple levels of redundancy: Supports redundancy for fiber ports, Ethernet ports, and between dual power supplies.
- 4K preview and monitoring: Supports ultra-high-definition preview and monitoring capabilities.
- Pixel-level consistency: Ensures consistent brightness and color temperature across every pixel, delivering a complete image display.
- Supports health monitoring and email notifications for real-time monitoring of all boards.

02 SCREEN CONFIGURATION

2.1 Device Power On/Off

- **Powering On the Device**

  The Universe Series supports two startup modes: power-on auto-startup and manual startup.

  ① Power-on Auto-startup

  Connect the video splicer to an AC power supply of 100~240V, 50/60Hz using a three-core power cord. Once connected, the video splicer will automatically start up after approximately 30 seconds.

  By default, the video splicer is set to automatic startup mode when powered on for the first time. You can check this setting via the web application.

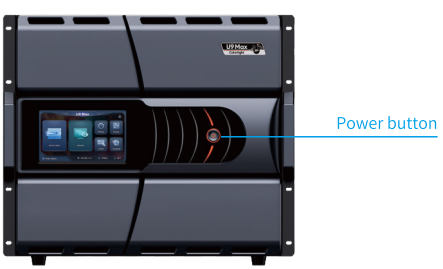
  ② Manual Startup

  To manually start the video splicer, change the startup mode to Manual startup via the web application.

  Connect the video splicer to an AC power supply of 100~240V, 50/60Hz using a three-core power cord. Press the power button on the front panel. The LED ring around the button will illuminate blue, indicating that the device is starting up. Wait about 30 seconds for the device to fully boot.

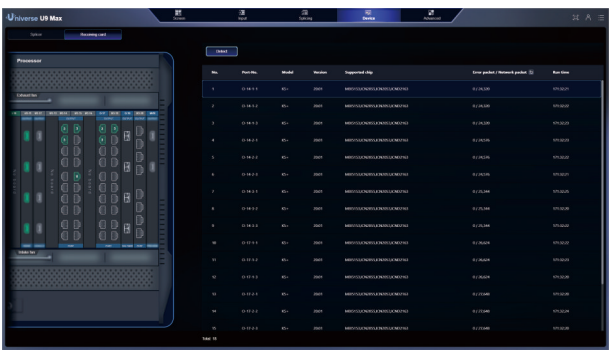
- **Powering Off the Device**

  - To power off the device, press and hold the power button until the blue backlight turns off, indicating that the device has shut down. For safety, disconnect the AC power supply after the device is off.
  - The Universe Series devices support safe power disconnection without losing parameters. When powered on again, the device will automatically restore the last saved parameters.



2.2 Receiving Card Detection

Go to **Device** > **Receiving** card, and click **Detect**. The software will automatically retrieve details of connected receiving cards, including port No., model, version, supported chip, network packet, and run time.



⚠ Note

If device detection fails, please check the following:

- The USB or Ethernet cable is properly connected.
- The relevant drivers are correctly installed.
- The computer's IP address is in the same subnet as the video splicer's.

2.3 Screen Configuration

2.3.1 Logging into Web Application

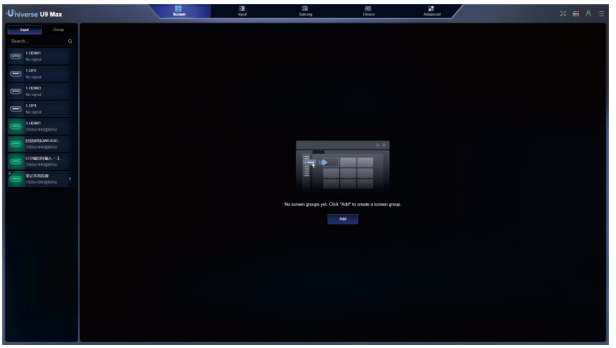
Recommended browsers: Edge, Chrome, and Safari.

- In the address bar of your browser, enter the video splicer' s IP address. The default IP address is "**192.168.1.10**".

- First, you need to register an administrator account. Click **Sign up** to enter the account registration page.
- Set a username, password, and a security question along with its answer. Then, click **Sign up** to proceed to the account login page.

- On the login page, enter the username and password. The original username is "**admin**", and the original password is "**123456**".

- Click **Login** to access the main interface.



- Once logged in, go to the **Splicing** interface and click "+" to create a new screen group. Choose either **LED** or **LCD** as required.
  - You can name the screen group during creation for easier identification.

⚠ Note

The Universe Series supports a maximum of 20 LED or LCD screen groups.

2.3.2 LED Screen Group Configuration

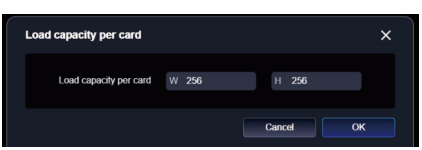
2.3.2.1 Light Up LED Screen

Step 1 After logging into the web application, go to the **Splicing** interface and create an LED screen group. Configure the screen group according to the device's output port load capacity and the structure of the LED screen cabinets. Check the cabinet size, the number of receiving cards per network port, and the cabling between cabinets.

Step 2 Set the canvas size and output color depth.

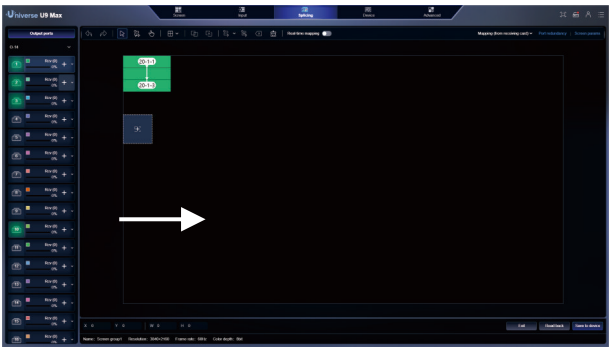
- Go to **Screen attributes** to configure the screen resolution, frame rate, and color depth. Ensure that the receiving cards connected to the cabinets support the maximum refresh rate and color depth.
  - > Maximum canvas size: 32768×16000 pixels (520 million pixels)
  - > Output frame rate: 23.98 Hz to 240Hz
  - > Output color depth: 8bit or 10bit

Step 3 Set the load capacity for the receiving cards. Click the expander arrow "﹀" to open the **Load capacity per card** window, and enter the load capacity that matches the cabinet size.



Step 4 Click "+" to add the required number of receiving cards to the screen group based on the card count per network port. Then, configure their mapping to match the actual cabinet cabling.

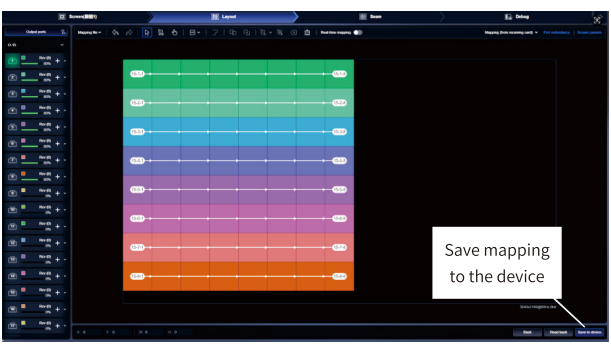
- For example, if a network port controls three receiving cards arranged from top to bottom, drag your mouse from top to bottom to complete the mapping.



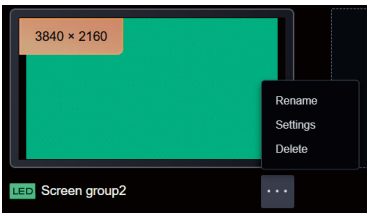
Step 5 Select the output board for the current LED screen group and add all receiving cards connected to its output ports to the editing area.

If multiple ports use the same mapping, select the existing mapping, press **CTRL + C** to copy it, and then press **Ctrl +V** to paste it to the corresponding area of the screen group. This completes the mapping for all receiving cards.

Step 6 Click **Save to device** to store the mapping. The LED screen group is now successfully created, and you can exit the setup.

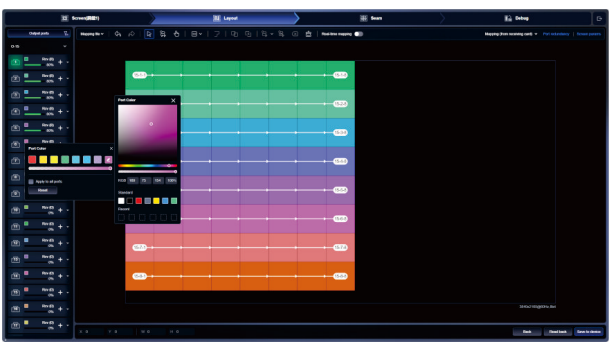


Step 7 To rename the LED screen group, go to the **Splicing** interface. Hover over the group you want to rename and click the ⋯ that appears in its bottom right corner. Select **Rename** and enter the new name. You may also name the screen group during its creation.



Auxiliary Function – Change Port Color

To change the port color, click **Layout**, and then click the color selector next to the port to customize its color.



Note

1G RJ45 Ethernet, 5G RJ45 Ethernet, and 10G fiber output boards can be configured within the same LED screen group, in any combination of two or three.

Auxiliary Function - Read Back Receiving Card Load

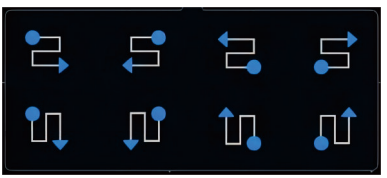
Click ⌄ next to a port to open a drop-down menu. The menu displays: the load of three recently used receiving cards, the receiving card load from **Screen params**, **Read back receiving card load**, and **Custom**.

- **Read back receiving card load**: Click to read the load of the first receiving card under the port and use it to set the mapping.
- Active status: When a receiving card is connected, the function option is available for selection.
- Disabled status: When no receiving card is connected, the function option is grayed out and unavailable.

2.3.2.2 LED Screen Group Auxiliary Functions

- **Automatic topology**

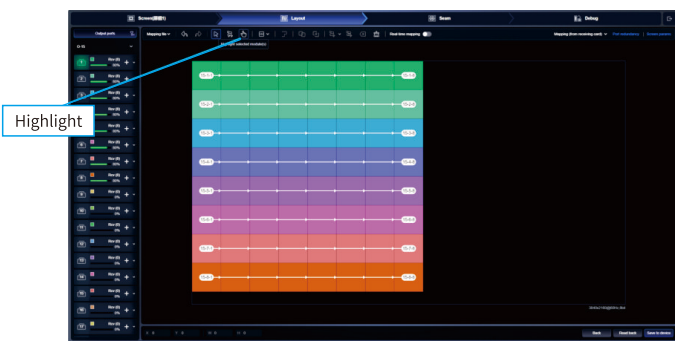
  To automatically configure the distribution of the receiving cards, select the topology that matches the actual cabinet cabling.



Common topology

- **Highlight**

  When enabled, click on the screen area you want to highlight. This identifies the receiving cards controlled by the highlighted network port. The edges of the selected cabinet flash sequentially in blue, red, green, and white.



- **Custom topology**

  To manually configure the distribution of the receiving cards, drag your mouse in the direction of the actual cabinet cabling to complete the topology.

- **Numbering**

  - **Number all:** When enabled, displays the positions and numbers of all receiving cards, including each card's location controlled by a network port, with corresponding numbers (e.g., "1", "2", "3").

- **Number by port:** When enabled, displays the position and number of a selected receiving card controlled by a specific network port, showing the port, card position, and corresponding numbers (e.g., "1", "2", "3").

- **Real-time mapping**

  Select **Mapping from processor** and enable **Real-time mapping**. The receiving card mapping will then be updated periodically, automatically lighting up the corresponding cabinets on the screen. This helps test the current mapping.

- **Group**

  Select multiple receiving cards connected to the same output network port, then click **Group** to combine them.

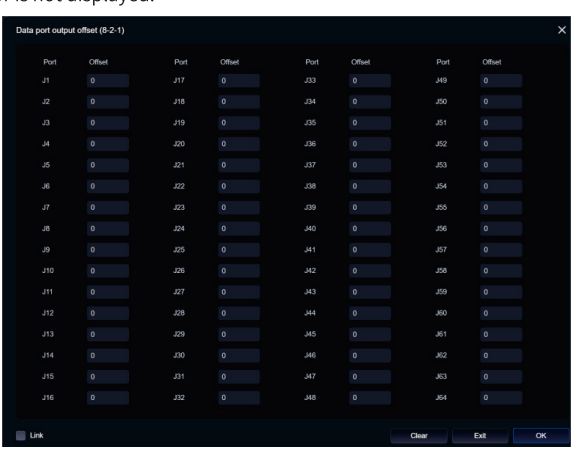
- **Ungroup**

  Select a receiving card group, then click **Ungroup** to split it.

- **Delete receiving card**
  Select the receiving card you want to delete, then click **Delete** to remove it. This action deletes a single receiving card.
- **Delete all receiving cards**
  Click **Delete all receiving cards** to remove all receiving cards in the screen group.
- **Read back mapping**
  Click the **Read back** button at the bottom to select either **From processor** or **From receiving card**.
  - **From processor**: Read back mapping from the firmware of the processor.
  - **From receiving card**: Read back mapping from the firmware of the receiving card.

⚠ Note
This step is only required for LED screen configuration. You can skip it for LCD or projection screens.

- **Data port output offset**
  When a single receiving card is selected,  in the function bar becomes active. Click it to open a dialog box. The offset value is read from the selected receiving card.
  The system supports a total of 64 data ports. The default offset value is 0, with an input range of 0–255 and a step size of 1. If the offset value is modified (not equal to 0), an offset indicator is added to the receiving card. When the offset value is 0, the indicator is not displayed.



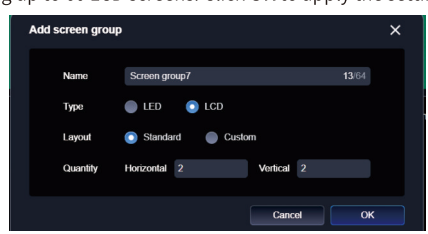
2.3.3 LCD Screen Group Configuration

- Supports independent or mixed use of 2K and 4K video output boards.
- Supports EDID configuration.
- Supports HDMI 2.0/1.4/1.3 and DVI output port settings.
- Supports both custom and standard LCD screen layouts.
- Supports LCD bezel compensation.

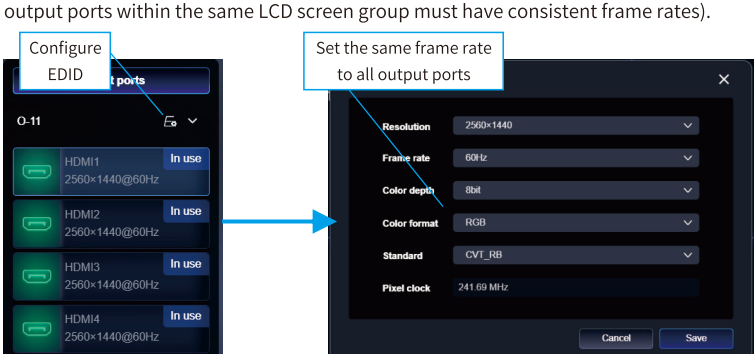
2.3.3.1 Standard Layout

Step 1 In the **Splicing** interface, click "+" to create an LCD screen group, and select **Standard** as the layout type. You can name the group for easier identification when editing layers.

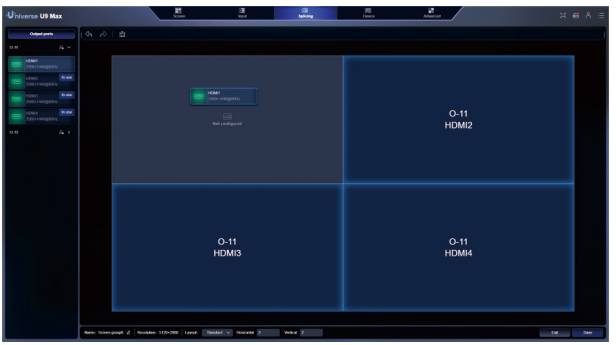
- The default arrangement for the standard layout is 2×2 screens. Adjust the number of rows and columns based on your requirements by editing the horizontal and vertical values, supporting up to 60 LCD screens. Click **OK** to apply the settings.



Step 2 Set the EDID of all output ports in the screen group to the same frame rate (all output ports within the same LCD screen group must have consistent frame rates).



Step 3 Drag and drop the desired output ports to the corresponding positions within the screen group.

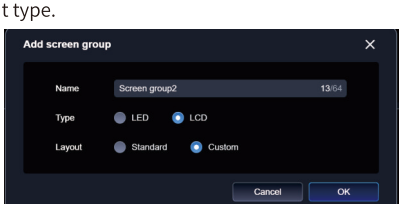


Step 4 Click **Save** to apply the changes. A standard LCD screen group is now successfully created.

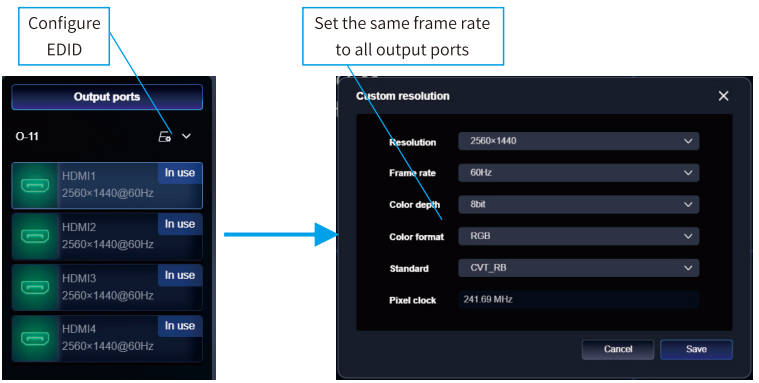
Step 5 To rename the LCD screen group, go to the **Splicing** interface. Hover over the desired group and click the "…" icon that appears in its bottom right corner. Select **Rename** and enter the new name.

2.3.3.2 Custom Layout

Step 1 In the **Splicing** interface, click "+" to create an LCD screen group, and select **Custom** as the layout type.

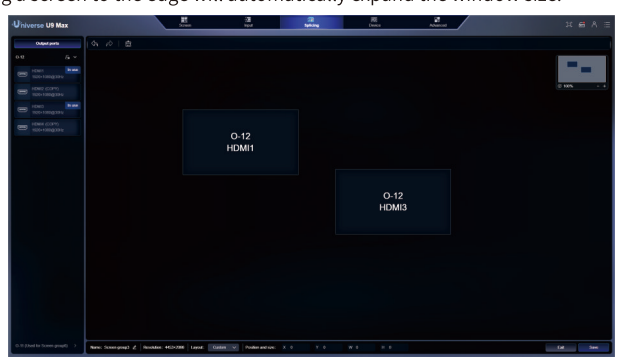


Step 2 Set the EDID of all output ports in the screen group to the same frame rate (all output ports within the same LCD screen group must have consistent frame rates).

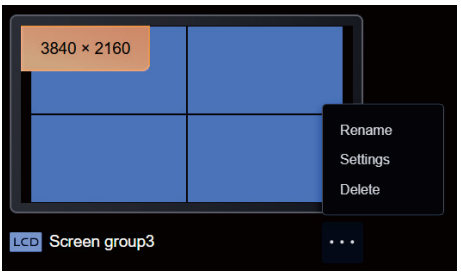


Step 3 Drag and drop the desired output ports to the corresponding positions within the screen group.

Arrange them based on the actual application, ensuring the screens are aligned both vertically and horizontally. If the LCD screen group window is not large enough, dragging a screen to the edge will automatically expand the window size.



Step 4 Click **Save** to apply the changes. This will return you to the previous interface, and a custom LCD screen group is now successfully created.



Step 5 To rename the LCD screen group, go to the **Splicing** interface. Hover over the group you want to rename and click the "…" icon that appears in its bottom right corner. Select **Rename** and enter the new name.

2.3.3.3 Output Port Replacement

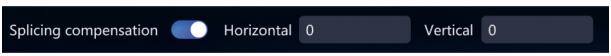
To replace an output port in the LCD screen group, drag the desired port from the **Output ports** list and drop it over the port you want to replace. Hold for about 1 second until the port area's outline changes from blue to purple. A "**Replace**" tip will appear, indicating that the current port will be replaced.

⚠ Note

Ensure that the resolution and frame rate of the new output port match those of the port being replaced.

2.3.3.4 Splicing Compensation

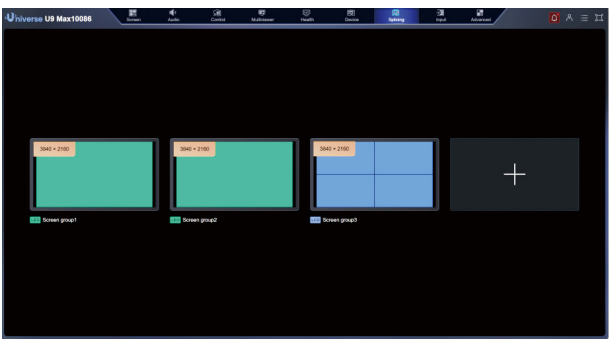
When configuring a custom LCD screen group, you can enable **Splicing compensation** to eliminate gaps between screens. Set the horizontal and vertical values (in pixels) to the width of the screen edges plus half the distance between the screens, respectively.



2.3.3.5 One-Click EDID Readback for Output Board

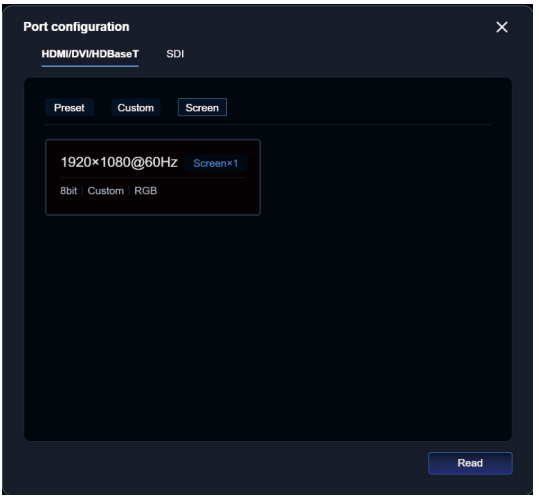
The operating steps for this function are as follows:

Step 1 Go to **Splicing**, then create a new LCD screen group or double-click an existing LCD screen group.



Step 2 Click **Layout**, then click **Port configuration** in the upper-left corner.

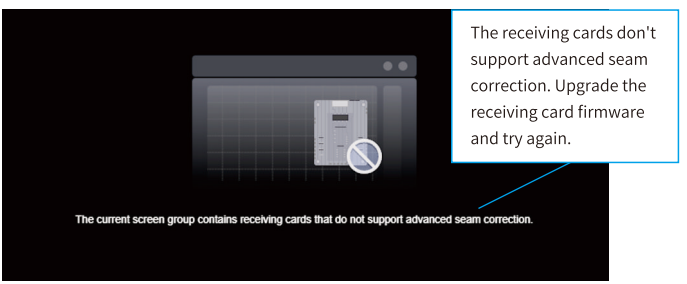
Step 3 Click **Read** to read the EDID from the output board.



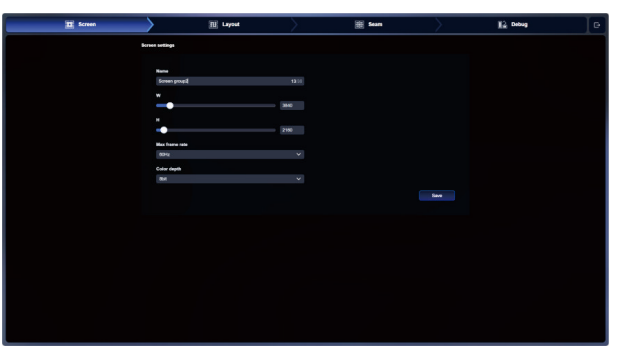
2.4 Advanced Seam Correction

Advanced seam correction adjusts seam brightness on LED displays without affecting calibration coefficients, reducing brightness where modules are closely assembled and enhancing it where they are loosely assembled. This ensures display uniformity by eliminating dark or bright lines.

Step 1 Before enabling **Advanced seam correction**, confirm whether the receiving cards support this function. If they don't, upgrade them to a suitable version (some models of receiving card might not support advanced seam correction even after version upgrade).

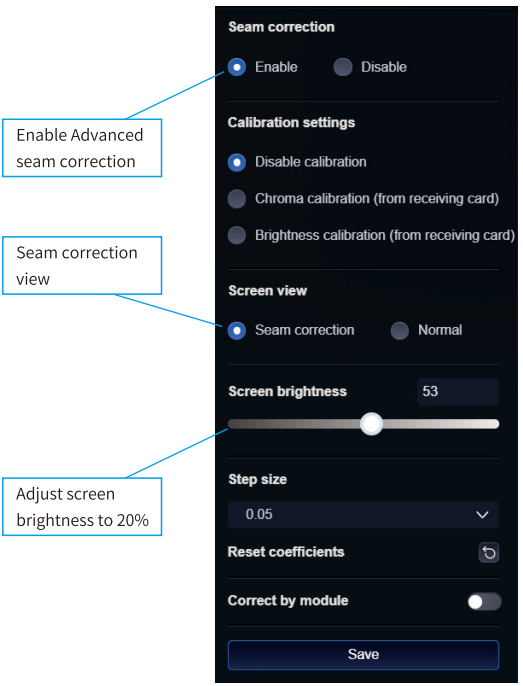


Step 2 Click **Splicing**, then double-click an existing LED screen group or create a new one. Select **Seam correction** to enter the **Advance seam correction** interface.

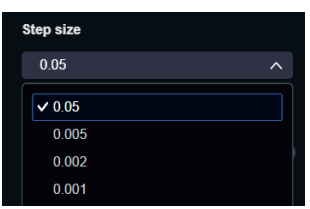


Step 3 Wait 3 to 5 seconds for the user interface to load the receiving cards.

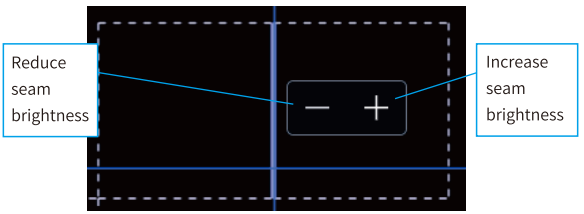
Step 4 Enable **Seam correction** and keep the calibration function off. Adjust the screen brightness to 20%, then check the seam status. If the seam brightness is too high, reduce it; if it is too low, increase it instead.



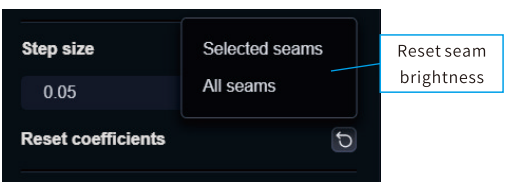
Step 5 Select a suitable step size for the correction. Available options include: 0.05, 0.005, 0.002, and 0.001. The smaller the step size, the more subtle the correction effect will be.



Step 6 Click the target seam (the selected seam will blink on the screen), and then click "+" to increase the seam brightness, or click "-" to reduce the seam brightness.



Step 7 If you want to reset the seam brightness coefficient, select the target seam(s), click the reset icon and then select **Selected seams**. You can also select **All seams** to reset the brightness of all seams.



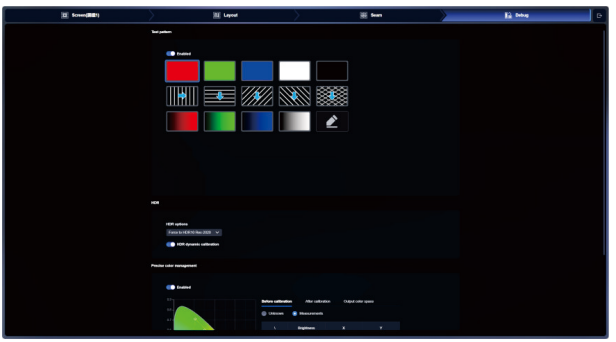
Step 8 Ensure that Seam correction is enabled and then click **Save.**

2.5 Debug

2.5.1 Test Pattern

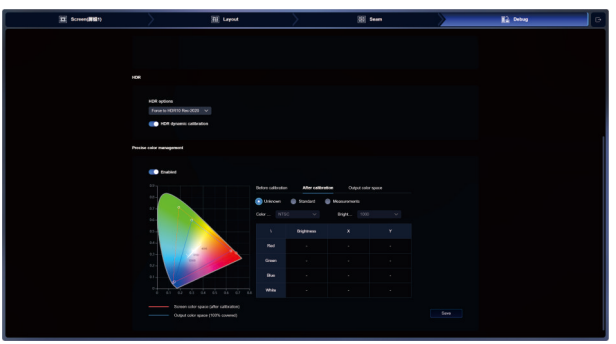
The **Test pattern** function allows you to test display effects by showing various test patterns on the screen. To enable **Test pattern**, click the more icon in the sidebar of the Screen interface to access additional settings. Then, select **Test pattern** and click the icon.

- You can quickly select from 14 available test patterns.
- Alternatively, you can create a custom pattern.
  - For 8-bit output color depth, the grayscale ranges from 0 to 255.
  - For 10-bit output color depth, the grayscale ranges from 0 to 1023.
- Custom pattern supports a linked adjustment of RGB values.



2.5.2 HDR

Click **HDR** to access HDR settings. By default, HDR is off, but you can choose from **Auto** or **Force to HDR**, with multiple output color space options available.



- Click  to enable **HDR dynamic calibration**. Ensure the screen's color and brightness parameters are accurate both before and after calibration (check in the **Precise color management** tab).

⚠ Note

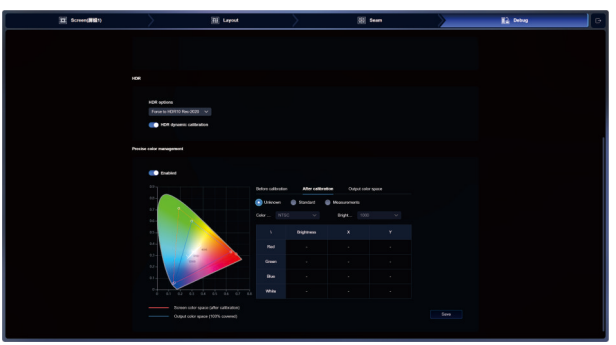
Enabling **HDR** will automatically activate **Precise color management** if it is not already enabled. Ensure that the receiving card's firmware version supports **Precise color management**.

2.5.3 Precise Color Management

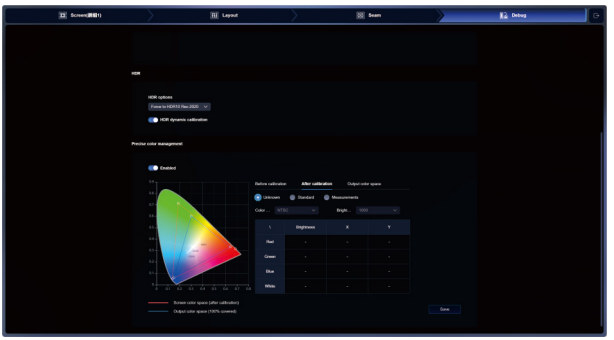
In the **Screen** interface, click the more icon in the sidebar to open the settings window. Select **Precise color management**, then click to enable this function. Wait 1 to 2 seconds for the screen's current output color gamut to fully load.

2.5.3.1 Color Gamut Conversion

- **Precise color management without HDR dynamic calibration:** Converts the current color gamut to the target gamut. For example, if the screen's color space is set to Rec.2020 and the output color space is sRGB, the red triangle represents the screen's color space, while the blue triangle represents the output color space. As shown in the figure below, the screen displays 100% of the colors after conversion.



- **Precise color management with HDR dynamic calibration:** The calibration adjusts the screen's color space similarly. For example, if the screen's color space after calibration is set to Rec.2020 and the output color space is sRGB, the red triangle represents the screen's color space, while the blue triangle represents the output color space. As shown in the figure below, the screen displays 100% of the colors after conversion.

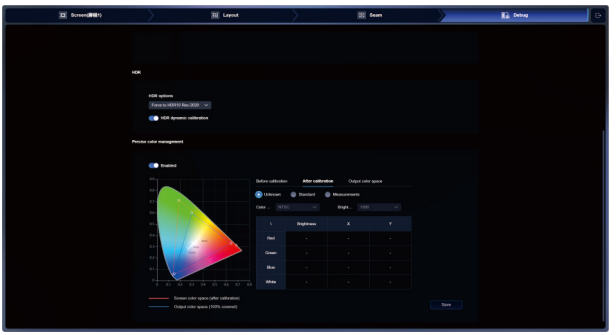


2.5.3.2 Conversion of Measurements

- **Without HDR dynamic calibration**

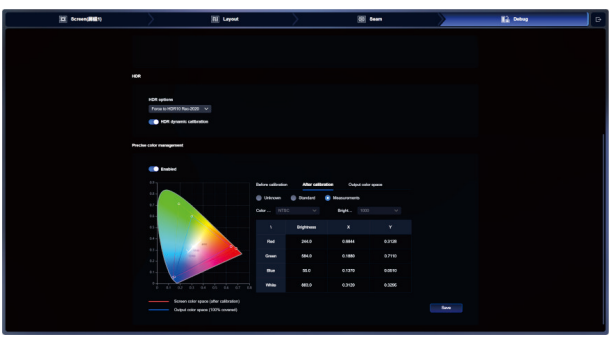
  Step 1 Confirm the screen's color space.

  - Enable **Test pattern**, set the grayscale values for red, green, and blue to 255. Drag the solid red, green, and blue blocks into the window, respectively.
  - Ensure the testing environment is dim and free from strong light interference. Use a color meter to measure the Lv, X, and Y values for the solid red, green, and blue colors. Measure each color 10 times at 2-second intervals, and record the data in the table. Calculate the average and overall standard deviation using the formula: f(x)=STDEV (range)
  - Enter the measured Lv, X, and Y values into the measurement fields. Compare these values to the standard gamut. If the color coverage is 100% or near 100%, you can confirm the screen's color space.
  - Alternatively, if the screen's input color space is already known, you can use that information.



Step 2 Select the target output color space.

- To convert to a specific color space, select an option from the dropdown menu: Rec.2020, DCI-P3, Rec.709, Rec.601, sRGB, NTSC, or PAL. You can also define a custom color space or leave the current color space unchanged.



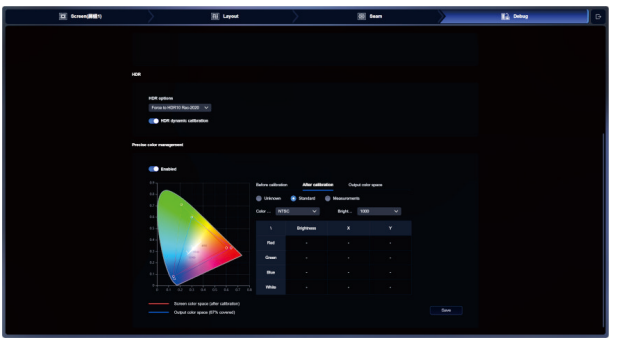
- **With HDR Dynamic Calibration**

Step 1 Confirm the screen's color space before calibration.

- Enable **Test pattern** and set the grayscale values for red, green, and blue to 255. Drag the solid red, green, and blue blocks into the window, respectively.
- Ensure the testing environment is dim and free from strong light interference. Use a color meter to measure the Lv, X, and Y values for the solid red, green, and blue colors. Measure each color 10 times at 2-second intervals, and record the data in

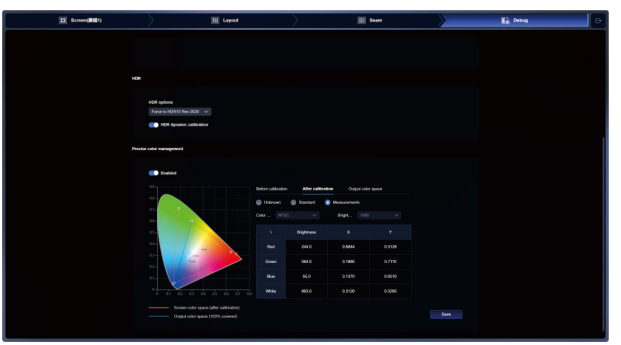
the table. Calculate the average and overall standard deviation using the formula: f(x)=STDEV (range).

- Enter the measured Lv, X, and Y values into the measurement fields, then click Save to store the pre-calibration measurements.

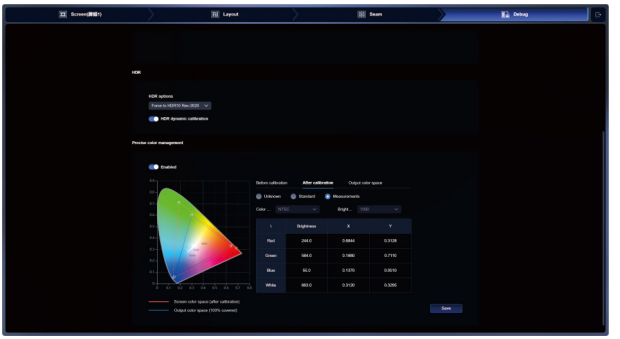


Step 2 Confirm the output color space after calibration.

- To convert to a specific color space, select an option from the dropdown menu: Rec.2020, DCI-P3, Rec.709, Rec.601, sRGB, NTSC, or PAL. You can also define a custom color space.
- Quickly select a standard color space as shown below.



- Define a custom color space as shown below.

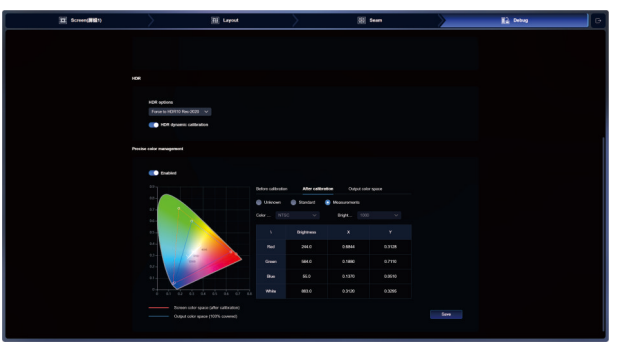


Step 3 Select the target output color space.

- To convert to a specific color space, select an option from the dropdown menu: Rec.2020, DCI-P3, Rec.709, Rec.601, sRGB, NTSC, or PAL. You can also define a custom color space or leave the current color space unchanged.
- The white color temperature and white brightness are adjustable.

  White color temperature: The default value is derived from the white value, with an input range of 1000 K to 25,000 K.

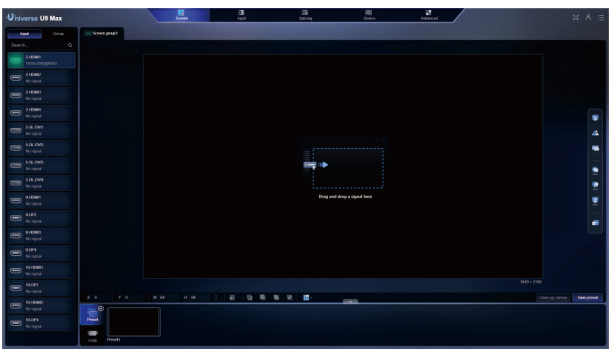
  White brightness: The default value is derived from the white value, with an input range of 0.001 to the upper limit of the color space white brightness.



03 SCREEN MANAGEMENT

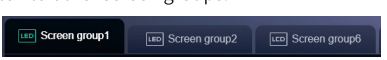
3.1 Screen Interface

- In the **Screen** interface, you can view information about the current device, including the device name. If the device information is not displayed, refresh the webpage.
- Below the device name, a list shows the current input board number and its corresponding ports. Ports receiving a signal will be highlighted in green to indicate a connection.



- **Screen group list**

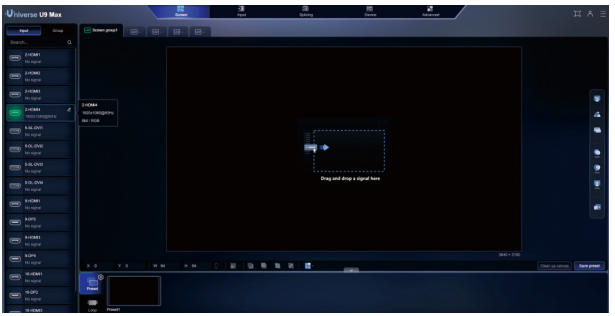
  Switch screen groups. The first screen is selected by default. Click on the screen group name to switch to other screen groups.



3.2 Input Signal Display

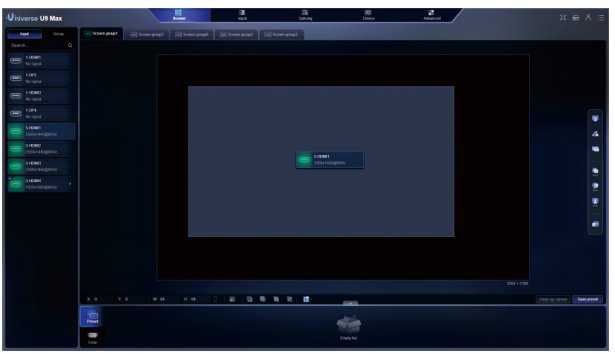
- **View input port status**

  On the left side of the **Screen** interface, you can see the connection status of the input ports along with their signal formats. Hovering over an input port will display the EDID information for that signal, including resolution, frame rate, color depth, color space, and HDR.



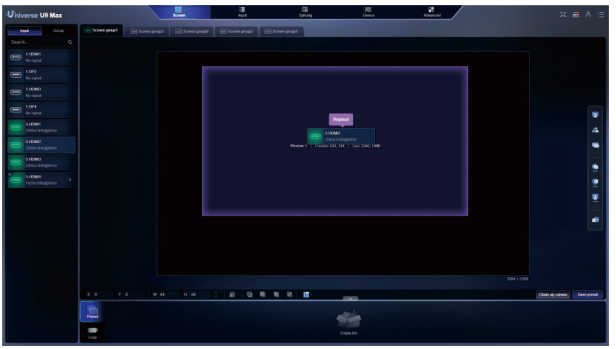
- **Drag input signals to the screen**

  Drag the desired input signal to the screen group. The signal will display at its native resolution by default, as shown below.



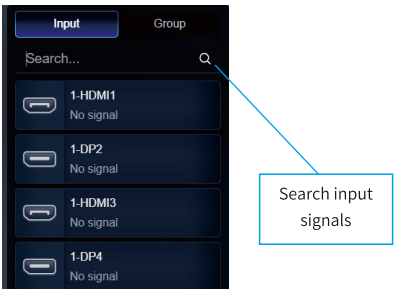
- **Replace input signals**

  Drag the desired input signal over the signal you want to replace. Hold for about 2 seconds until the window frame changes from blue to purple. A "**Replace**" tip will appear, indicating that the current signal will be replaced, as shown below.



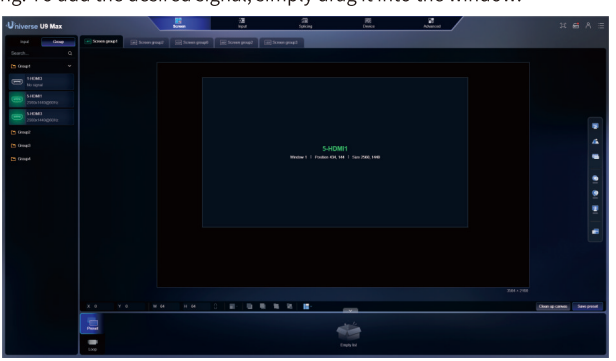
- **Edit input signals**
  CClick the input signal window to enter edit mode. Here, you can scale the window, set offset values, and overlay layers.
- **Rename input signal**
  Hover over the input port you want to rename. An edit icon will appear in the top right corner; click it to rename the input signal.

- **Search input signals**
  To quickly locate an input signal, enter its name in the search field.



- **IPC input signals**
  - Add IPC signals: Go to the Input tab to add IPC input signals. For details, see *Section 5.6*.
  - Manage IPCs: Go to Screen > IPC to view all available IPCs. You can search, locate, or rename them as needed.
  - Splice IPC signals: In the Device tab, select the IP board and enable Splicing mode. Then return to the Screen tab—Spliced signals will appear in the IPC list for splicing configuration.
  - Add IPC layers: Drag either an IPC signal or a spliced IPC signal to the target window to add it as a layer.
- **Group input signals**

  Go to the **Input** interface to group input signals. Then return to the **Screen** interface, expand the signal groups, and view the list of input signals for quick searching and locating. To add the desired signal, simply drag it into the window.



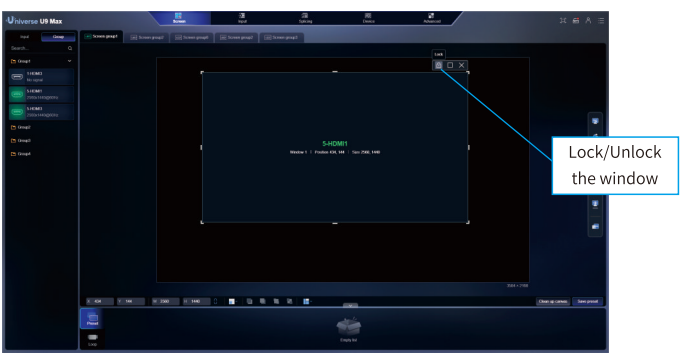
- **Layout**

  A layout lets you quickly set the window size and location. To apply a layout, click the  icon and select your desired option. Then, drag an input signal onto the canvas, and the signal window will automatically adjust to fit the selected layout.

- **Lock the window**

  To keep the window fixed in its current position and size, you can lock it manually.

  - Lock: Click the lock icon in the top right corner to lock the window. Once locked, the icon will display a locked status.
  - Unlock: Click the icon again to unlock the window. Once unlocked, the icon will display an unlocked status.



- **Shortcut keys:**
  The ↑ / ↓ / ← / → keys on the keyboard can be used to adjust the position of a layer. Each key press moves the layer by one pixel. Press and hold a key to move the layer continuously. These shortcut keys are also supported in multiple modules, including cropping, logo, and custom multiviewer.
- **Layer border:**
  Borders can be added to the layer of a single input signal window or to all input signal windows. The border size and color can be adjusted as required.
  - **Apply to all windows** (checked): The layer border settings apply to all input signal windows within the screen.
  - **Apply to all windows** (unchecked): The layer border settings apply only to the selected input signal window within the screen.

- **Window offset and scaling**
  - Scaling: Supports manual scaling, full screen, custom scaling, keep aspect ratio, and fixed ratio scaling.
  - Manual scaling: Hover over the window edge to enter the scaling mode, then drag the edges to adjust the window size manually.
  - Full screen: Hover over the window and click the icon in the top right corner. The input signal will expand to fill the window. Click icon to revert the window to its previous size.
  - Custom scaling: Enter values in the width (W) and height (H) fields to adjust the window size.

- Keep aspect ratio: Select an input signal, and click the icon to maintain the current aspect ratio while dragging the window edges to scale.
- Fixed ratio: Click the icon and choose from options like **4:3**, **16:9**, or **32:9** to scale the signal window with a fixed aspect ratio.
- Manual offset: Drag the input signal window to move it to any desired position.

- Order layers: Supports bringing a selected layer forward or to the top, and sending it backward or to the back.

- Delete window: Hover over the window to display the "×" icon. Click this icon to remove the current window from the output screen. To delete all windows, click **Clean up canvas** to clear all windows at once.

⚠ Note

Maximum window count:

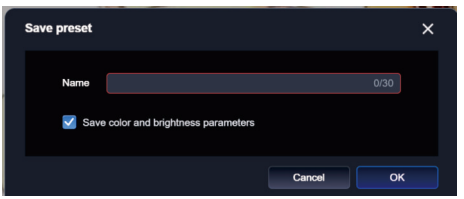
Each output board supports up to 16×2K or 4×4K signals. Similarly, 10 output boards can support up to 160×2K or 40×4K signals. Note that one 4K signal is equivalent to four 2K signals, allowing for flexible combinations.

3.3 Preset Settings

After configuring the windows, you can save the layout as a preset for future use.

- **Save preset**

  Step 1 In the **Screen** interface, click **Save preset** in the bottom right corner to open the dialog box.



  Step 2 If needed, select the checkbox for **Save color and brightness parameters** to preserve the current settings. You can also name the preset with a descriptive name for easier identification.

  Step 3 Click **OK** to save the preset.

Note

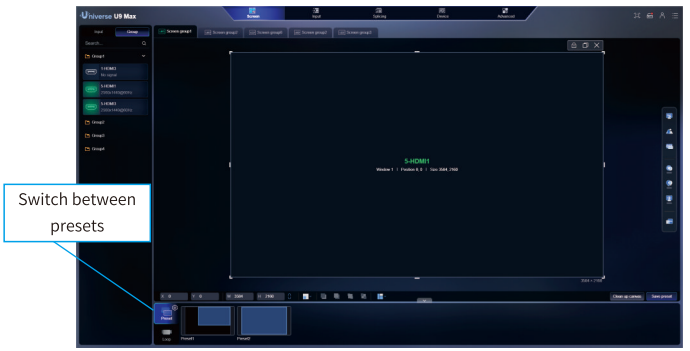
The Universe Series supports up to 40,000 presets, with a maximum of 2,000 per screen group.

- **Switch between presets**

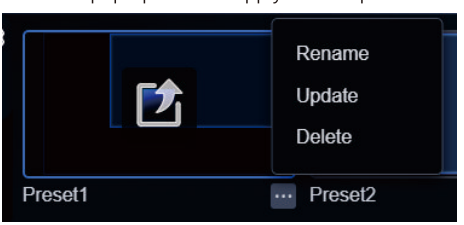
  Presets are saved separately for the LED or LCD screen group. To switch to a different preset:

  Step 1 In the **Screen** interface, select the screen group you want to load.

  Step 2 At the bottom of the screen group, all available presets are displayed. Click the preset you want to switch to directly.



- You can check the signal position within the window by previewing a desired preset.
- To delete a preset, hover over the preset to display the ··· icon, then select **Delete** from the pop-up menu.
- To rename a preset, hover over the preset to display the ··· icon, select **Rename** from the pop-up menu, and enter the new name.
- To update a preset, hover over the desired preset to display the ··· icon, then select **Update** from the pop-up menu to apply the new preset.

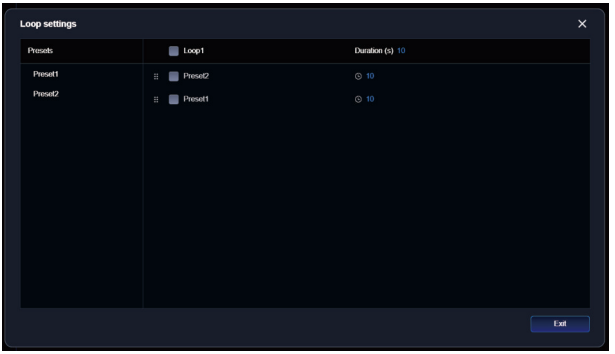


- **Loop playback**

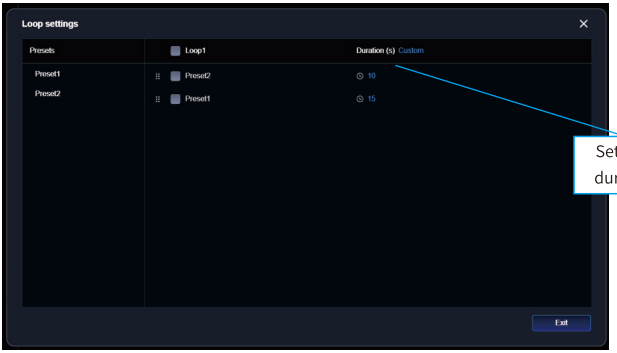
  Loop playback automatically plays and switches between presets in a specified order and duration, eliminating the need for manual switching. Note that at least two presets are required to use this function.

- **Loop settings**
  - In the **Screen** interface, click **Loop** at the bottom menu bar, then click the ⚙ icon in its top right corner to open the **Loop settings** window. Here, you can add and configure groups for looping.

- Select a loop group, drag the desired presets into the group.



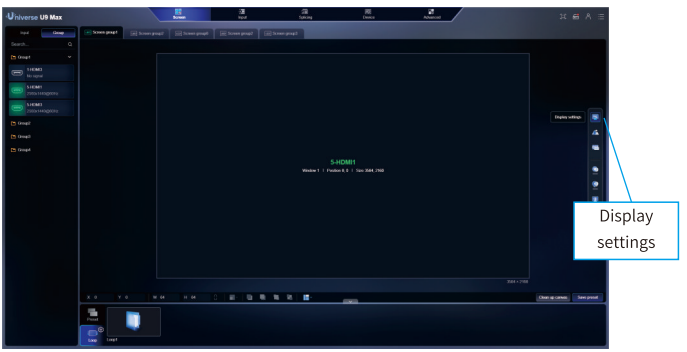
- Set the duration for each preset in the loop, then click **Exit** to return to the **Screen** interface. Click **Loop** at the bottom, select the newly created group, then click **Start** to begin loop playback.



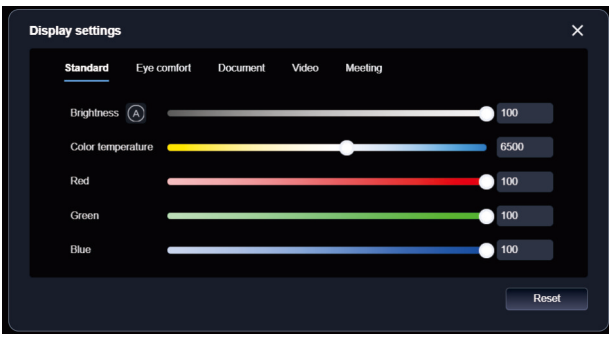
3.4 Display Settings

Display settings allows you to adjust the color parameters for the screen group.

In the **Screen** interface, click the display settings icon in the sidebar to open the settings window.



- Supports adjustments for color, brightness, and other parameters.
  > LED screen group: Adjust brightness, color temperature, and RGB.
  > LCD screen group: Adjust brightness and color temperature.
- Display modes: Choose from **Standard**, **Eye comfort**, **Document**, **Video**, and **Meeting** modes.
- Brightness adjustment by port group:
  Brightness can be adjusted by grouping Ethernet ports. Create a group and drag the Ethernet ports into the group, then adjust the brightness for the group. The default brightness for a group is 50%.
- Reset: Click **Reset** in the bottom right corner to restore brightness, color temperature, and other parameters to their default values.

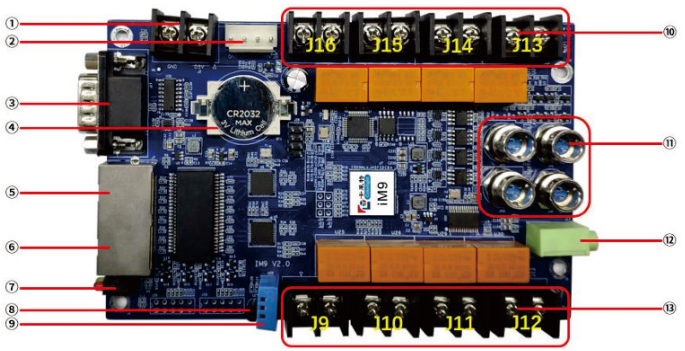


- **Auto-brightness**

  The Universe Series supports automatically adjusting the output brightness on LED display based on the brightness value detected by external devices (e.g. multi-function card).

- **Multi-function card**

  The iM9 multi-function card is an important accessory in Colorlight's LED display control systems for environment monitoring and remote control. It supports real-time detection of the LED display's operating environment, such as the temperature, humidity, and smoke, ensuring a safe operating environment for the LED display. It can also detect the ambient brightness of the LED display and allows for automatic adjustment of the display's brightness based on the detected value and a predefined adjustment rule, thereby realizing energy savings and ensuring optimal display effect. Moreover, the iM9 features multiple relays to remotely control the on/off status of devices such as air conditioners, fans, and power distribution cabinets.



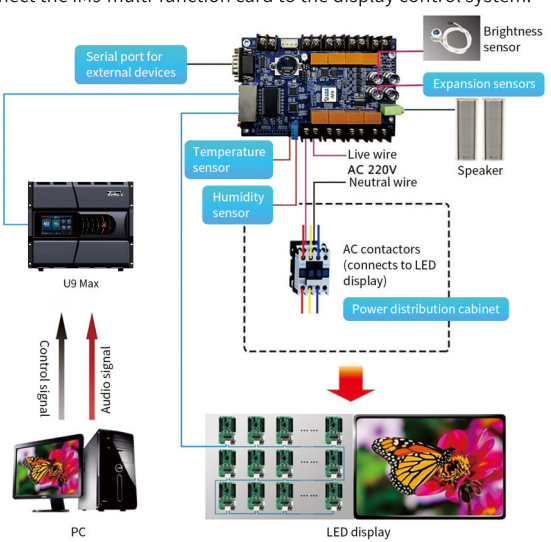
The iM9 multi-function card

Description of iM9 Connectors			
No.	**Name**	**Function**	**Note**
1	Power supply 1	Connects to power supply.	Use either one; Supports reverse polarity protection
2	Power supply 2	Connects to power supply.	
3	RS-232	Used for external device control.	-
4	Coin cell holder	Applicable to CR2032 coin cell.	-
5	Ethernet port A	Connects to a sending device or receiving card.	Interchangeable ports for input or output.
6	Ethernet port B	Connects to a sending device or receiving card.	
7	Status LED	Indicates the status of the power supply and signal transmission.	Steady red: normal power supply; Blinking green: normal signal transmission
8	Temperature sensor	Detects the ambient temperature.	-
9	Humidity sensor	Detects the ambient humidity.	-

No.	Name	Function	Note
10	Relay connectors (J13-J16)	Connects to relays to automatically power on / off the connected devices with a delay. J13-J16 can be controlled by temperature separately.	Max. current: 3A
11	Expansion interfaces for detection	Supports real-time detection of brightness, humidity, smoke, and so on.	Optional; Consult with Colorlight' technical support if needed.
12	Audio output port	Parses and outputs the audio signal transmitted from the sending device via the network cable.	
13	Relay connectors (J9-J12)	Connects to relays to automatically power on/off the connected devices with a delay. J9-J12 are linked.	Max. current: 3A

Take the following steps to install the multi-function card and enable auto-brightness:

Step 1 Connect the iM9 multi-function card to the display control system.

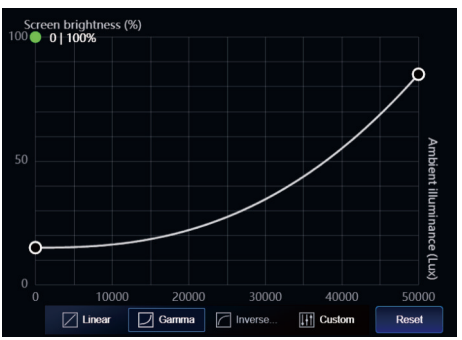


Step 2 Navigate to **Advanced** > **Accessories** and then select the target screen to access **Multi-function card**. Next, click **Detect** to detect available multi-function cards. If no multi-function card is found, check the cable connection of the cards.

Step 3 Switch on the toggle for **Auto-brightness**. There are 4 adjustment methods available. See pictures below:

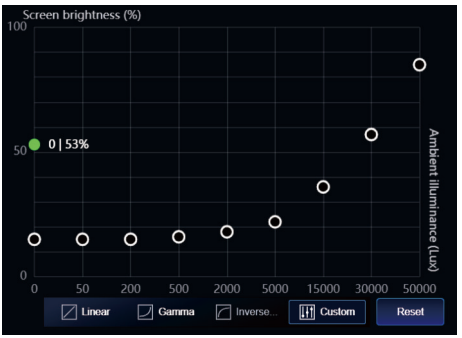
- Linear

- Gamma



- Inverse gamma

- **Custom**



- Click **Reset** to return to the default auto-brightness adjustment method. The brightness changes within the range of 0-100%.

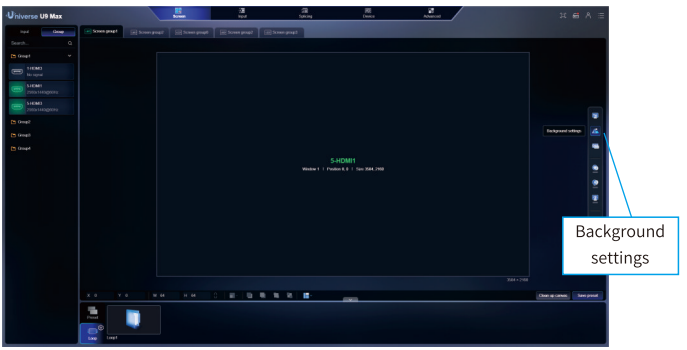
Step 4 After selecting the adjustment method, the brightness of the screen groups connected to the multi-function card will be automatically adjusted according to the ambient light. When auto-brightness is disabled, the brightness of the LED display will be reset to the default value (i.e., the value set by the Universe series device).

3.5 Background Settings

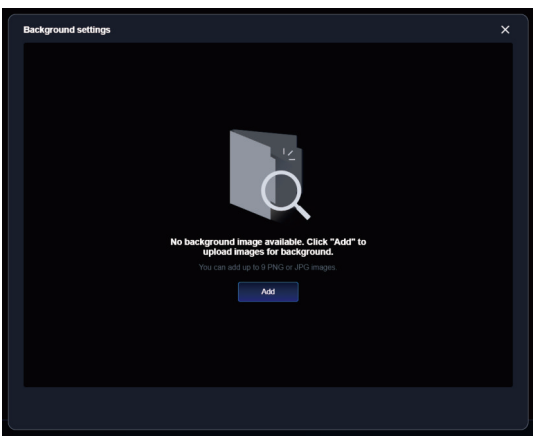
The background image is set for the screen group, and each screen group can have one background image.

- **Upload a background image**

  Step 1 In the **Screen** interface, click the background image icon in the sidebar.

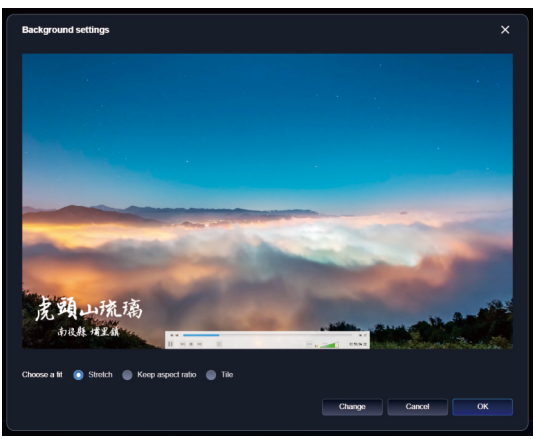


  Step 2 Click **Add**, then select an image from your local files.



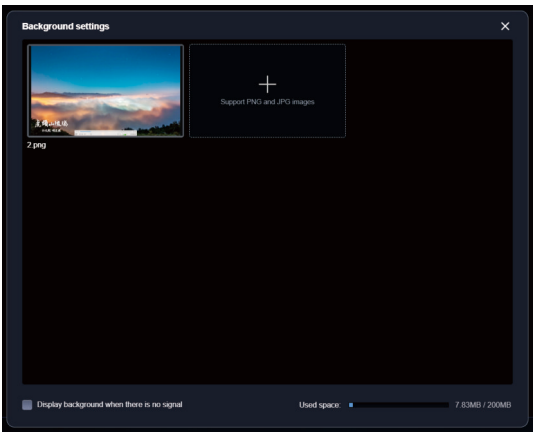
Step 3 Choose a display mode: **Stretch**, **Tile**, or **Keep aspect ratio**, then click **OK** to complete the upload.

- Background images must be in PNG or JPG format.
- You can upload up to 9 background images per screen group. The total size of background images cannot exceed 200 MB.
- The same image can be uploaded multiple times.
- Both LED and LCD screen groups support background images.
- Preview the effects of **Stretch, Tile**, and **Keep aspect ratio** modes in the background settings.
- To replace an image, select a new one and click **Change**.

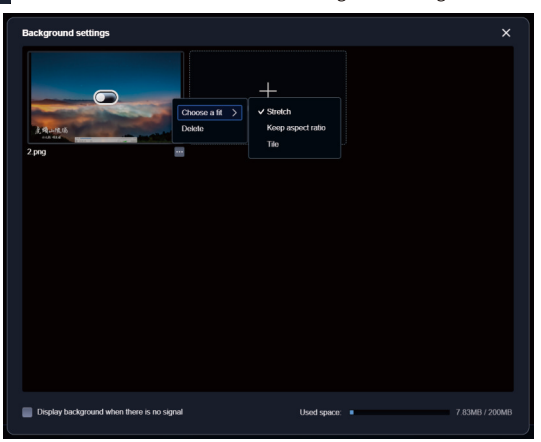


Step 4 Click  to enable the background display.

- **Display background when there is no signal**: When there is no signal on the canvas, the screen will only display the background image.
- The bottom right corner displays the used and total space for background images.



- **Background display settings**
  - Click  to enable or disable background display.
  - Click  to choose a fit or delete current background image.



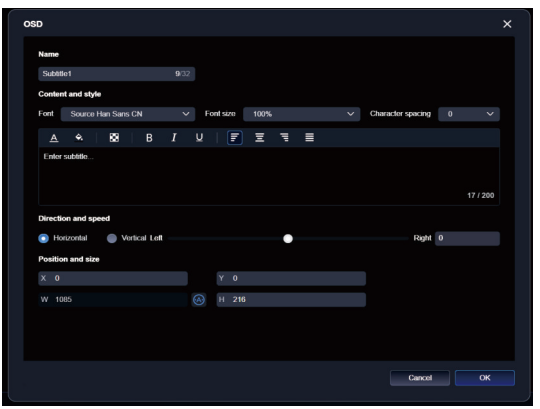
3.6 OSD Settings

The OSD settings allow for the display of texts, images, and videos.

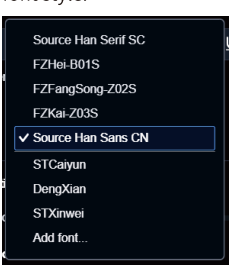
3.6.1 OSD Text

Step 1 In the **Screen** interface, click the OSD icon in the sidebar.

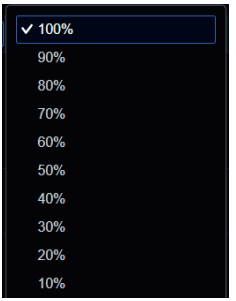
Step 2 Select **Text** and enter the text you want to display.



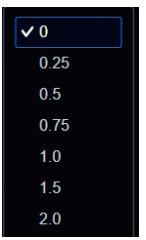
- **Edit subtitle name**
  You can change the subtitle name, which defaults to "Subtitle 1".
- **Edit subtitle content**
  - **Font**: Selected the desired font style.



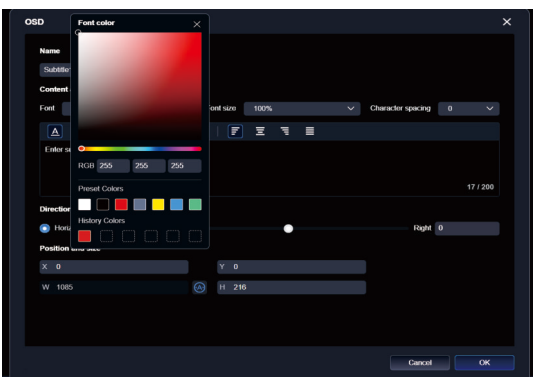
- **Font size**: Adjust the font size relative to the subtitle display area. The default is 100%, with increments of 10% down to a minimum of 10%.



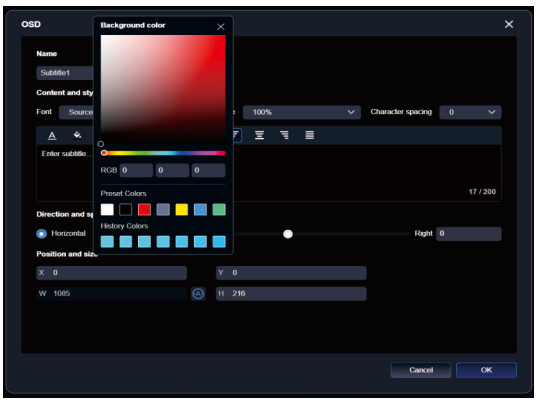
- **Character spacing**: The default is 0, with increments of 0.25 up to a maximum of 2.



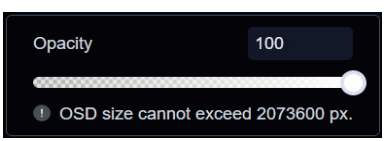
- **Font color**: Click  to customize the font color using RGB (Red, Green, Blue) values, or select from presets or recently used colors.



- **Background color**: Click  to customize the text background color using RGB (Red, Green, Blue) values, or select from presets or recently used colors.



- **Opacity**: Click  to adjust the opacity. You can drag the slider or enter a custom value. The default is 100%.



- Text formatting: Supports **Bold**, **Italic**, **Underline**, **Align left**, **Center**, **Align right**, and **Distributed**.

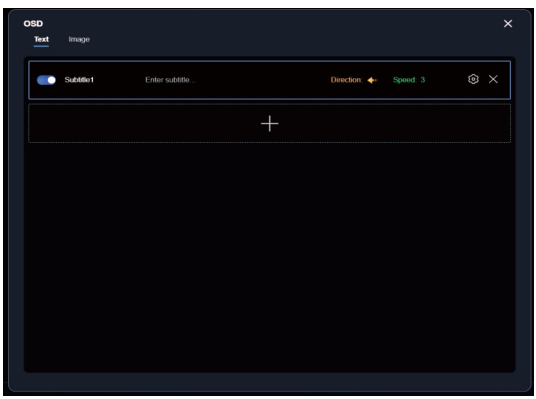
- Character limit: Each subtitle supports up to 200 characters.

- **Subtitle movement direction and speed**
  - Movement direction: Choose between **Horizontal** (left-right) and **Vertical** (up-down).

  - Movement speed: To adjust the subtitle movement speed, drag the slider or enter a value (0-20) in the field.

- **Subtitle position and size**
  - You can modify the display position and size of subtitles on LED or LCD screen groups. The default coordinates are (0,0).

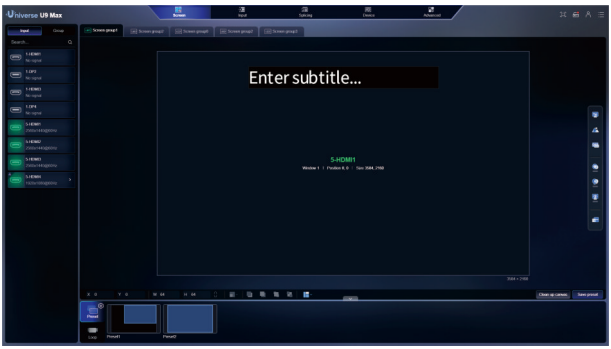
Step 3 Enter the subtitle content, adjust the font color, size, and other parameters, then click **OK**. A 100% progress prompt indicates that the subtitle has been successfully added.



Step 4 Click  to enable the subtitle, which will appear in the corresponding area of the screen.

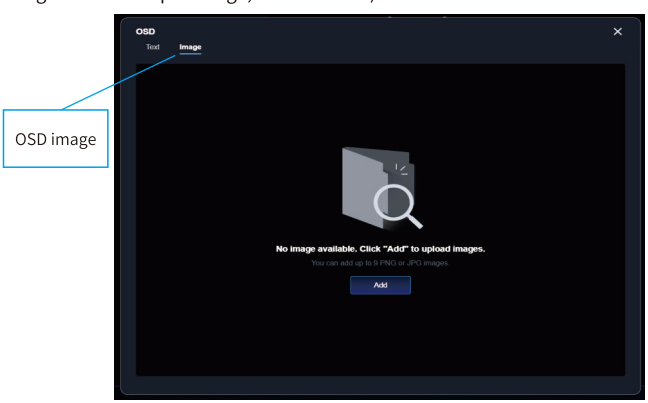
Step 5 You can modify subtitle settings in real-time:

- Custom positioning: Adjust the subtitle's coordinates (X, Y) for precise placement.
- Manual positioning: Drag the subtitle to any desired position within the window.
- Speed and direction: Set the movement speed and direction (horizontal or vertical).
- Lock subtitle: Click  in the top right corner of the subtitle to prevent any modifications. Click  to unlock it for editing.
- Close subtitle: Click  in the top right corner of the subtitle to quickly close it.



3.6.2 OSD Image

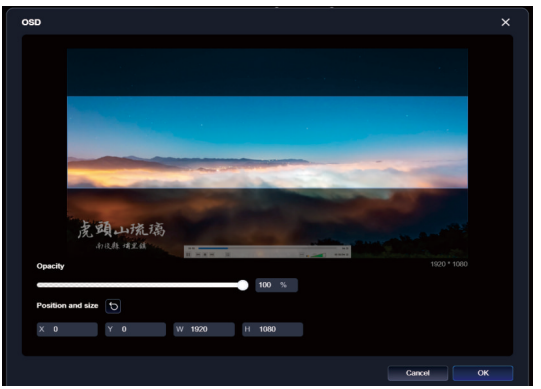
Step 1 In the **Screen** interface, click the OSD icon in the sidebar, select **Image**, and add an image (.jpg or. png) from your local files. You can upload up to 9 images.(Maximum image size: 20 MB per image; 200 MB total.)



Step 2 Edit the image and click **OK** to upload it.

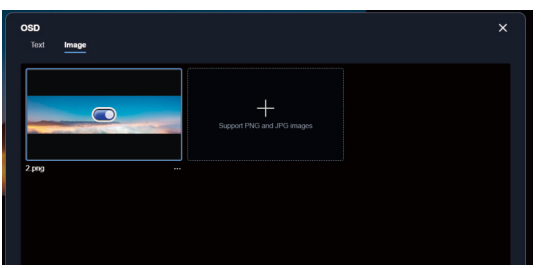
- Cropping: Drag the frame edges to crop the image.
- **Opacity**: Use the slider or enter custom values (default: 100%) to adjust the opacity.
- **Position and size**: Enter specific values to precisely adjust the position and size. The default coordinates are (0, 0). The size can be the original or cropped dimensions.

- Adjust direction and speed: The default direction is horizontal (left/right adjustment). When vertical direction is enabled, the slider adjusts up/down. The default speed is 0, with an adjustment range of -20 to 20.



Step 3 Click to enable the OSD image, which will appear in the corresponding area of the screen.

- Click ••• to edit or delete the image.



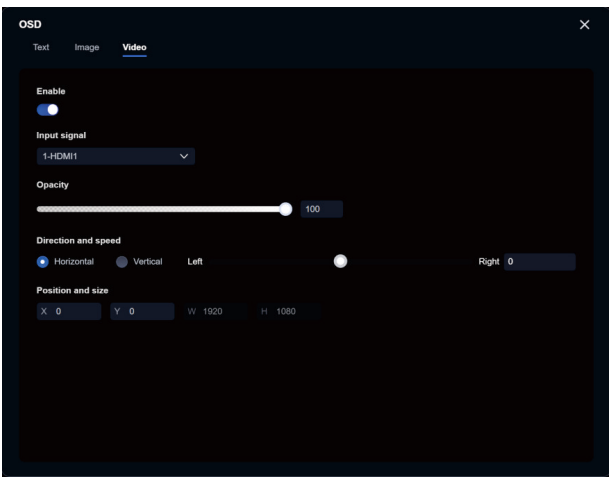
Step 4 Edit the image as required. The changes will apply to both the window and the LED or LCD screens.

- Custom positioning: Adjust the image' s coordinates (X, Y) for precise placement.
- Manual positioning: Drag the image to any desired position within the window.
- Lock image: Click in the top right corner of the subtitle to lock it, preventing any modifications. Click to unlock it for editing.
- Close image: Click in the top right corner of the image to quickly close it.

3.6.3 Video OSD

Step 1 Click **OSD** on the right side of **Screen**, click **Video**, turn on the switch, and choose an input signal from the drop-down list.

- The default is the first input signal. The drop-down list supports video sources from input boards and cropped signals; IPC signals are not supported.
- To select a main signal, click to select it.
- To select a cropped signal, hover to expand the secondary crop menu, then click the desired cropped signal.



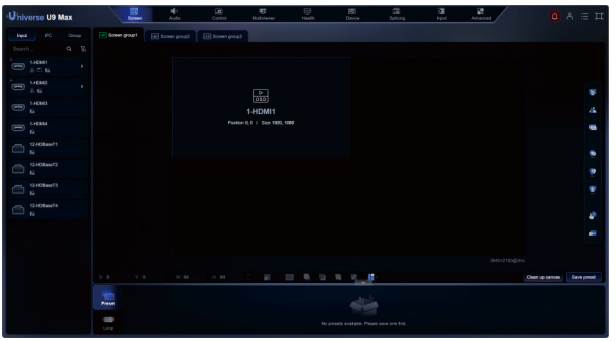
Step 2 Edit the video.

- Opacity: Default 100%; adjustable via slider, value box, or fine-tune buttons (step = 1).
- Direction: Default **Horizontal** (left/right). Select **Vertical** for up/down adjustment.
- Speed: Default 0; range -20 to 20.
- **Position and size:** Default OSD position is (0, 0); the display area defaults to the input signal width and height.

Step 3 Click  to display the video in the corresponding screen area.

- The video rendered in the window matches the display on the LED/LCD screen.
- Supports dragging to reposition the video.
- Lock: Click  or  in the upper-right corner to lock/unlock the video.

- Close: Click × in the upper-right corner to close the video.



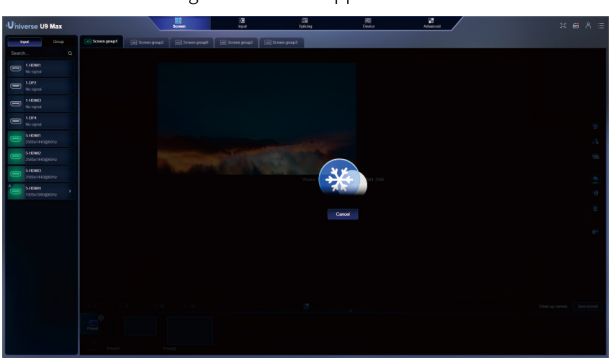
Note

When Video OSD is enabled, the Fade function may not work.

3.7 Freeze and Blackout

3.7.1 Freeze

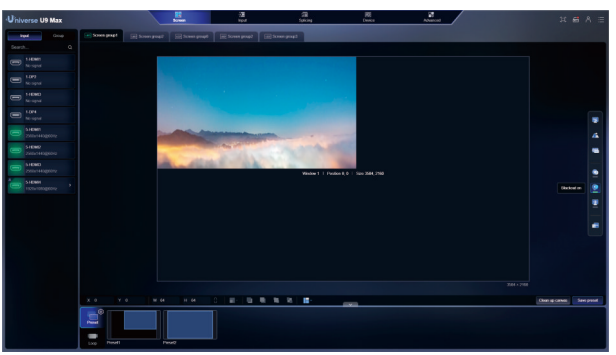
- Enable **Freeze**: In the **Screen** interface, click the freeze icon in the sidebar to enter freeze mode. The screen will display the last frame, and no further actions can be performed on the current signal in the web application.



- Disable **Freeze**: Click **Cancel** to exit freeze mode. The screen will resume normal operations and display dynamic content.

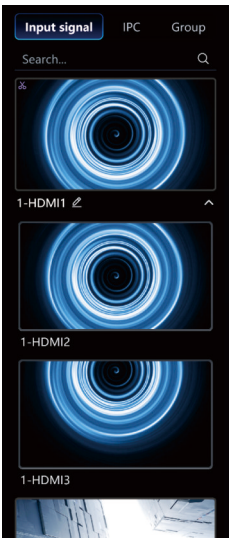
3.7.2 Blackout

- Enable **Blackout**: In the **Screen** interface, click the blackout icon in the sidebar to enter blackout mode. The LED or LCD screen will turn black, and a green indicator will appear below the blackout icon.
- Disable **Blackout**: Click the blackout icon again to exit blackout mode. The screen will return to normal display.



3.8 Multiviewer

- Enable **Multiviewer**: Click in the sidebar. The **Input signal** list displays real-time images from each input signal, the IPC list displays IPC image, and the screen shows the current output image.



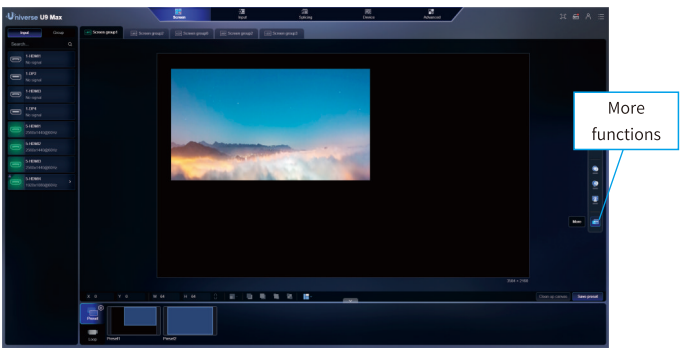
- Exit **Multiviewer**: Click again to exit **Multiviewer**.

Note

A compatible preview board (optional) is required.

3.9 More Functions

In the **Screen** interface, click the more icon in the sidebar to access additional settings, including **HDR**, **Precise color management**, **3D**, **Test pattern**, **Sync signal**, **Virtual pixel**, **Better grayscale at low brightness**, **Frame rate multiplication**, **Fade**, and **VSync delay**.



3.9.1 3D Function

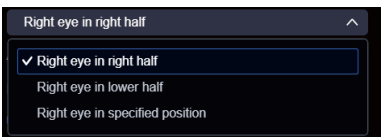
3.9.1.1 Single 3D

The 3D function is designed to work with Colorlight's 3D emitter and 3D glasses, displaying 3D effects on LED, LCD, or projection screens.

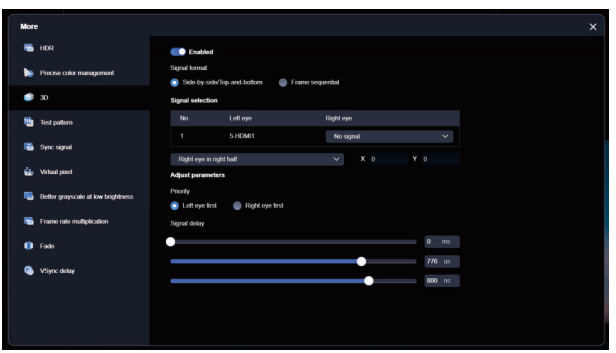
To enable **3D**, click the more icon in the sidebar of the **Screen** interface to access additional settings. Then select **3D** and click the icon.

- Enabling 3D will reduce the device's output load capacity by half.
- Select a desired refresh type for the signal: **Side-by-side/Top-and-bottom**.
- Signal selection:
  - Left eye: Displays the current screen's signal by default.
  - Right eye: You can select the same signal as the left eye or a different signal.
- Eye position:
  - Right eye in right half.
  - Right eye in lower half.

- Right eye in specified position: If this option is selected, you can manually adjust the right eye signal's offset (X, Y).



- Eye priority: Select either **Left eye first** (by default) or **Right eye first**.
- Signal delay: Adjust the signal delay time to synchronize the left and right eye images of the 3D glasses with the screen.



⚠ Note

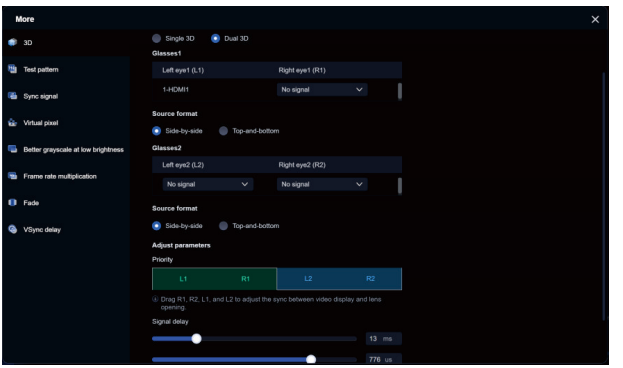
- The default signal delay is 7ms + 768μs + 0ns. Fine-tune this setting based on the actual 3D effect.
- The low-latency and 3D functions of the sender are mutually exclusive.

3.9.1.2 Daul 3D

In the **Screen** interface, click **More** in the right-side menu, go to the **3D** tab, and select **Daul 3D**.

- Enabling 3D will reduce the device output load by half.
- Select the input signal for the right eye of **Glasses 1**.
- Choose the **Source format** as needed: **Side-by-side/Top-and-bottom**.

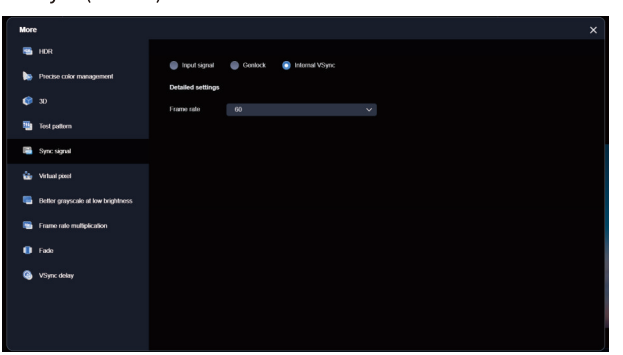
- Select the input signal for the left eye of **Glasses 2**, then the input signal for the right eye of **Glasses 2**.
- Adjust the left/right positions for **Glasses 1** and **Glasses 2**.
- Set the **Signal delay** duration.



3.9.2 Sync Signal

Click **Sync signal** in the sidebar to configure the sync signal. You can select from internal VSync, Genlock, or an input signal.

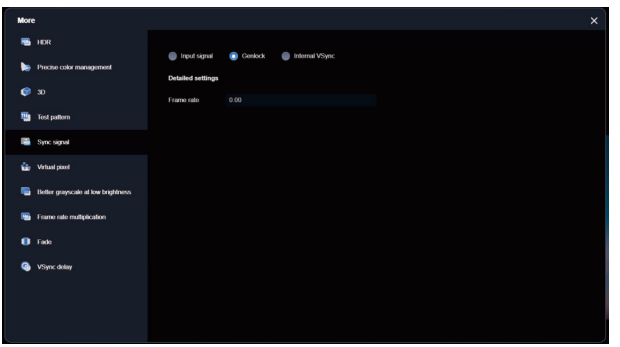
- **Internal VSync (default)**



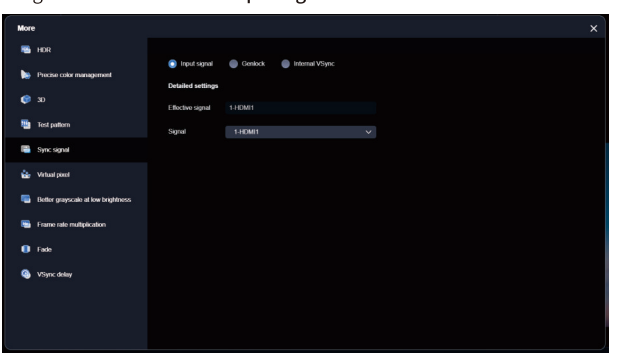
- The default frame rate is 60Hz. You can adjust the frame rate ranging from 23.97Hz to 240Hz.
- Available frame rates: 29.97Hz, 30Hz, 50Hz, 59.94Hz, 60Hz, 120Hz, and 240Hz.
- Custom frame rates are supported with compatible receiving cards.

- **Genlock**

  To use Genlock as the sync signal, connect a Genlock signal generator or another video splicer to the GENLOCK-LOOP port for a stable frame rate. The signal format will then be recognized.



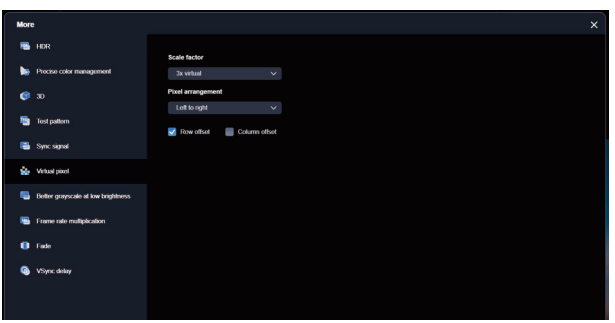
- **Input signal**
  - When **Input signal** is selected as the sync signal, its frame rate matches that of the active signal selected from the **Input signal** list in the **Screen** interface.



3.9.3 Virtual Pixel

Prerequisite: Ensure the receiving card supports the **Virtual pixel** function. If not, please contact Colorlight technical support for a program upgrade or card replacement.

- **Scale factor**: Choose from **4x virtual**, **3x virtual**, or **0.75x virtual**.
- **Pixel arrangement**: Choose either **Left to right** or **Top to bottom** according to actual requirements.
- Offset type: Select either **Row offset** or **Column offset**.
  - **Row offset**: Enabling this option shifts the display image one pixel horizontally. Disabling it shifts the image back by one pixel in the same direction.
  - **Column offset**: Enabling this option shifts the display image one pixel vertically. Disabling it shifts the image back by one pixel in the same direction.



3.9.4 Better Grayscale at Low Brightness

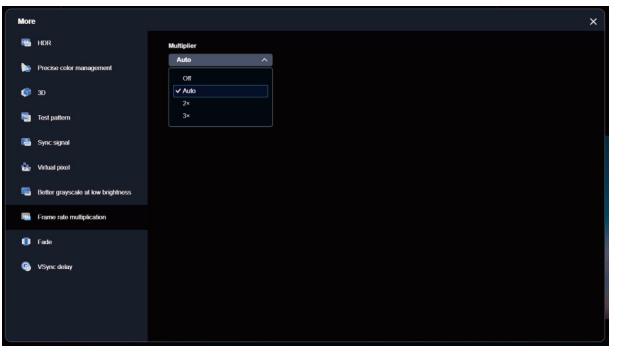
Better grayscale at low brightness optimizes display performance at low brightness conditions. By default, this function is enabled. Click  to disable it if needed.

3.9.5 Frame Rate Multiplication

Frame rate multiplication adjusts the output frame rate by multiplying the sync signal's frame rate with the selected multiplier. Choose an option as needed:

- **Off**: Uses the frame rate from the sync signal by default.

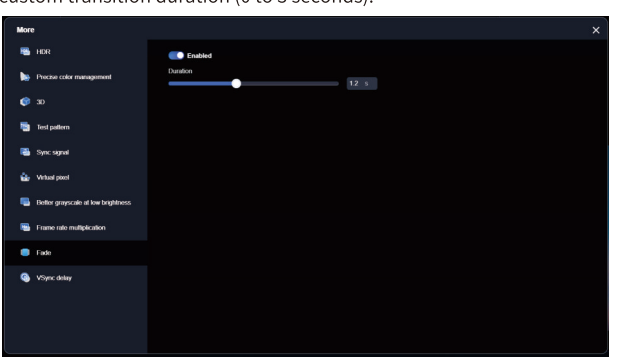
- **Auto**: Automatically adjusts frame rates below 60Hz to approximately 60Hz.
  - For frame rates ⩽ 24.61Hz: Multiplied by 3.
  - For frame rates > 24.61Hz and ⩽ 49Hz: Multiplied by 2.
- **2×/3×**: Multiplies the sync signal's frame rate by 2 or 3, depending on your selection.



3.9.6 Fade

The **Fade** function creates a smooth transition effect between presets. To apply this effect during transitions, configure multiple presets and enable **Fade**.

- Click  to enable **Fade**.
- Set a custom transition duration (0 to 3 seconds).



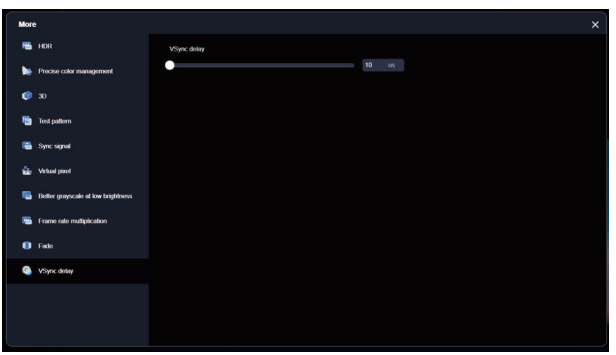
3.9.7 VSync Delay

The **VSync delay** function calibrates delay on the current sending device to ensure image synchronization.

Step 1 Use the delay measurement tool to determine the current signal delay offset.

Step 2 Set the VSync delay parameters.

- The delay parameters support both manual and custom adjustments.



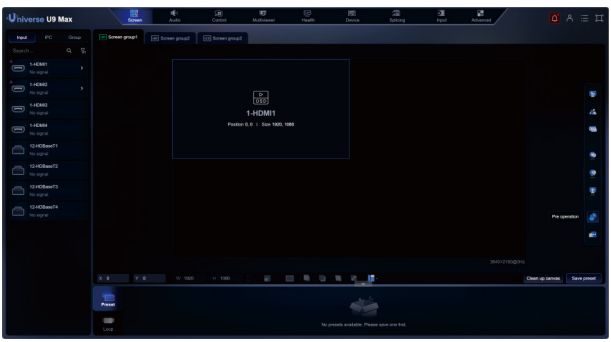
Note

If the total delay of the sender, IC chip, and receiving card is 10 ms, and the delay is set to 5 ms, the total device delay will be 15 ms.

3.10 Pre-Edit

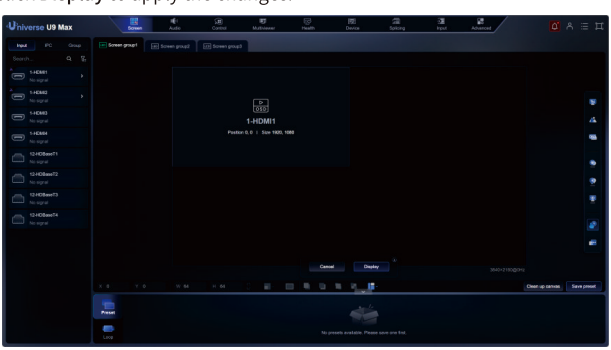
When **Pre-Edit** is enabled, changes made in the window only take effect after clicking **Display**. The pre-edit button is the second-to-last button in the right-side toolbar.

Step 1 Click  to enable **Pre-Edit**.



Step 2 Edit the input signals within the screen, such as adjusting input signal size, layer position, or layer border.

Step 3 Click **Display** to apply the changes.

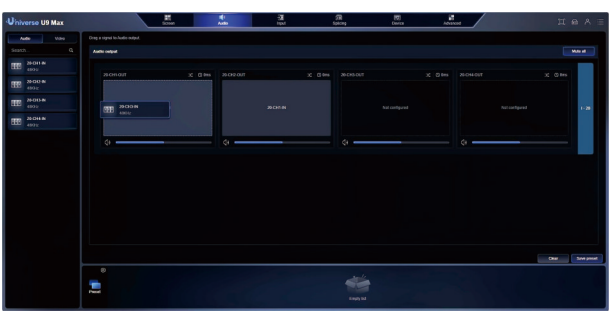


04 AUDIO MANAGEMENT

Click **Audio** to configure audio output for various connectors such as Phoenix, HDMI, DP, and DVI.

4.1 Audio Ports

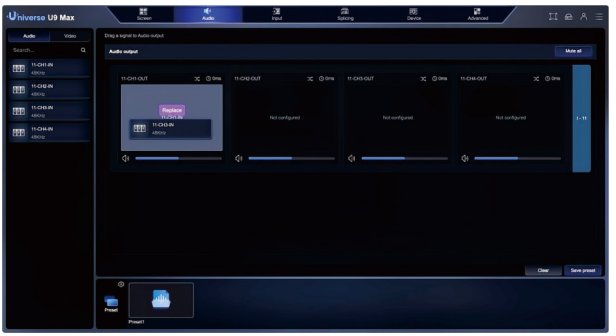
- **Audio port information**
  The left side of the **Audio** interface displays the sampling rate, real-time level, and operating mode of the audio port.
- **Configure audio sources**
  Drag audio sources from the left to the desired output ports on the right, as shown below:



- Configure without **Audio mixing**
  > Mono Input → Mono Output: Can be assigned to any single output port.
  > Mono Input → Stereo Output: Can be assigned to either port of the stereo output.
  > Stereo Input → Mono Output: Odd/even-numbered input can be assigned to the corresponding odd/even-numbered output port.
  > Stereo Input → Stereo Output: Freely assigned to both output ports.
- Configure with **Audio mixing**
  > Mono Input → Mono Output: Can be assigned to any 1 of the 4 output ports.
  > Mono Input → Stereo Output: Can be assigned to any 1 of the 8 output ports.
  > Stereo Input → Mono Output: Odd/even-numbered input can be assigned to the corresponding odd/even-numbered output port (any 1 of 4).
  > Stereo Input → Stereo Output: Occupies all output channels.

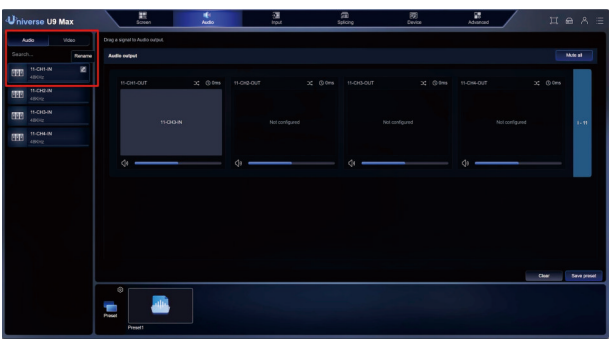
- **Replace audio sources**

  Drag an audio source from the left **Audio** list and drop it onto the target output port. The port outline will change from blue to purple, and a "**Replace**" tip will appear, indicating that the current audio will be replaced, as shown below.



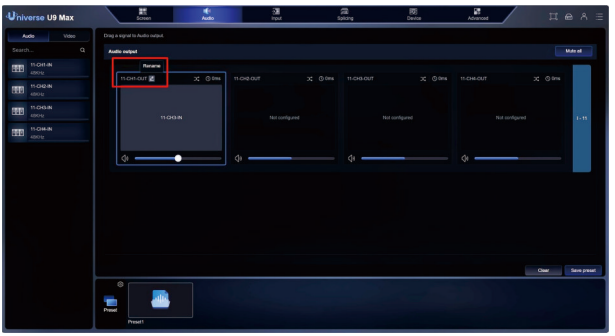
- **Rename audio input ports**

  Hover over the audio input port you want to rename. An edit icon will appear in the top right corner; click to rename the port.



- **Rename audio output ports**

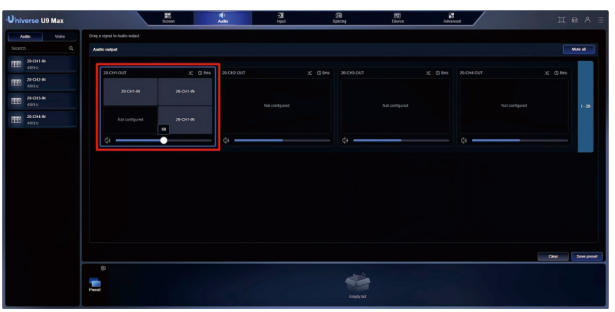
  Hover over the audio output port you want to rename. An edit icon will appear in the top left corner; click to rename the port.



- **Adjust output volume**

  The output volume of audio output ports is adjustable.

  - Default: 50%. Adjust via volume slider (range: 0–100, step: 1).
  - 3 ways to mute: Click the speaker icon; use the **Mute all** function; drag the volume slider to 0.
  - Stereo output ports are adjusted simultaneously.
  - After changing the operating mode of a port, the volume resets to the default 50%.

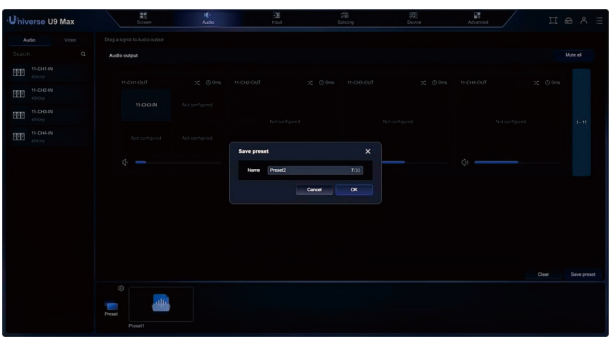


4.2 Audio Presets

After configuring the audio output port, you can save the current settings as a preset for future use.

- **Save presets**

  Step 1 In the **Audio** interface, click **Save preset** in the bottom right corner to open the dialog box.



  Step 2 You can also name the preset with a descriptive name for easier identification.

  Step 3 Click **OK** to save the audio preset.

Note

The Universe Series supports up to 128 audio presets.

- **Switch between presets**

  All available audio presets are displayed at the bottom of the **Audio** interface. Click the desired preset to switch to it.

- **Delete presets**

  Method 1: Hover over the preset to display the ••• icon, then select **Delete** from the pop-up menu.

  Method 2: Click the **Preset settings** icon , then select multiple presets to delete. Click the **Delete selected** button to remove them.

4.3 Mute All and Unmute

To mute or unmute all video outputs, click the Mute all / Unmute button in the top right corner.

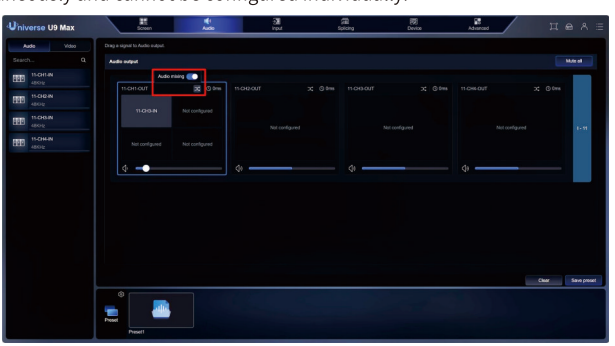
- **Mute all**
  If any audio output is not muted, the button will display **Mute all**. Click it to mute all audio outputs.
- **Unmute**
  When all outputs are muted, the button changes to **Unmute**. Click it to restore all outputs.
  If one output is unmuted manually, the button switches back to **Mute all**.

4.4 Audio Mixing

Enable the **Audio mixing** toggle in the **Audio** interface to activate this function.

When **Audio mixing** is enabled:

- Each output port contains 4 output channels and supports 4 audio inputs.
- The configured input audio will be switched to the first channel.
- Delay, audio test, volume adjustment, and other functions apply to all 4 channels simultaneously and cannot be configured individually.

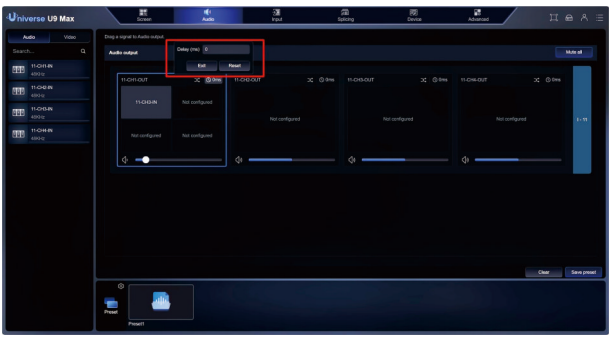


4.5 Delay

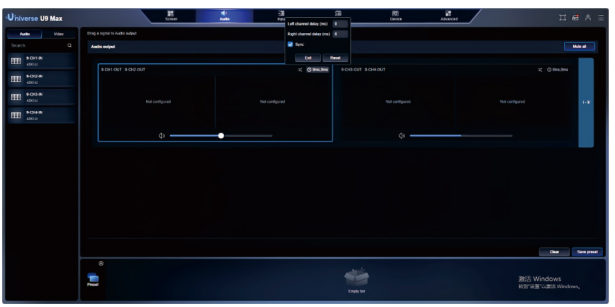
This function allows you to set the desired delay time for each audio channel.

Set delay time:

- Click the **Delay settings** icon to open the settings window.
- Mono: In the pop-up window, enter the desired time in the **Delay** input field.



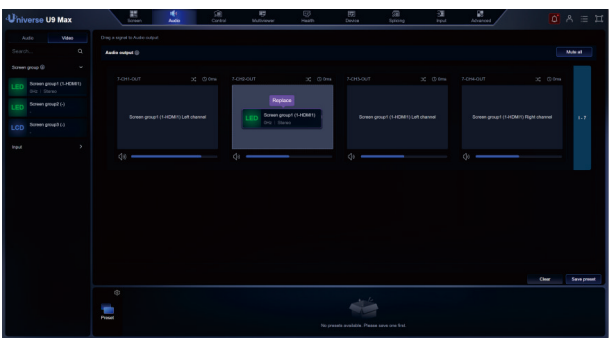
- Stereo: **Sync** is enabled by default, allowing real-time synchronization of delay between the two channels. Deselect this option to adjust them separately.



4.6 Audio-Video Linking

This function allows a screen group to be dragged into an audio output port, outputting the audio of the topmost input signal within the screen group.

- Playback logic: Priority is given to the topmost window, and the window must contain a valid input signal.
- Screen group list and the input signal list: Screen groups and input signals can be interchanged in the audio output window. Screen group sources support the same functions as regular input signals.



05 INPUT CONFIGURATION

Click **Input** to access the section where you can modify the settings of input signals, add signal logos (text or image), crop the signals, set the EDID, adjust the color and brightness, and group the signals.

5.1 Signal Logo

The Universe Series devices support adding logo (text or image) to inputs for identification.

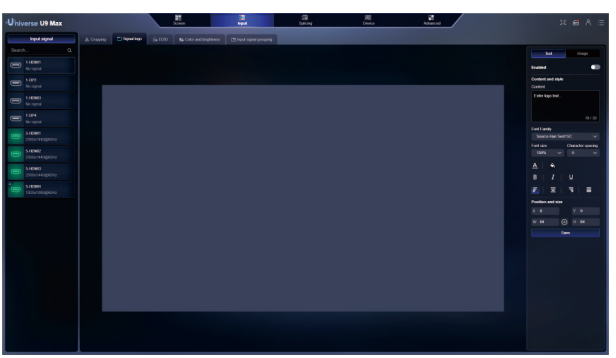
A signal logo helps you distinguish between different input signals. To add a signal logo for an input signal, select the **Signal logo** tab in **Input** section. A logo can be either textual or an image.

5.1.1 Textual Logo

To add a textual logo, take the following steps:

Step 1 Navigate to **Input** > **Signal logo** and then select the desired input signal.

Step 2 By default, the tab is for adding a textual logo. Enter the text content and set the style and position of the logo. The overall effect can be previewed on the middle of the tab.



- The text content should not exceed 30 characters.
- The logo is displayed at the upper left corner (0,0) of the input signal by default. You can change the position by modifying the **X** and **Y** coordinates under **Position and size**.

- The size of the logo can be modified by entering desired width and height respectively in the **W** and **H** input boxes. (Max. size: 512×512)
- In addition, you can also set the font, font size, character spacing, font color, background color of the text, and text style (bold / italic / underlined), and change the opacity of the text and its background as needed.

Step 3 Click **Save**. The signal logo will be displayed on the LED/LCD screen.

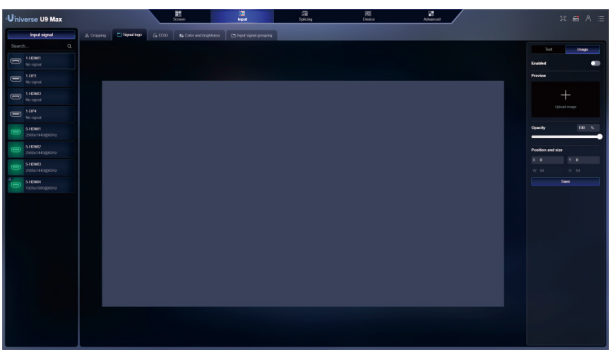
5.1.2 Image Logo

To add an image logo, take the following steps:

Step 1 Select **Image** on the right-side panel of the **Signal logo** tab. Click the icon "+" to upload a desired image, and then set the **X** and **Y** coordinates of the image.

- The image resolution should not exceed 512×512 pixels (256×256 pixels for the HDMI 1.3×6 input board).
- The opacity of the image is 100% by default and is adjustable.

Step 2 Click **Save**. The signal logo will be displayed on the LED/LCD screen.

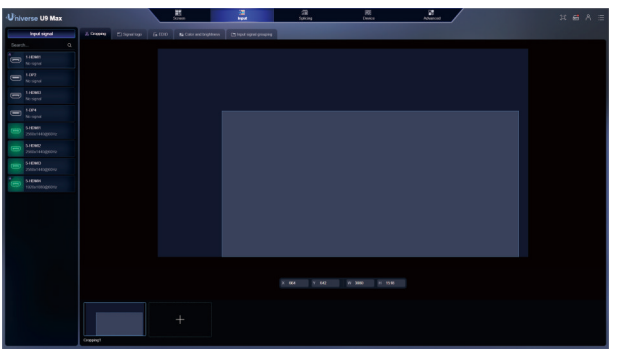


5.2 Cropping

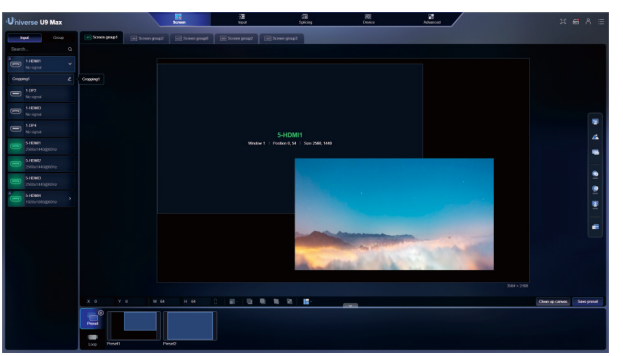
An input signal can be cropped. The cropped area of the original signal can serve as a standalone input signal.

Step 1 Navigate to **Input** > **Cropping**, then select a desired input signal for cropping. Next, click "+" to start cropping the selected signal.

- You can zoom in/out the selected signal for cropping. The cropping frame can be moved at will.
- To crop the signal accurately, you can enter the **X** and **Y** coordinates and the size (**W** and **H**) of the cropping frame on the bottom of the tab.
- The menu for deleting and renaming a cropped signal can be found by clicking the three-dot button ... at the bottom-right corner of the cropped signal.
- You can add up to 8 cropped signals for a selected input signal.



Step 2 In the interface of the **Screen** section, you can view the list of the cropped signals. You can display a desired cropped signal by dragging it to a target window on the right side.



5.3 Phase Adjustment

The Universe Series supports VGA input phase adjustment to ensure proper display of the input image.

5.3.1 Auto Mode

To enable automatic phase adjustment:

Step 1 Click **Input configuration**, and select the target VGA signal.

Step 2 Go to **Phase adjustment**. **Auto** mode is selected by default.

Step 3 Click **Apply**. The system automatically adjusts the position and phase based on the input signal.

5.3.2 Manual Mode

Select **Manual** for custom adjustments:

- Quick adjustment: Drag the slider to adjust parameters.
- Precise adjustment:
  - Hover over the input field and use the spin buttons.
  - Or enter exact values.

Parameters		
Name	**Function**	**Note**
Position (H)	0 to 50	1
Fine-tune (H)	-25 to 25	1
Position (V)	0 to 50	1
Fine-tune (V)	-25 to 25	1
Phase	0 to 63	1

Note

All parameters support both drag-based adjustment and 1-step incremental adjustment.

5.4 EDID Settings

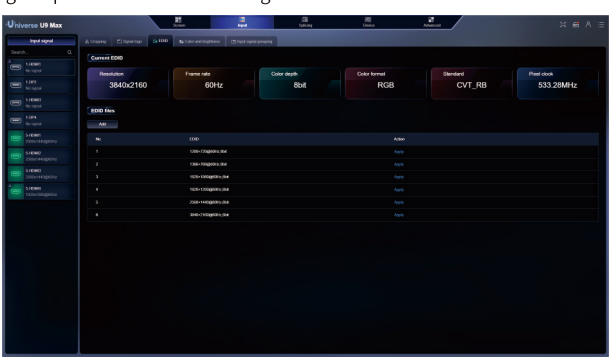
In the **EDID** tab,, you can modify the EDID settings of an input signal, including the resolution, color depth, timing standard, and so on. In terms of resolution, you can either select a provided option, or set a custom one as needed.

5.4.1 Provided EDID

To change the resolution of an EDID file with a provided option, click **Edit** on the row of the target EDID file in the list to bring up the window for editing the file. Next, select a desired resolution from the drop-down menu of **Resolution**. Once the graphics card of the host PC reads the new EDID, the input signal also changes its resolution correspondingly.

5.4.2 Custom EDID

The Universe Series device supports adding an EDID with custom resolution, or modifying the parameters of an existing EDID file as needed.



To create an EDID with custom resolution, take the following steps:

Step 1 Click **Add** to bring up the window for creating an EDID file.

- **W**: The width (resolution) of the input signal.
- **H**: The height (resolution) of the input signal.

- **Frame rate**: The frame rate of the input signal (60Hz by default).
- **Color depth**: Available options include **8bit** and **10it**.
- **Standard**: The timing standard within the EDID file. Available options include: **DMT**, **CVT**, **CVT-RB**, and **Custom**.
- **Pixel clock**: This value is determined automatically according to the previous setting items.

Step 2 Click **Save** to save the settings. Next, find the corresponding EDID file in the list and click **Apply.**

Step 3 Once the graphics card of the host PC reads the new EDID file, the input signal also changes its resolution correspondingly.

Auxiliary Functions

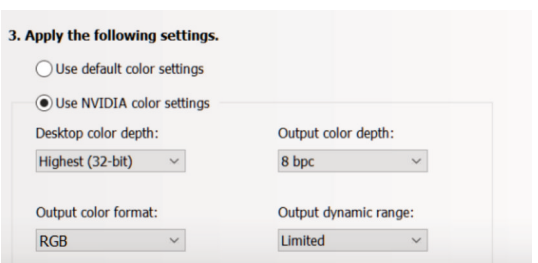
- **Upload**
  - Click **Upload** to open the system file manager. Select files with the .txt or .bin format and upload them. Batch upload is supported.
  - Uploaded EDID files can be deleted or downloaded. The list displays the file name and resolution information.
  - Uploaded EDID files cannot be edited. The **Edit** button is disabled, and a tooltip appears on hover "The EDID file you uploaded does not support editing."

- **Download**
  - When selecting an EDID file, the **Download** button becomes available. Click it to choose the file format (.txt or .bin).
  - For built-in and manually added EDID files, the system calculates the EDID based on the selected interface before downloading. The EDID file name is generated using the interface type and file name, for example: HDMI 1920×1080@60Hz. Uploaded EDID files do not require additional processing and can be downloaded directly.

5.4.3 Change Color Space

Available color formats include: RGB, YCbCr444, YCbCr422, YCbCr420.

In the NVIDA control panel, select the display (U-connector type) to change its color space. Select **Use NVIDIA color settings**, and then select the desired output color format. Next, click **Apply** to complete the settings.



5.5 Color and Brightness

This tab allows you to adjust the following settings for the selected input signal: **Brightness**, **Contrast**, **Brightness compensation**, **Saturation**, **Hue**, and **RGB** gain.

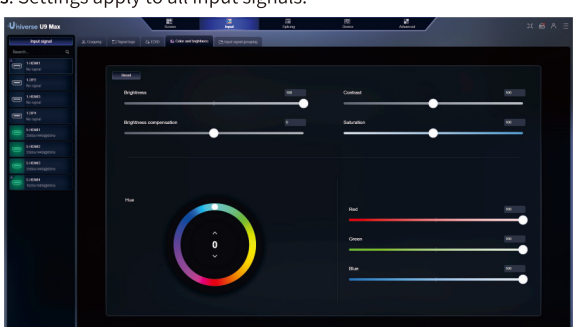
Navigate to **Input** > **Color and brightness**, and then select the desired input signal for adjustment.

- Quick adjustment: Drag the slider to adjust parameters.
- Precise adjustment:
  - Hover over the input field and use the spin buttons.
  - Or enter exact values.

Parameters			
Name	**Range**	**Default**	**Step**
Brightness	0 to 100	100	1
Contrast	0 to 200	100	1
Brightness compensation	-30 to 30	0	1
Saturation	0 to 200	100	1
Hue	-30 to 30	0	0.25
RGB	0 to 100	100	1

Apply to

- **Current port**: Settings apply only to the selected input signal.
- **All ports**: Settings apply to all input signals.

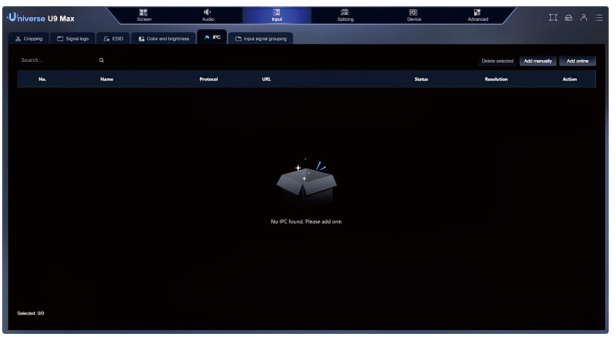


5.6 IPC

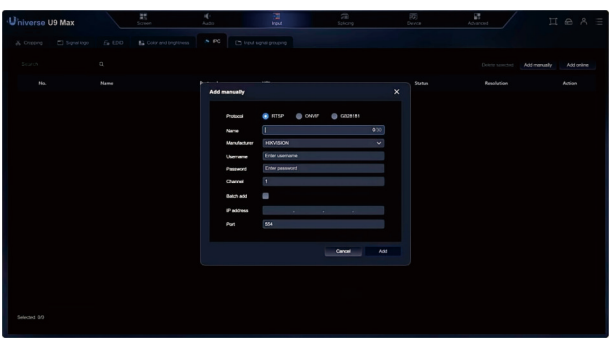
On the **Input configuration** > **IPC** page, you can add, edit, or delete IPC signal configurations.

- **Manually add IPC**

  Step 1 Go to **Input configuration** > **IPC**, then click **Add manually**.



  Step 2 Select a protocol, then enter the name, manufacturer, username, password, IP address, port, and other required information. Then click **Add** to complete the process.



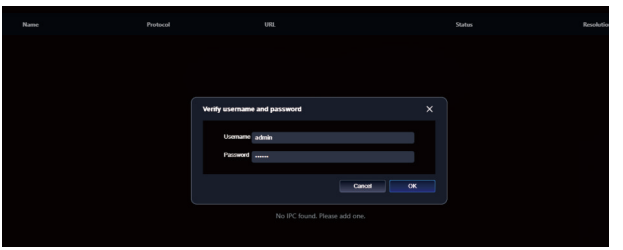
  - Batch addition is supported. Enter the start IP and end IP to batch add IP addresses.
  - For batch addition, select the checkbox first and ensure that the first three octets of the IP address are identical.

- **Add IPC online**

  Step 1 Click **Input configuration** > **IPC**, then click **Add online**.

  Step 2 Click **Search** to scan for IPCs.

  Step 3 Select the IPCs you want to add, then click **Add**. Enter the username and password, and click **OK** to complete the addition.



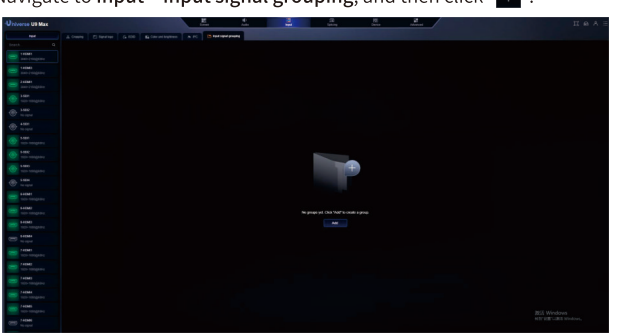
  - IPC search, editing, and deletion are supported.
  - The maximum number of IPCs that can be added is 64 × the number of IP boards.

5.7 Input Signal Grouping

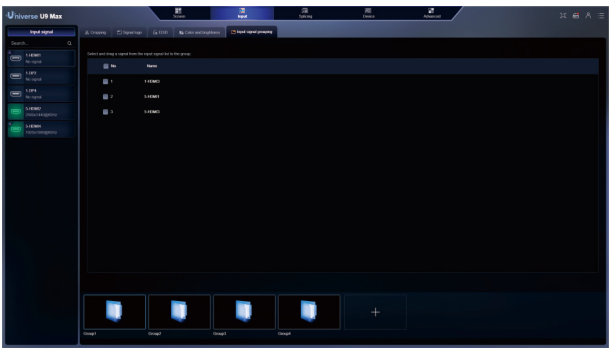
In the **Input signal grouping** tab, you can divide the input signals into several groups as needed.

To group the signals, take the following steps:

Step 1 Navigate to **Input** > **Input signal grouping**, and then click + .

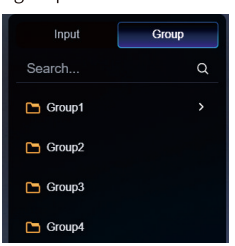


Step 2 Drag the desired input signal or IPC signal to the target input signal group.



- A signal group can be renamed or deleted.
- The input signals within a group can be selected (individually, in multiples, or all at once) for deletion.
- The grouping action does not change other actions to the input signals (e.g., cropping).
- You can search a particular signal for grouping via the search bar on top of the input signal list.
- The maximum number of signal groups is 8.

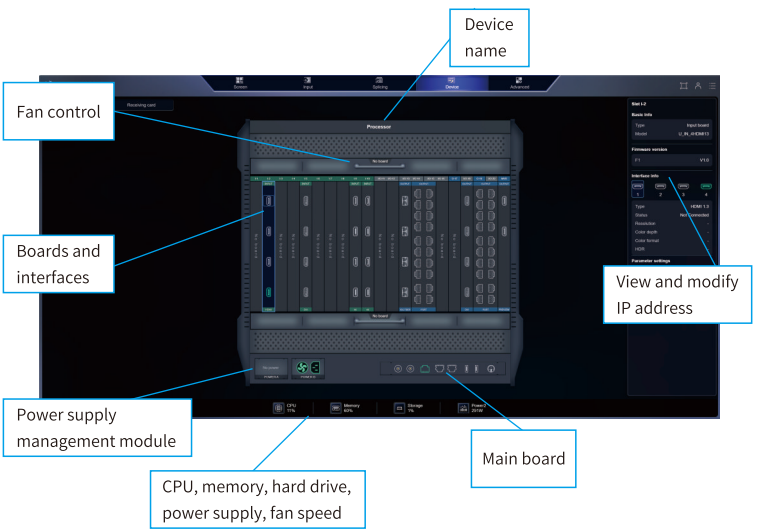
Step 3 You can view the signal groups under **Screen** > **Group**.



06 DEVICE MANAGEMENT

6.1 Basic Settings

Diagram for device management



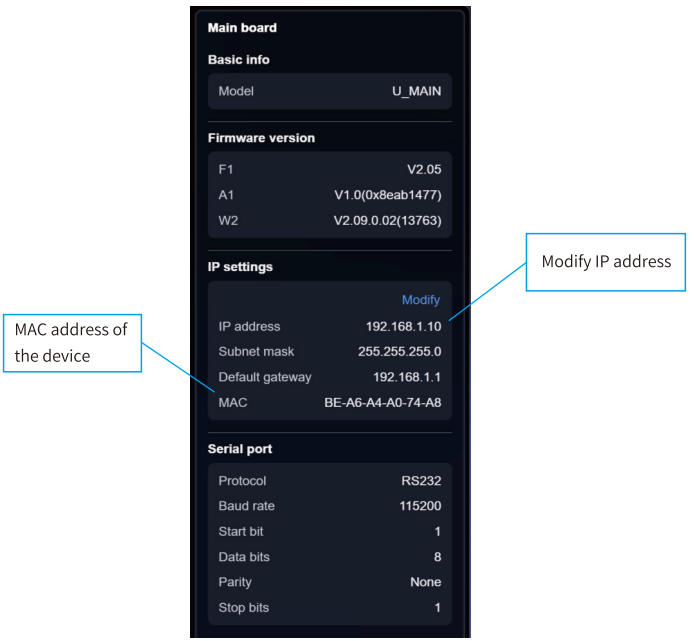
6.1.1 Rename Device

Hover over the device name area, and click the edit icon 

to start editing the device name in English or Chinese.

6.1.2 Modify Device IP Address

Click the main board area  to bring up a pop-up right-side panel, where you can view the detailed information about the board, including the MAC address, and modify the IP address.



- After changing the IP address, the web application will automatically redirect to the login page;
- The IP address of the login page also changes, and you should log in again with the account and password (original username: admin; original password: 123456).

⚠ Note

The device IP address must be different from the host PC's IP address.

6.1.3 Power Supply Management

Click the power supply management area to view the real-time power and fan speed of the power supply, so as to know the operating status of the device. The Universe Series device supports dual power supplies, and the redundant power supply is optional.

6.1.4 Cooling Fans Management

A cooling fan has 4 operation modes: **Auto**, **Mute**, **Balanced**, and **Full speed**. You can click the icon of a target fan and then select its operation mode. By default, the fans operate in **Auto** mode, adjusting their speed based on the chip's heating status to ensure the board's safe and stable performance.

You can view the fan speed by clicking the icon of the target fan.

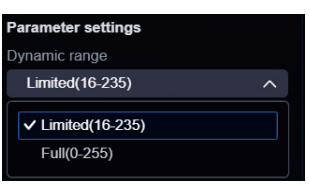
6.1.5 Input/Output Board Settings

You can click any one of the boards to view its basic information, including the slot number, board type and model, firmware version, and port information.

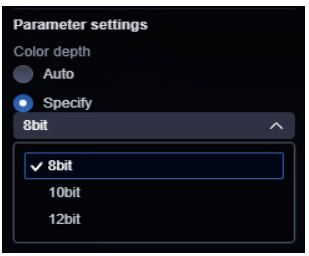
By clicking a port on the board, you can view its type, connection status, input/output resolution, color depth, and color space, and know whether it supports HDR. You can also set some important parameters for the port based on its type.

6.1.5.1 Input Ports

- HDMI 2.0/1.3 port, supporting switching of dynamic range between limited (16-235) and full (0-255).

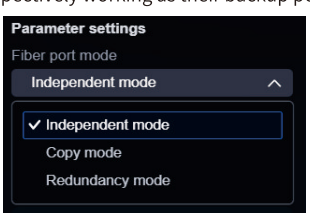


- HDMI 2.0, DP 1.2, and 3G/12G-SDI port, supporting specified color depth (8bit/10bit).

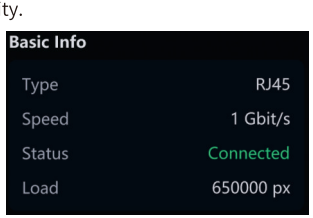


6.1.5.2 Output Ports

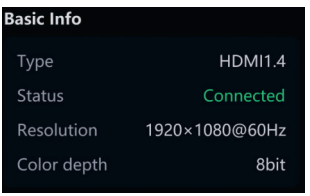
- 10G-Fiber ports, featuring 3 modes: **Independent mode**, **Copy mode**, and **Redundancy mode**. The panel shows the port's type, transmission speed, connection status, and load capacity.
  - **Independent mode**: All the 4 fiber ports can serve as an independent output port, each with a load capacity equal to that of 10 Ethernet ports (655,360×10 pixels).
  - **Copy mode**: Fiber 1 and Fiber 2 work as the primary output ports, with Fiber 3 and Fiber 4 respectively copying their output.
  - **Redundancy mode**: Fiber 1 and Fiber 2 work as the primary output ports, with Fiber 3 and Fiber 4 respectively working as their backup ports.



- 1G-RJ45 port. The panel shows the port's type, transmission speed, connection status, and load capacity.



- Video output ports (HDMI 2.0/1.4, and DVI). The panel shows the port's type, connection status, resolution, and color depth.



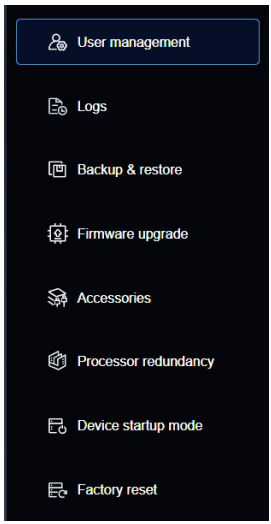
6.2 Device Maintenance

The Universe Series devices support real-time monitoring of its CPU status, memory usage, hard drive memory space, and the real-time power of the power supply. These information can be checked on the bottom of the device view.

- The device requires timely maintenance after running for a long time, when the CPU usage, hard drive memory usage, and memory usage are relatively high and are shown in red.

07 ADVANCED SETTINGS

In the **Advanced** tab, you can manage user accounts, import or export logs, backup device data, upgrade firmware, carry out redundancy configuration, perform factory settings, perform encryption or decryption, and detect device accessories.



7.1 User Management

In **Advanced** > **User management**, you can manage multiple user accounts, including one administrator (admin), who can grant normal accounts access to functional sections of the web app. The Universe Series devices support multiple users logging in simultaneously.

- **Multi-user login**

  Step 1 Prerequisite: The Universe Series device must be connected to your network (via Wi-Fi or router). Do not connect it directly to any host PC using an Ethernet cable.

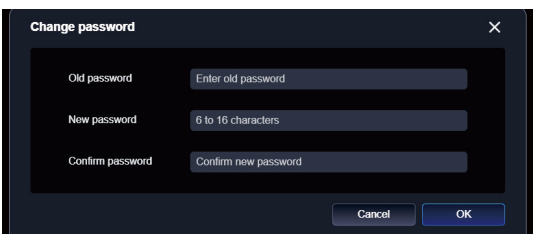
  Step 2 Connect the Universe Series device to the network (Wi-Fi or router) using an Ethernet cable. Next, connect all host PCs to the same network. Ensure all IP addresses are within the same subnet but use different final octets.

For example:
Universe Series device: 192.168.1.10
Host PC 1: 192.168.1.11
Host PC 2: 192.168.1.12
Host PC 3: 192.168.1.13
...

- Enter the new IP address of the Universe Series device into the address bar of a supported browser in the host PCs, and then log in to the web application.

7.1.1 Change Login Password

You can change your login password as needed. Click **Change password**, and then respectively enter the old password and new password, and confirm the password.



⚠ Note

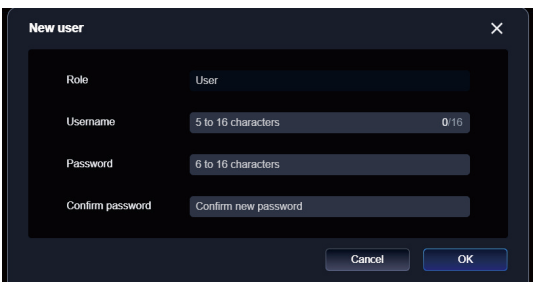
- It is highly recommended that you change the password regularly to ensure system security. To protect your privacy and your company's data security, and to avoid cyber security issues, please set a strong password that complies with the security rules.
- The password should contain 6~16 characters. Please combine any two of the following for your passwords: numbers, lowercase letters, uppercase letters, and special characters. Do not contain in the password your username, "123", "admin", four successive incremental or diminishing numbers, or four successive identical characters.

7.1.2 Add User Account

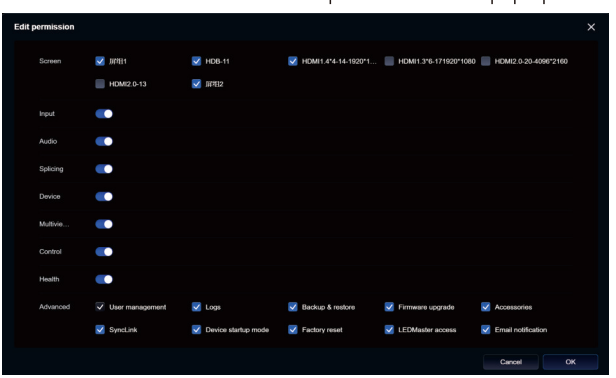
The administrator account can add new user accounts.

- In the tab **User management**, you can view the list of the existed administrator account and other user accounts, and know their current status.

- Click **New user** on top of the user account list to bring up the pop-up window for adding a new account. Enter user type, username, and password as guided.



- To grant permissions to a user account, click **Edit permission** on the row of the target user account and then select desired permissions in the pop-up window.

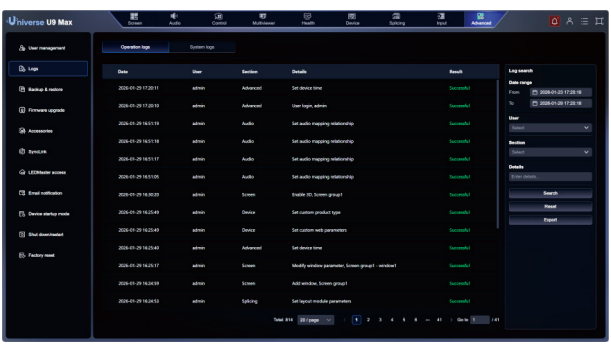


7.2 Logs

Go to **Advanced** > **Logs**. Logs are divided into two categories: **Operation logs** and **System logs**.

7.2.1 Operation Logs

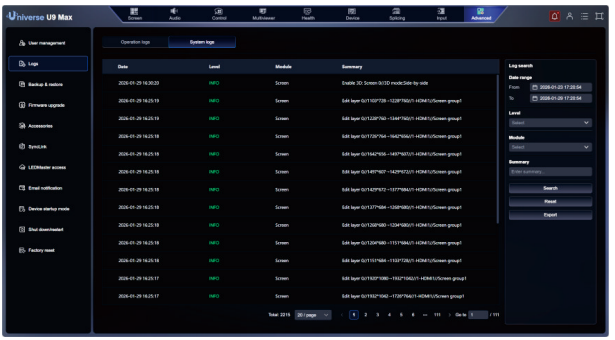
Operation logs record user actions. Filters on the right of the interface allow logs to be refined by **Date**, **User** (multiple selection supported), **Section** (multiple selection supported), and **Details**. The system also supports resetting filter criteria and exporting filtered results.



7.2.2 System Logs

System logs record system events during operation and are classified into three levels: information, warning, and error. Certain events are predefined by the system design.

Filters on the right of the interface allow logs to be refined by **Date**, **User** (multiple selection supported), **Section** (multiple selection supported), and **Details**. The system also supports resetting filter criteria and exporting filtered results.

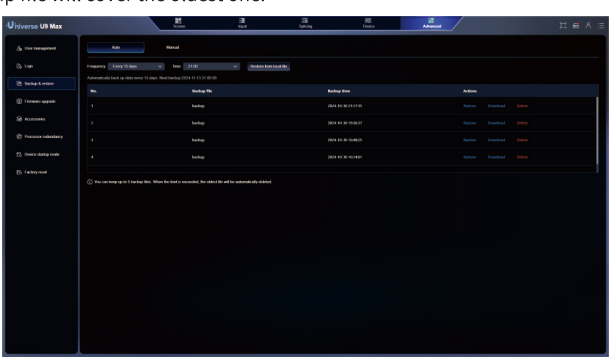


7.3 Data Backup and Restore

In **Advanced** > **Backup & restore**, you can back up the parameters of the current device firmware.

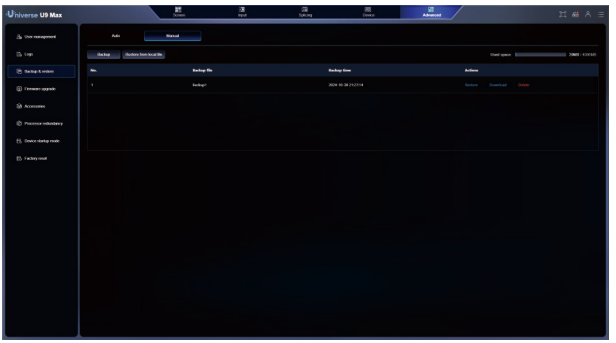
- **Auto backup**

  The function of auto backup is not enabled by default. You can set the frequency and backup time to create the rule for the system to perform data backup. One device can save up to 5 backup files. When the file number exceeds 5, the latest backup file will cover the oldest one.



- **Manual backup**

  Click **Backup** to create a backup file. You can name the file as needed.



- **Restore data from local file**

  Click **Restore from local file** on top of the backup file list. In the pop-up window, import a backup file and then select the operating mode of the current device. (When there are more than one devices with configured primary-backup relations, the backup file can be used for either the primary device or the backup device. Please make the selection based on the actual mode of the current device.)

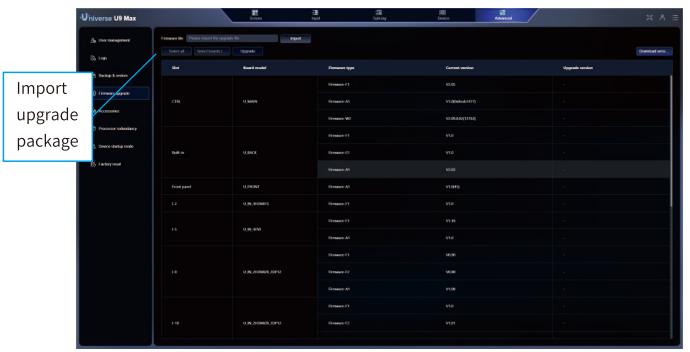
- **Action options for backup files**

  - **Restore**: Click **Restore** on the row of a desired backup file to use that file for data restoration.
  - **Download**: Click **Download** on the row of a desired backup file to download that file.
  - **Delete**: Click **Delete** on the row of a desired backup file to remove that file.

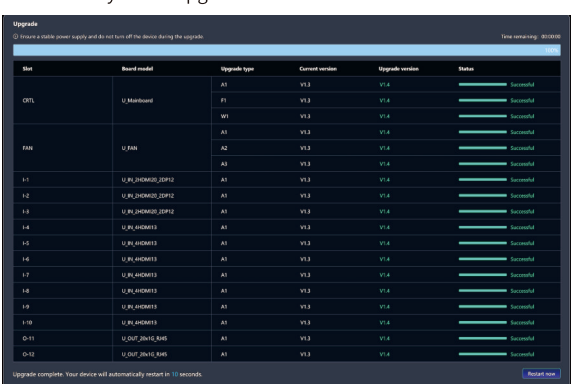
7.4 Firmware Upgrade

The Universe Series video splicers support firmware upgrade using a USB drive in the web application. Contact Colorlight's technical support to get the upgrade package. With the upgrade package, you can upgrade the entire firmware package, update specific boards, or perform modular upgrade. (Refer to Section *8.4.3.5* for an instruction about firmware upgrade with USB drive.)

Step 1 Import the upgrade package (.fw file).



Step 2 Select items for upgrade. You can either upgrade the entire firmware package, or specify boards/chips for upgrade. You can check the version information on the list to confirm the necessity of the upgrade.



Step 3 The input/output boards support upgrade without power interruption. Refresh the webpage after the end of the upgrade. You can also hot swap the board or power cycle the device after the upgrade, and then check the firmware version of the board to make sure that the upgrade is successful.

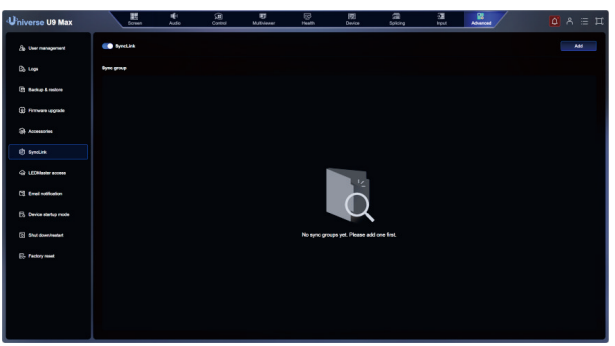
⚠ Note

Do not plug out boards during the upgrade, and maintain a stable power supply. Otherwise, the upgrade will fail and you will have to upgrade again.

7.5 SyncLink

7.5.1 Processor Redundancy

Enable **SyncLink**, click **Sync group** at the top right, then select **Primary-backup**. From the drop-down, choose one Universe Series device as the primary device and the other as the backup device.



- To enable **Processor Redundancy**, you should prepare two Universe Series devices of the same model and with identical configurations, with one working as the primary device, and the other as the backup. The two devices should connect to the same display at a time, so that when failure occurs to any one of the devices, the other one can seamlessly take the role for output, ensuring a stable image display.

- **Environment establishment**

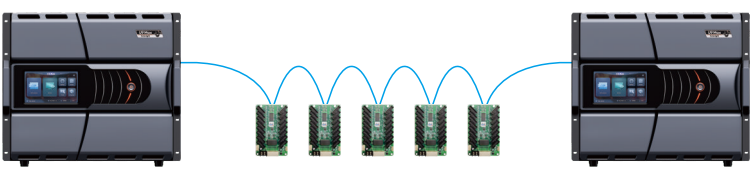
  Step 1 Prepare two video splicers of the same model and with different IP addresses. Connect them and a PC to the same network.

  Step 2 Make sure that all firmware versions of the two devices are the same.

  Step 3 Respectively connect the 2 devices' output ports (1G-RJ45 / 5G-RJ45 / 10G-FIBER) of the same type to the receiving cards.

  Step 4 Select one Universe Series device as the primary device, and save the correct receiving cards mapping to the receiving cards and then light up the LED display. Next, switch on the Backup toggle of the other device. The primary device will automatically send the receiving cards mapping in reverse order to the backup device.

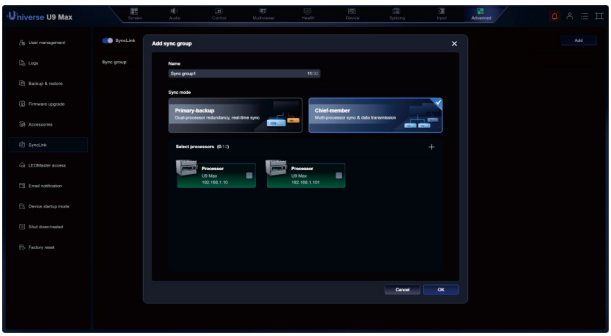
  Step 5 Select **Loop redundancy** — the primary device will automatically send the opposite receiving card mappings to the backup device and save them. Select **Dual-card redundancy** — the primary device will automatically send the same receiving card mappings to the backup device and save them.



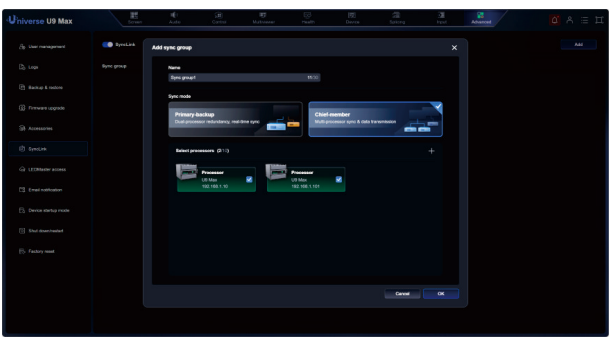
7.5.2 Chief-Member

- This function requires at least two Universe video splicers to work together. Using two video splicers, the same command can be sent to different displays simultaneously — for example, turning Display 1 and Display 2 to blackout or freeze at the same time, or adjusting the brightness of both displays simultaneously.
- **Environment establishment**

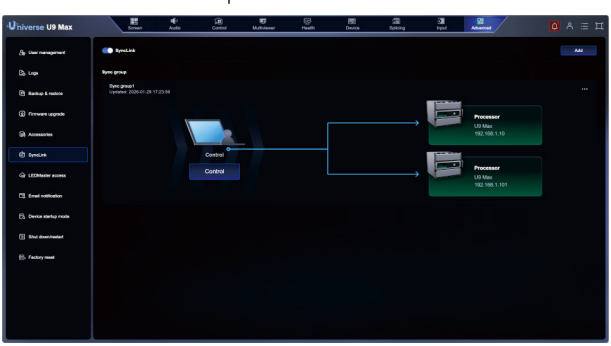
  Step 1 Enable **SyncLink**. Click **Sync group**, then select **Chief-member**.



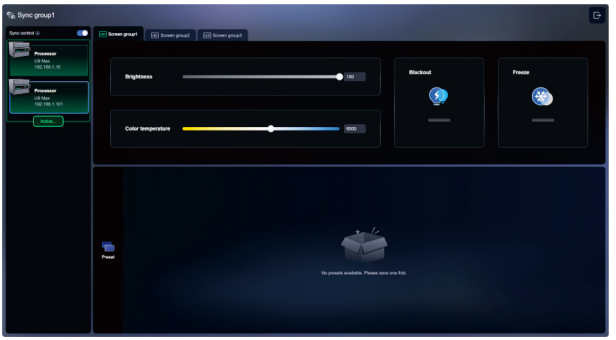
Step 2 Select the device and click **OK**.



Step 3 Click **Control** to enter the operation interface.



Step 4 Perform adjustments for devices within the sync group, including brightness, color temperature, freeze, blackout, and preset application.



7.6 Ethernet/Fiber Port Redundancy

7.6.1 1G-RJ45 Ethernet Port Redundancy

The Universe Series device supports connecting two Ethernet ports to the same screen, so that when the main port fails, the backup one can seamlessly take the role for output, ensuring a stable image display.

Step 1 Connect the primary and backup ports of the 1G Ethernet board to the receiving cards to form a loop of primary-backup Ethernet ports.

Step 2 In the web application, access **Splicing** > **LED screen**, and then configure and save the receiving cards mapping controlled by the primary Ethernet port.

Step 3 Click **Port redundancy** at the upper left corner of the tab. You can select between 2 redundancy methods: **Quick redundancy** and **Manual** (redundancy).

- If primary and backup ports of the board can be arranged evenly and are of the same count, you can select **Quick redundancy**, which provides 3 arrangement methods for the primary and backup ports, including **Intra-board redundancy (evenly split)**, **Intra-board redundancy (adjacent)**, and **Inter-board redundancy**.

- If the ports cannot be arranged evenly, or their number is not the same, you should select manual redundancy. Select a port as the primary port and then select its backup port.
- When you finish the primary-backup settings, return back to the previous interface and save the current receiving cards mapping.

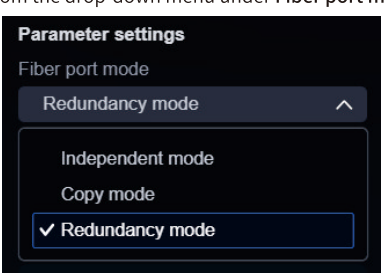
7.6.2 5G-RJ45 Ethernet Port Redundancy

Please refer to the instruction for 1G-RJ45 Ethernet port redundancy in *Section 7.6.1*.

7.6.3 10G-Fiber Port Redundancy

The redundancy of the 10G fiber ports are determined by the work mode of the board.

Step 1 Access the section **Device** and then click the 10G-Fiber board. Select **Redundancy mode** from the drop-down menu under **Fiber port mode**.



Note

Fiber 1 and Fiber 2 work as the primary output ports, while Fiber 3 works as the backup port of Fiber 1, and Fiber 4 as the backup of Fiber 2.

Step 2 Configure the receiving cards mapping of the primary fiber port. The receiving cards mapping of the backup fiber port will be automatically configured.

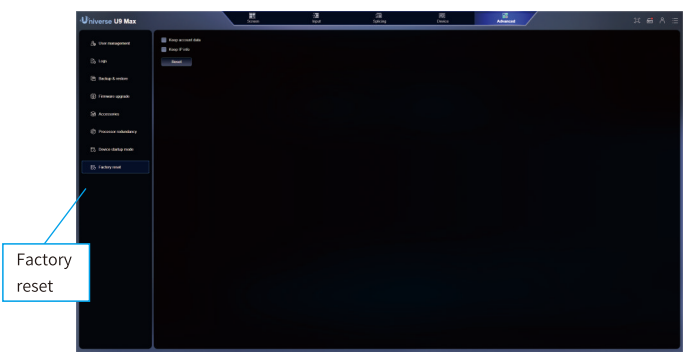
Step 3 Connect the primary fiber port to the fiber optic transceiver using an optical fiber cable and then connect the fiber optic transceiver to the primary port of the receiving card using a network cable.

Step 4 Connect the backup fiber port to the fiber optic transceiver using an optical fiber cable and then connect the fiber optic transceiver to the backup port of the receiving card.

Step 5 Access the **Splicing** interface and then configure and save the receiving cards mapping of the primary fiber port.

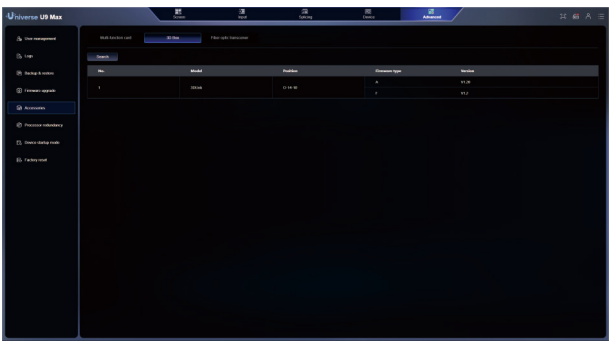
7.7 Factory Reset

You can keep the account data, IP settings, or the splicing settings. After you made a selection, click **Reset** to start restoring the device to its factory settings with the selected items kept. If the account data is not kept, the normal data of the administrator account will be removed; if the IP settings is not kept, the IP address will be reset to the default address: 192.168.1.10.



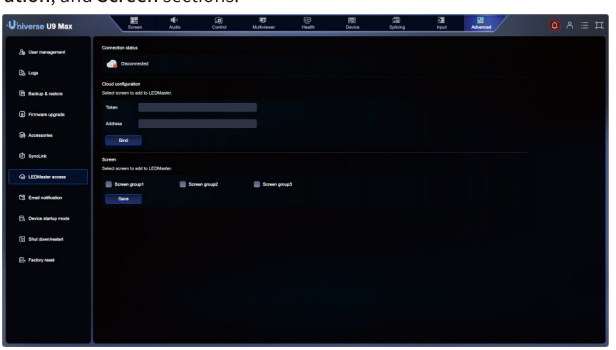
7.8 Accessories

In the section **Accessories**, you can view basic information of the external accessories of the device. You can view information of the connected multi-function card (iM9/iM9-5G), 3D box (3DLink), and fiber optic transceiver. You can also configure the multi-function card in this interface.



7.9 LEDMaster Access

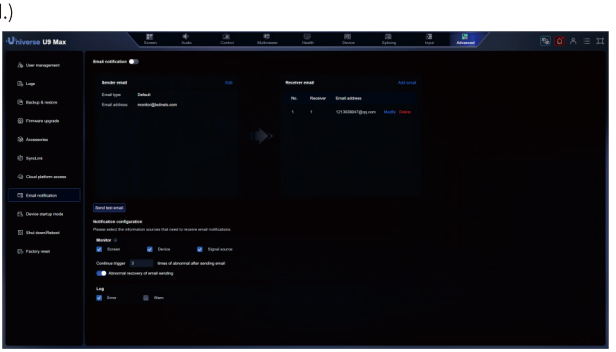
This function is used to connect devices to LEDMaster, enabling device binding, screen group sync, and status management. The interface includes **Connection status**, **Cloud configuration**, and **Screen** sections.



- **Connection status**
  - The interface displays the current connection status between the device and LEDMaster: not connected or connected.
  - Once entering this interface, the system automatically checks the connection status every 3 seconds.
- **Cloud configuration**
  - Users must enter the token and server address obtained from LEDMaster. The system supports both **Bind** and **Unbind** operations.
  - Cloud tokens and server address are provided by LEDMaster.
- **Screen**
  - Select the screen groups that need to be synchronized to LEDMaster. When entering or refreshing the interface, the system automatically updates the selection status of screen groups already connected to LEDMaster.
  - When a screen group is deleted in **Splicing**, if the group has been uploaded to the cloud, its corresponding cloud data will also be cleared.

7.10 Email Notification

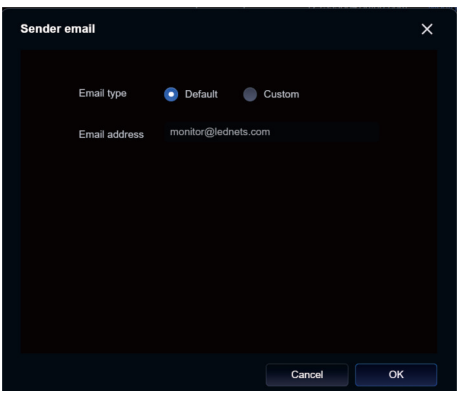
This function allows users to automatically send emails when abnormalities occur in screens, devices, input signals, logs, etc. The interface contains **Sender email**, **Recipient email**, and **Notification configuration** sections. (An internet connection is required.)



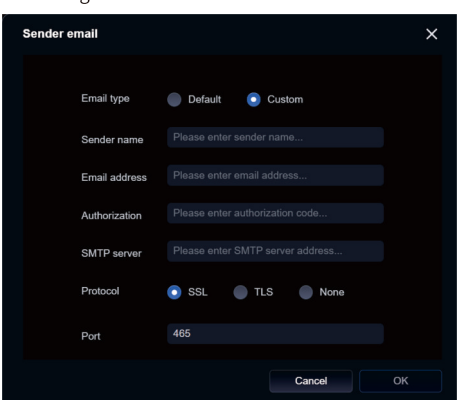
7.10.1 Sender Email

The interface displays configuration options for sending emails:

- Default: Use the default email account to send messages; no additional configuration is required.



- Custom: Users can configure a custom email account as needed. Editable fields include **Name**, **Address**, and **Authorization**. The **SMTP server**, **Protocol**, and **Port** use built-in values and cannot be modified. After saving, users can click **Send test email** to verify the configuration.

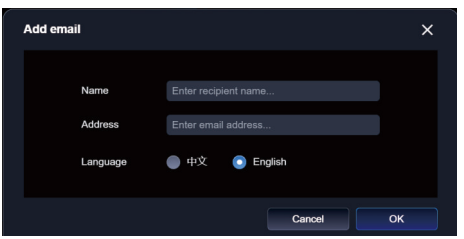


7.10.2 Recipient Email

The interface displays configuration options for recipient emails:

- **Name:** Enter the recipient's name.
- **Address:** Enter the recipient's email address.
- **Language:** Select whether emails are sent in Chinese or English.

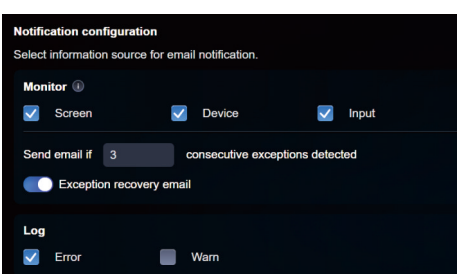
A maximum of 50 recipient addresses can be added.



7.10.3 Notification Configuration

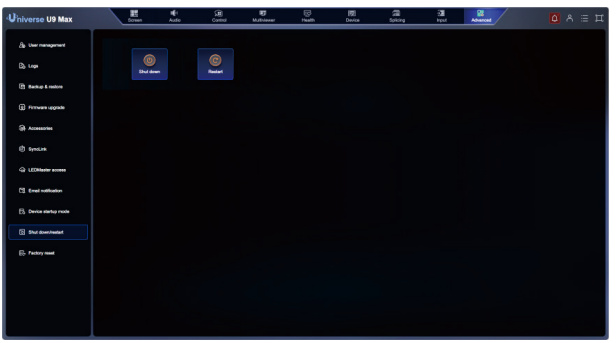
The interface provides the following options:

- **Monitor:** Select **Screen**, **Device**, or **Input** to trigger email notifications. Specify the number of consecutive abnormal events required before an email is sent (range: 1–10).
- **Exception recovery email:** When enabled, an email is automatically sent to recipients when an abnormal condition is resolved.
- **Log:** Enable email notifications based on log levels. Log levels include error, warning, and information.



7.11 Shut Down/Restart

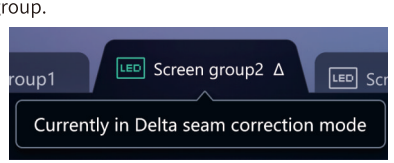
Devices can be powered off or restarted via the software. After clicking **Shut down** or **Restart**, a confirmation dialog appears. Once confirmed, the device applies the shutdown or restart command.



7.12 DeltaΔ Seam Correction

The Universe Series device supports deltaΔ seam correction. Before using deltaΔ seam correction, make sure that the receiving cards support this function. If they don't, upgrade them to a suitable version.

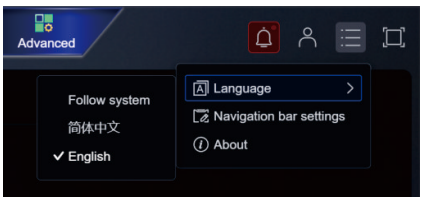
If the receiving cards support deltaΔ seam correction, a symbol (Δ) will appear after the name of the screen group.



Except for that, deltaΔ seam correction follows the same steps as advanced seam correction. For details, refer to *Section 2.4*.

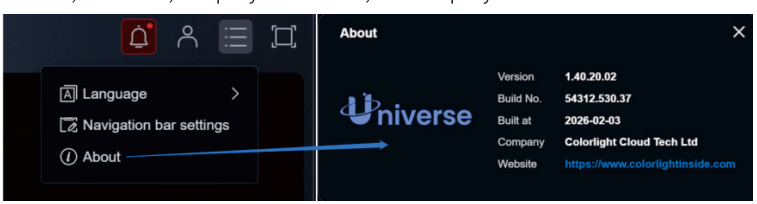
7.13 Change System Language

To change the system language, click the icon and then select **Language**. Make the selection as needed. The Universe Series system is in Chinese by default, and supports customization of language.



7.14 About Device

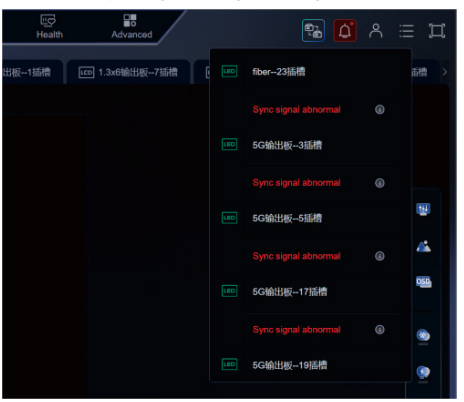
Click the second icon from the right at the upper right corner of the interface and select **About** to view information about the device, including the software version, build number, build time, company information, and company website.



7.15 Notification Center

Click in the upper-right corner of the web interface to view important notifications pushed by the current device, including monitoring notifications, exception notifications, and function notifications.

- Monitoring notifications include alerts for device operation abnormalities, screen group abnormalities, and input signal abnormalities.
- Exception notifications include alert such as Vsync signal loss.
- Function notifications include notifications for enabling or disabling **Blackout**, **Freeze**, enabling **Test pattern**, and when screen group brightness is set to 0.
- Within the **Notification center**, users can perform actions such as disabling **Blackout** or **Freeze**, and adjusting screen group brightness.



08 FRONT PANEL OPERATION

Power on the device and then press the power button on the front panel. The LCD touch screen will start at the same time.

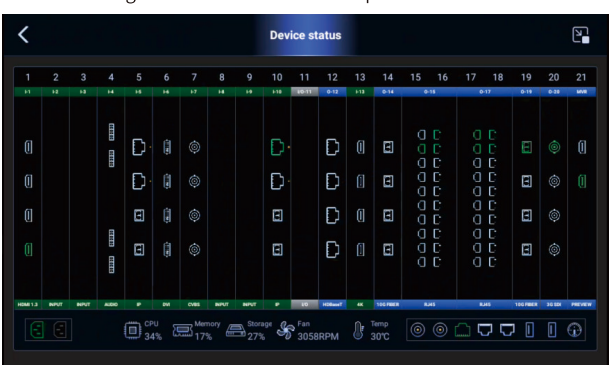
8.1 Home Interface

The front panel LCD supports displaying screen saver when it remains inactive for a long time. You can touch the LCD to exit the screen saver. Tapping the lock icon can ban/unban menu operation of the panel.

8.2 Device Status

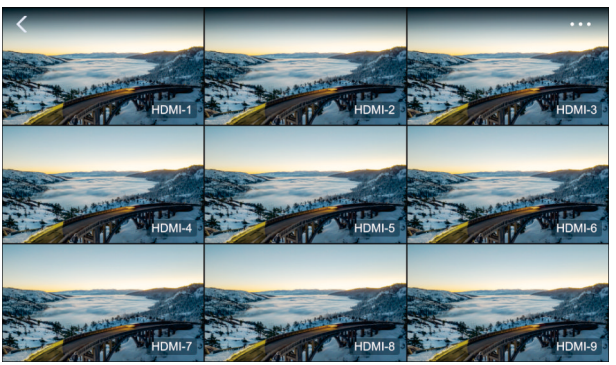
To view the current status of the device, tap Device status on the front panel LCD, including:

- Port connection status (Green: connected; White: not connected)
- EDID information of the HDMI 2.0/1.3, DP, DVI, SDI, VGA, and CVBS signals; and real-time loading status of the output ports (1G Ethernet/5G Ethernet/10G-Fiber)
- Port connection status of the main board (Green: connected); the ports include: Genlock-IN, Genlock-Loop, and 2× USB 2.0.
- Runtime power of the power management unit, including rated power and real-time power.
- Operation status of the cooling fan.
- Real-time monitoring of the device ambient temperature.

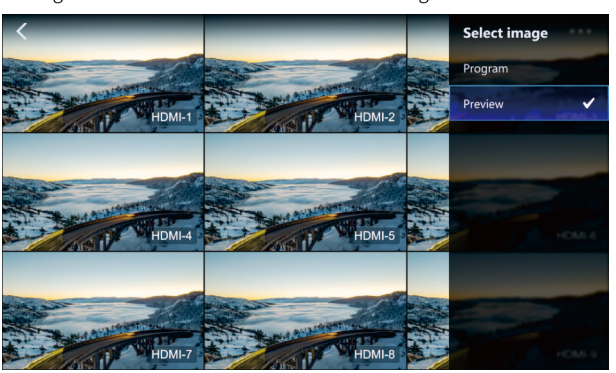


8.3 Multiviewer

Tap **Multiviewer** to access the interface where you can view the current output images (PGM).



Swipe to the right to access the interface for the PVW images.

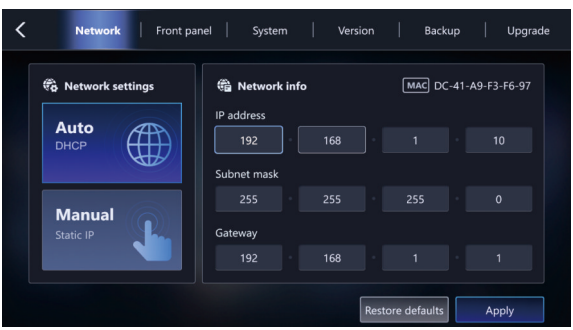


8.4 Settings

8.4.1 Network Settings

In **Settings** > **Network**, you can enable auto IP or manually modify the current IP of the device. Tap **Apply** to let the new IP take effect.

- **Manually set IP address:**
  Set the IP address as 192.168.#.#; the subnet mask is 255.255.255.0; the default gateway is 192.168.#.1.

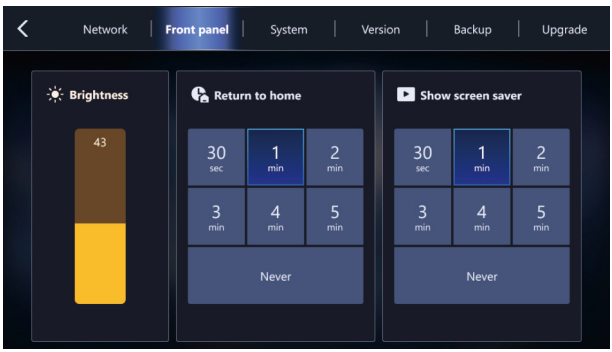


⚠ Note
The new IP address should share the same subnet with the IP address of the host PC.

- **Automatic IP address:**
  When there are many devices that requires IP address allocation, you can let the IP addresses be adjusted automatically by tapping **Auto DHCP**.

8.4.2 Front Panel Settings

- Brightness: You can adjust the brightness of the front panel LCD. A low brightness can help extend the life span of the LCD.
- Return to home: You can set the time period of inactivity after which the interface should automatically return to the Home interface.
- Show screen saver: You can set the time period of inactivity after which the screen saver will be shown.

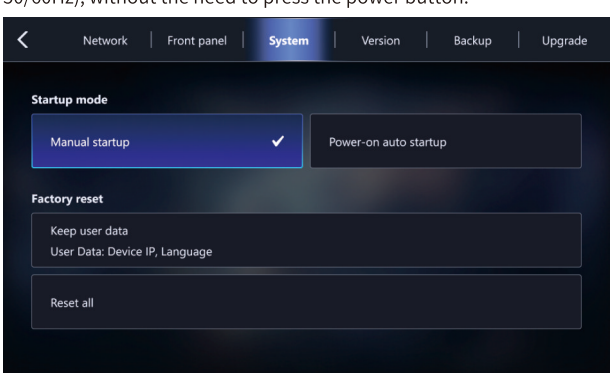


8.4.3 System Settings

8.4.3.1 Device Startup

The Universe Series supports two ways of startup: **Manual startup** and **Power-on auto startup**.

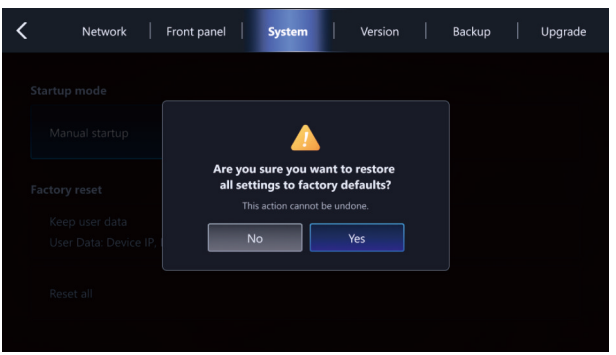
- **Manual startup**
  When the device connects to the power supply (AC 100-240V, 50/60Hz), press on the power button to start up the device.
- **Power-on auto startup**
  The device automatically starts up once it connects to the power supply (AC 100-240V, 50/60Hz), without the need to press the power button.



8.4.3.2 Factory Rest

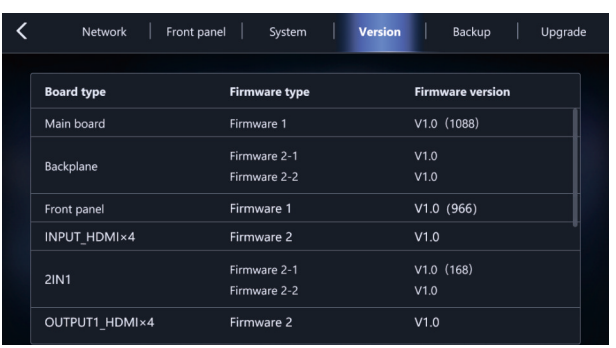
By default, the device will keep user data after performing factory reset.

You can also tap **Reset all** to reset all device parameters.



8.4.3.3 Version Information

Tap Version to access the interface where you can view the board type, firmware type, and firmware version of the device.

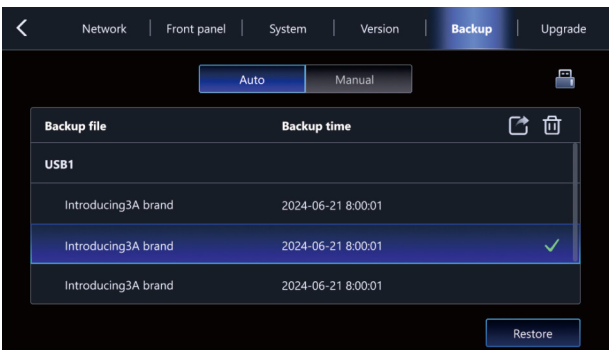


8.4.3.4 Data Backup

On the front panel LCD, you can set auto data backup or manually back up the data.

- **Auto backup and data restoration**
  Auto backup is not enabled by default. You can set the frequency and backup time

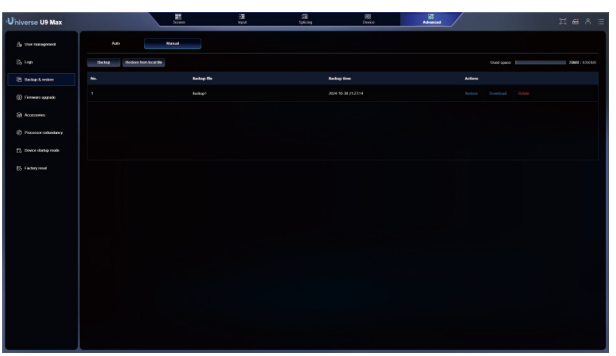
to let the system automatically back up data at the specified time in the specified frequency. The device can save up to 5 backup files. When the file count exceeds 5, the latest backup file will automatically cover the oldest one. You can tap a desired backup file on the list and tap Restore to let the device restore with the selected file.



- **Manual backup and data restoration**

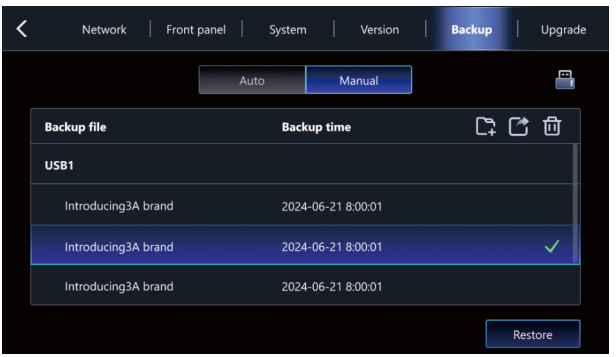
  Manual backup and data restoration require operations in both the web application and the front panel LCD.

  Step 1 Log in to the web application and navigate to **Advanced** > **Backup & restore** > **Manual**. Click **Backup** to generate a backup file and you can download the file to a USB drive.



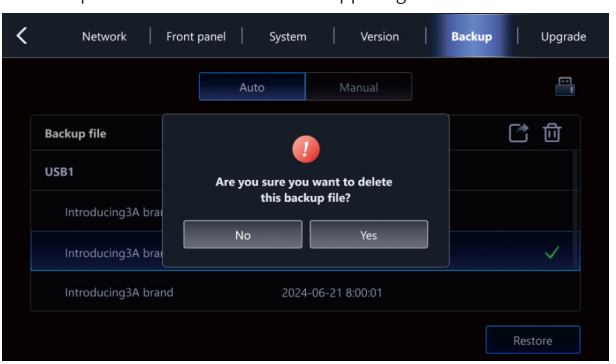
  Step 2 Access **Settings** > **Backup** on the front panel LCD and then tap **Manual**. Next, find and tap the desired backup file and then tap **Restore** to let the device restore

with the selected file.



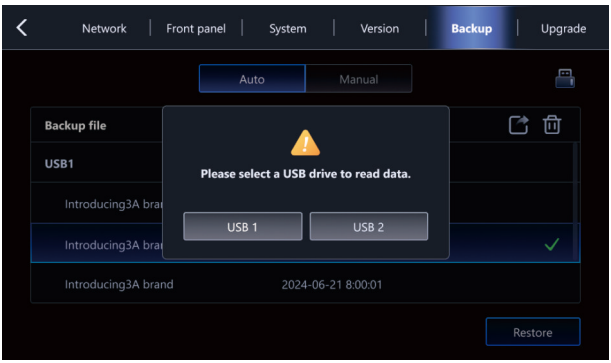
- **Delete backup file**

  To delete a backup file from the front panel LCD, tap the desired backup file in the list and then tap the icon for deletion at the upper right corner of the list.



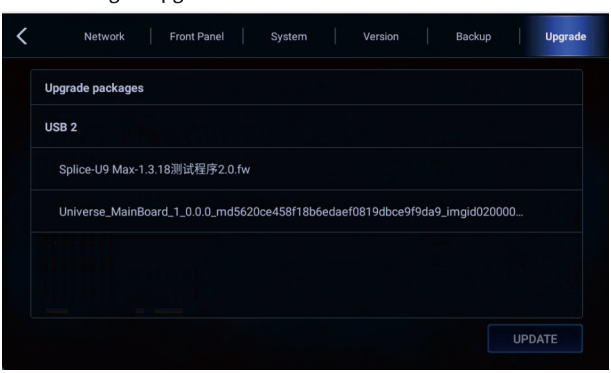
- **Restoration with USB drive**

  Log in to the web application and access to **Advanced** > **Backup & restore**. Click **Backup** to generate a backup file and then download the file to a USB drive. Next, plug the USB drive into the USB port of the device's main board, which will automatically read the backup file. You can then select the target USB drive on the LCD for reading the backup data.

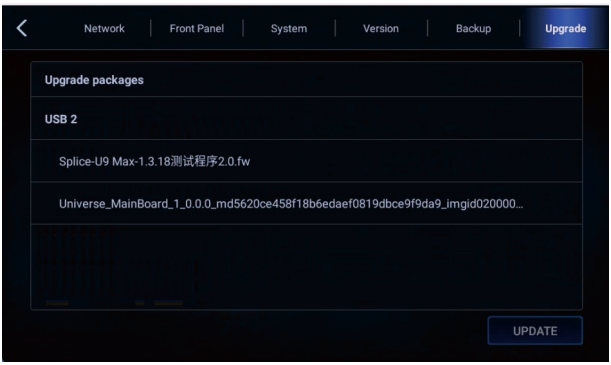


8.4.3.5 Firmware Upgrade

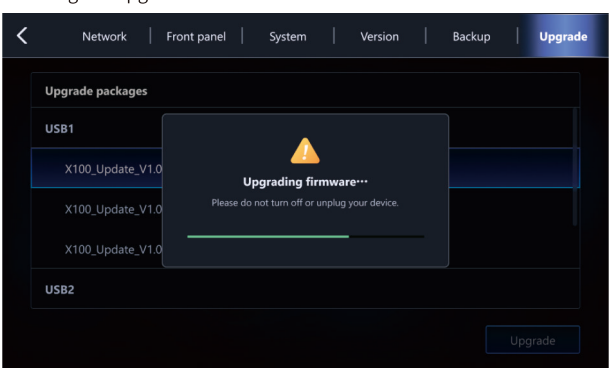
Step 1 Access **Settings** > **Upgrade**.



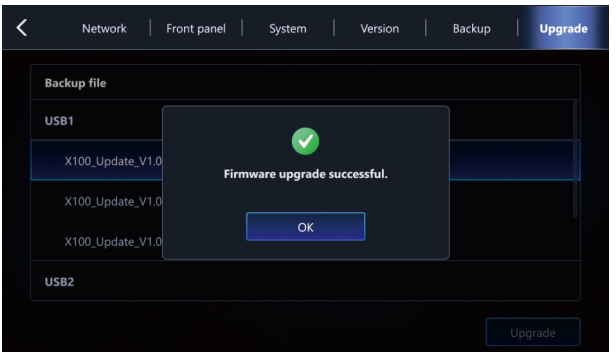
Step 2 Plug a USB drive that has saved the firmware upgrade package into the USB port of the device's main board, which will automatically read the package. Next, on the front panel LCD, find and tap the desired upgrade package and then wait 2 to 3 seconds for the device to load the package.



Step 3 When you are prompted "Loaded successfully", tap **Upgrade**. Do not power off the device during the upgrade.

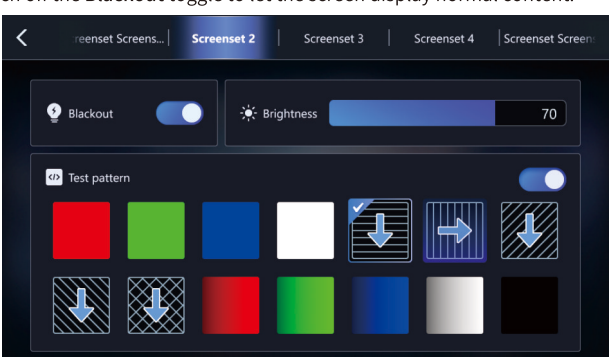


Step 4 After the completion of the upgrade, tap **OK** in the pop-up window to let the device restart.



8.5 Display Settings

- On the front panel LCD, you can adjust the brightness of the existing screen groups (LED/LCD) within the range between 0 to 100%.
- You can switch on **Test pattern** and select one pattern below to display on the screen for diagnosis.
  - 14 patterns available.
- Supports **Blackout**
  - The screen will display black when **Blackout** is enabled.
  - Switch off the **Blackout** toggle to let the screen display normal content.



8.6 Preset

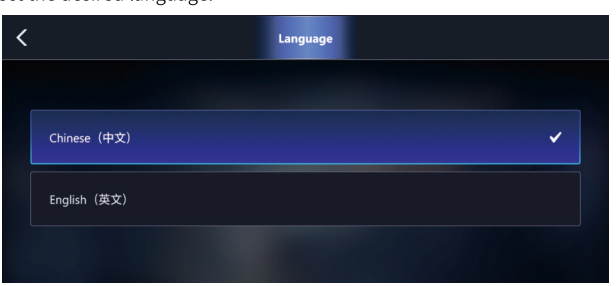
Tap **Preset** on the Home interface of the front panel LCD to access the interface where you can switch between presets.

⚠ Note

You can only add presets in the web application. The front panel LCD just provides access for quick preset application.

8.7 Change Language

To change the front panel LCD language, tap **Language** on the Home interface and then select the desired language.



09 CONTROL

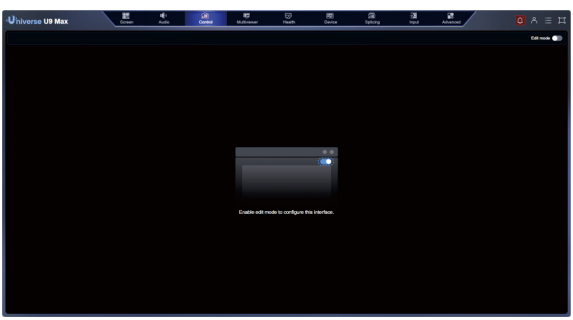
All command configuration and sending for the control board are performed within the Control interface.

9.1 Basic Settings

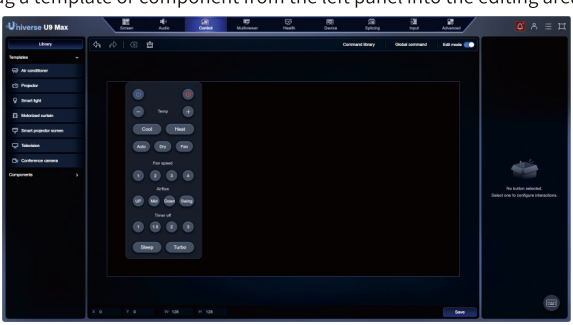
Enter the **Device** interface and click the control board view to configure the COM1, COM2, and Ethernet ports. You can also view the level status of I/O and the open/close status of relays.

9.2 Command Settings

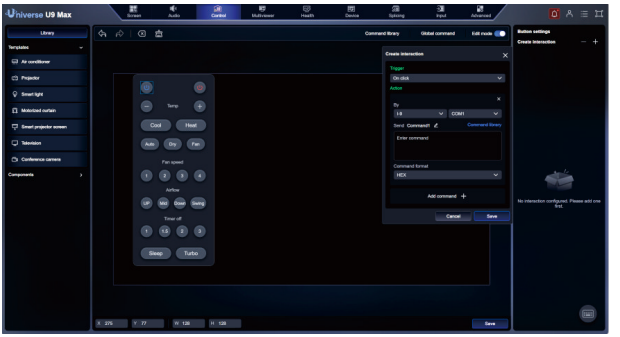
Step 1 Enable **Edit mode** and enter the **Control** interface.



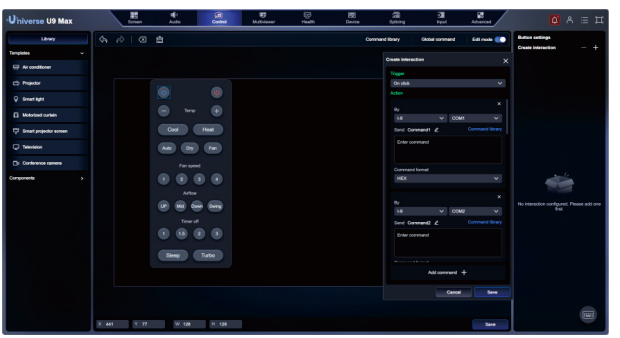
Step 2 Drag a template or component from the left panel into the editing area.



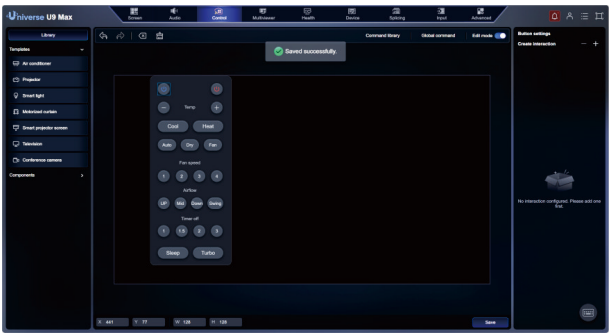
Step 3 Select a component, or a component within a template, then click + next to **Interaction** on the right panel.



Step 4 From the drop-down list, select the action to be triggered and the control board interface that triggers the action. Enter the command, select the command format, and click **Save** in the dialog box. Each control supports up to 4 actions, and each action supports up to 10 commands. Commands can be added directly from the **Command library**.

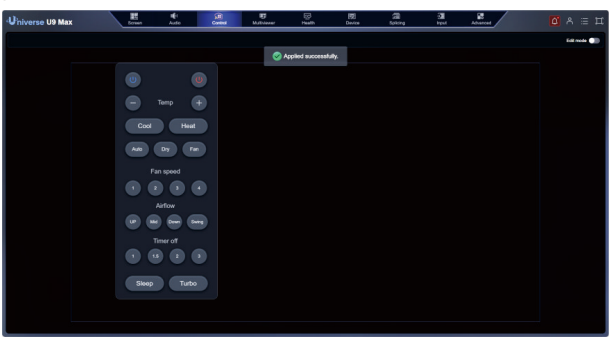


Step 5 Click **Save** in the lower-right corner.



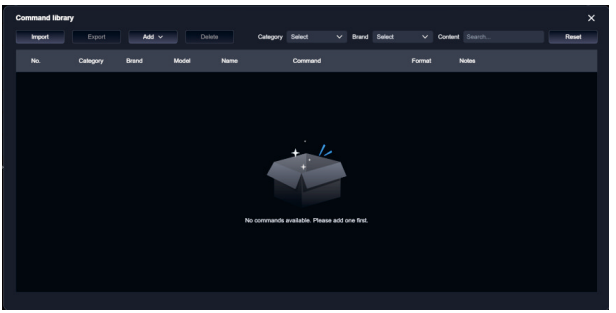
Step 6 Exit **Edit mode** and click the component with configured commands.

A message "Applied successfully." will be displayed.



9.3 Command Library

The **Command library** supports command creation, editing, deletion, batch operations, and import/export, enabling reuse across multiple projects and configuration of large command sets. Commands can be applied in interaction configuration and global commands, improving system setup efficiency.

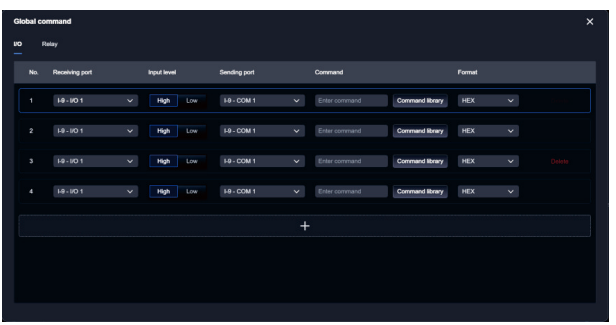


- **Command types:**
  - General commands: Manually entered by the user (HEX / ASCII formats), suitable for serial, TCP/UDP, and other control scenarios.
  - Infrared commands: obtained through hardware-based IR learning. The interface only displays the learned result, and manual input is not supported. These commands are used for infrared-controlled devices.
- **Command entry and classification:**
  - Command information includes: device category, brand, model, command name, command content, and remarks.
  - Categories and brands can be expanded and maintained to support command management for multiple brands and models.
  - Continuous entry is supported, enabling rapid creation of a complete set of control commands.
- **Command import and export:**
  - The **Command library** supports CSV file import and export. Export is used for backup, while import is used to batch import an existing command library.
- **Search and management:**
  - Supports filtering by category and brand, as well as keyword search.
  - The command list supports multi-selection for batch operations such as deletion.
- **Command application:**
  - Interaction settings: Commands can be selected directly from the library when configuring device actions, avoiding repeated manual entry.
  - Global commands: Used for system-level link and centralized control, such as shutting down multiple devices simultaneously or batch rebooting.

9.4 Global Commands

9.4.1 I/O

This function provides centralized management and trigger configuration for device I/O interface. By responding to I/O level changes, it links other interfaces to execute commands, enabling coordination between physical signal control and system operations.



Enter the I/O configuration interface, and configure as follows:

Step 1 Select an I/O. From the drop-down list, choose the control board and the corresponding I/O channel. Multiple I/O configurations are supported.

Step 2 Set the trigger level. Define the trigger condition for the selected I/O interface as high or low. When the specified level is detected, subsequent actions are executed.

Step 3 Select the execution interface. Specify the target interface to apply the commands after the trigger; any interface other than the current I/O interface can be selected.

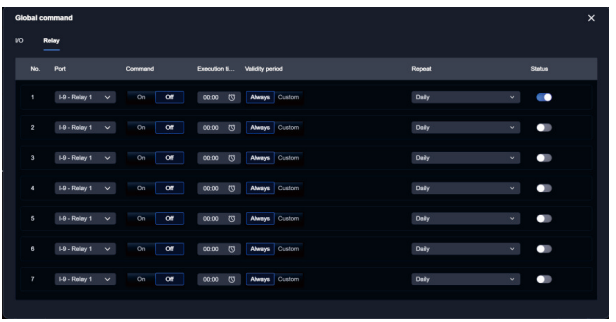
Step 4 Configure commands. Define the commands to be sent to the target interface to automatically control external devices upon level triggering.

Step 5 Delete configurations. Remove I/O rules that are no longer needed.

After saving, the system will trigger the corresponding actions based on the I/O signal status. This can be applied to scenarios such as sensor triggering, hardware button link, and SyncLink.

9.4.2 Relay

This function provides linked control for relay interfaces. You can configure close or open trigger actions for specific relay channels and implement automated control through scheduled timing and repeat rules.



In the **Relay** tab, configure the following settings:

Step 1 Click Relay. From the drop-down list, choose the control board and the relay channel.

Step 2 Set the command action by selecting the relay operation mode (close or open).

Step 3 Specify the **Execution time**.

Step 4 Configure the **Effective date**. Two modes are supported:

- **Always:** The command remains effective indefinitely.
- **Custom:** The command is effective within a specified date range.

Step 5 Select the repeat pattern. The command runs daily by default. Any combination of Monday through Sunday can be selected to create a recurring schedule.

Step 6 Enable or disable the rule as needed.

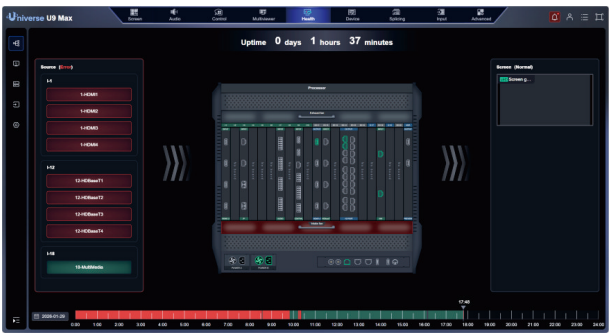
Step 7 Delete the rule to remove unnecessary configurations.

Once the configuration is saved, the system controls the relay according to the configured time and schedule, enabling automated scenarios such as scheduled power on/off and automatic switching.

10 HEALTH

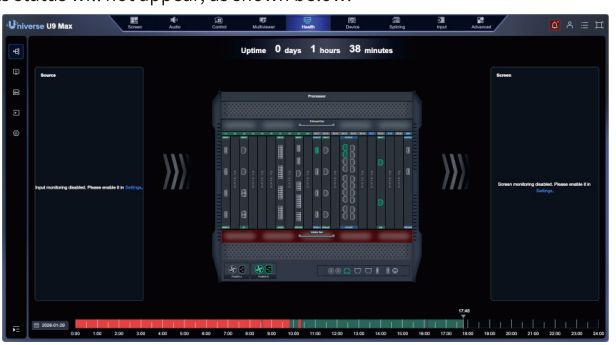
The Health interface consists of two main sections: **Overview** and **Settings**.

The **Overview** section displays the health status of screens, devices, and input signals.



10.1 Overview

The **Overview** section displays monitoring information for screens and input signals with monitoring enabled. If the monitoring function is not enabled for a screen or input signal, its status will not appear, as shown below.



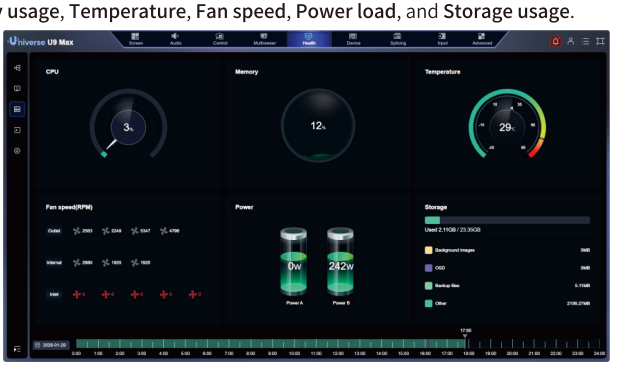
10.1.1 Screen

The Screen tab displays monitoring information for screens. If no screens are being monitored, the screen count is 0. Click **Settings** to enable monitoring.

- Click  to view the status of all cabinets. If a cabinet has multiple abnormalities, they are displayed in a scrolling view.
- Click  to view the cabinet connection topology.
- Click  to view the bit error rate of the receiving card for the selected cabinet.
- Click  to view temperature,  to humidity, or  to runtime.

10.1.2 Device

The Device tab displays monitoring information for devices, including **CPU usage**, **Memory usage**, **Temperature**, **Fan speed**, **Power load**, and **Storage usage**.



- **Temperature:** Refers to the main board temperature. Alarm thresholds range from 50°C to 85°C.

- **CPU usage:** Threshold range 50%–90%.
- **Memory usage:** Threshold range 50%–90%.
- **Fan speed:** An alarm is triggered if the fan speed is 0 or if no fan is detected.
- **Power load:** Threshold range 500 W–700 W.
- **Storage usage:** Threshold range 50%–90%.

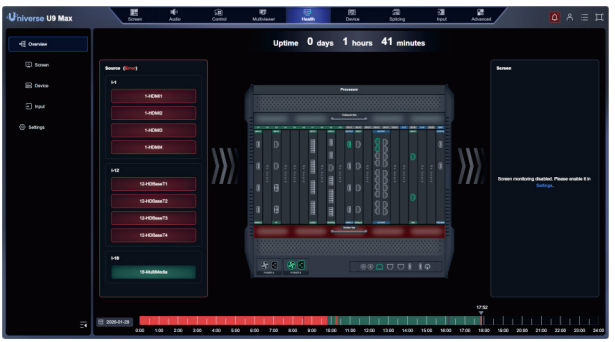
⚠ Note:
- An alarm is triggered when the value exceeds the threshold.
- The power value represents the combined load of Power A and Power B.
- Sustained high CPU, memory, or storage usage during long-term operation requires timely maintenance.

10.1.3 Input

The **Input** tab displays monitoring information for input signals, including connection status and EDID consistency. The status bar prioritizes the connection status; EDID inconsistency is displayed only when the connection is normal.

10.1.4 Timeline

The timeline allows users to view monitoring status changes over time for screens, devices, and input signals, and to review historical monitoring data, including the time and status of abnormalities.



- **Date**
  - By default, the current date is displayed. Click the date field to open the date picker and select any date to view historical data.
  - A red dot below a date indicates that abnormalities occurred on that day; gray indicates monitoring was not enabled or the device was not active.
  - Hover over a date to view the monitoring records stored for that day. Monitoring records are stored by day and vary dynamically based on the actual number of receiving cards.
- **Status**
  - Gray: Monitoring not enabled or device not active.
  - Green: Operating normally.
  - Red: Operating abnormally.
- **Pointer**
  - By default, the pointer indicates the latest time point and updates automatically with real-time monitoring data (update interval: 1 minute).
  - Click anywhere on the timeline to jump to a specific time point; minute-level dragging is supported.
  - Click  to return to the current time point.

10.2 Settings

You can configure monitoring items for screens, devices, and signal sources individually or in batches. The settings take effect after clicking **Save**.

- **Configure LED screen monitoring**

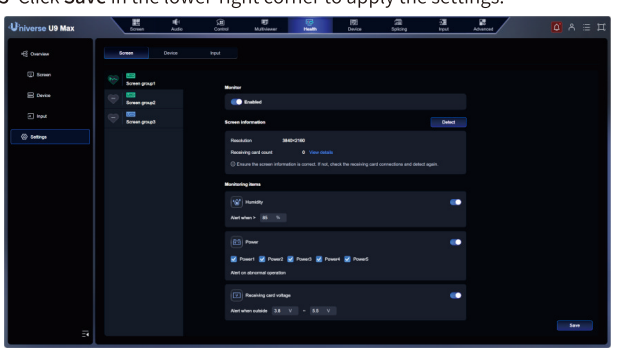
  Step 1 Re-detect the LED screen to display the screen resolution and the number of receiving cards, indicating that the screen is properly connected. If the number of receiving cards cannot be detected, check whether the screen connections are correct.

  Step 2 Enable **Monitoring**.

  Step 3 Enable the monitoring items as required.

  Step 4 Set the threshold values for each monitoring item or select the objects to be monitored.

  Step 5 Click **Save** in the lower-right corner to apply the settings.



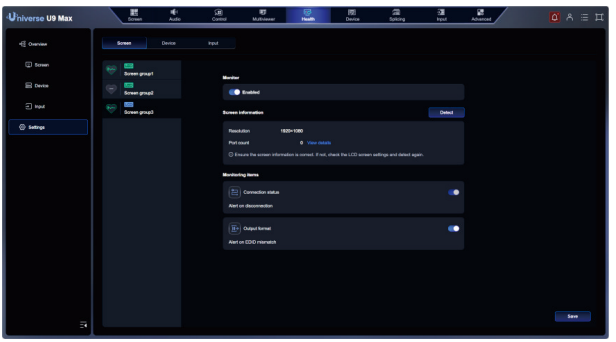
- **Configuring LCD screen monitoring**

  Step 1 Re-detect the LCD screen to display the screen resolution and the number of receiving cards, indicating that the screen is properly connected. If the number of receiving cards cannot be detected, check whether the screen connections are correct.

  Step 2 Enable **Monitoring**.

  Step 3 Enable the monitoring items as required.

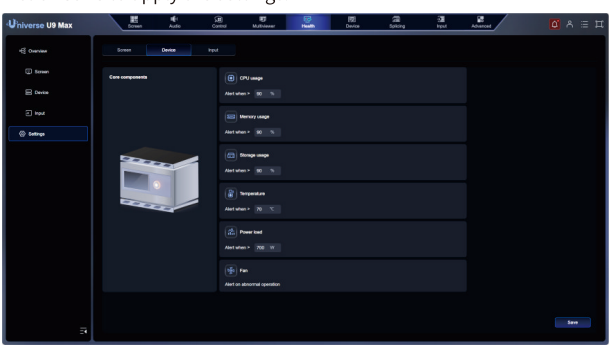
  Step 4 Click **Save** in the lower-right corner to apply the settings.



- **Configuring device monitoring**

  Step 1 Set alarm thresholds for **CPU usage**, **Memory usage**, **Storage usage**, **Temperature**, **Power load**, and **Fan speed**.

  Step 2 Click **Save** to apply the settings.



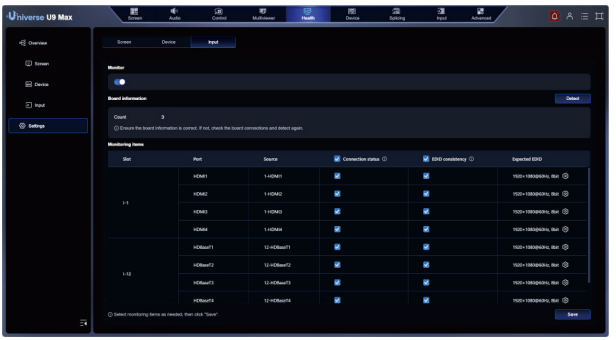
- **Configure input signal monitoring**

  Step 1 Re-detect the boards to display the number of detected boards, indicating that the boards are properly connected. If the board count cannot be detected, check the board connections.

  Step 2 Enable **Monitoring**.

  Step 3 Select the items to be monitored.

  Step 4 Click **Save**.


Universe U9 Max
Screen
Audio
Control
Multiviewer
Health
Device
Splicing
Input
Advanced
Overview
Screen
Device
Input
Settings
Screen
Device
Input
Monitor
Board information
Detect
Count 3
Ensure the board information is correct. If not, check the board connections and detect again.
Monitoring Items
Slot
Port
Source
Connection status
EDID consistency
Expected EDID
I-1
HDMI1
1-HDMI1
HDMI2
1-HDMI2
HDMI3
1-HDMI3
HDMI4
1-HDMI4
I-12
HDBaseT1
12-HDBaseT1
HDBaseT2
12-HDBaseT2
HDBaseT3
12-HDBaseT3
HDBaseT4
12-HDBaseT4
Select monitoring items as needed, then click "Save"
Save

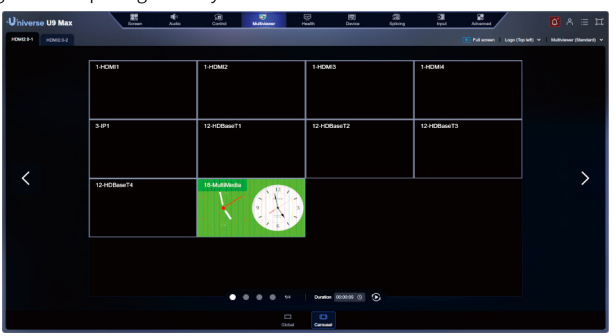
11 MULTIVIEWER

11.1 Standard Mode

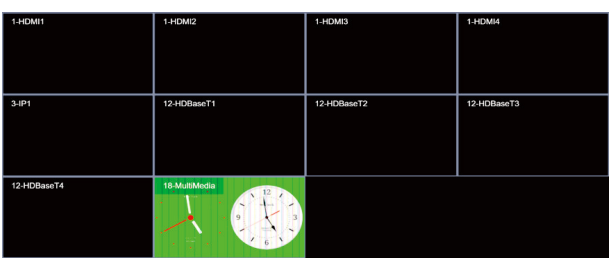
In **Standard** mode, the preview and monitoring of input signals and screen groups are displayed.

11.1.1 For Input Signal

Step 1 Enter the **Multiviewer** interface and select **Standard**. Click **HDMI 2.0-1** to view the image of the input signal. Playback mode can be switched.

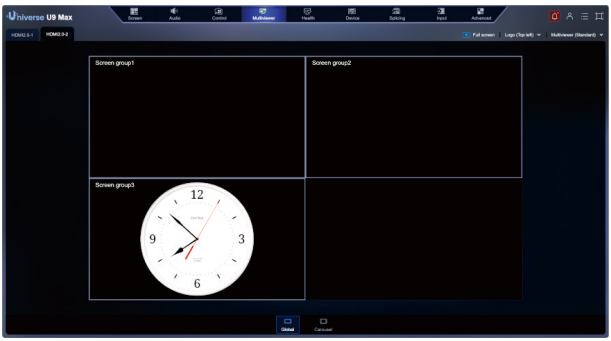


Step 2 Connect the HDMI cable from HDMI2.0-1 on the preview board to a monitor. The input signal image will be displayed on the monitor, with synchronized carousel playback.

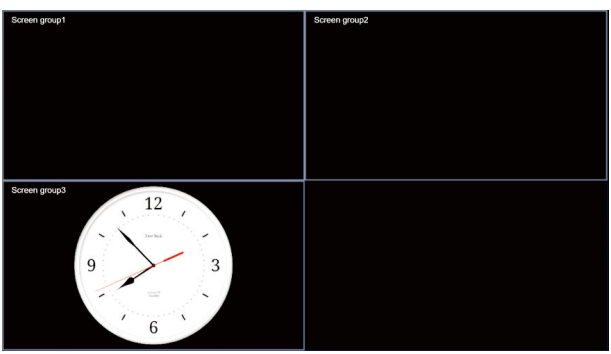


11.1.2 For Screen Group

Step 1 Enter the **Multiviewer** interface and select **Standard**. Click **HDMI 2.0-2** to view the image of the screen group. Playback mode can be switched.



Step 2 Connect the HDMI cable from HDMI2.0-2 on the preview board to a monitor. The input signal image will be displayed on the monitor, with synchronized carousel playback.



11.2 Custom Mode

11.2.1 Custom Preview

Step 1 Enter the **Multiviewer** interface, select **Custom**, and click **HDMI 2.0-1**.

Step 2 Drag input signals or screen groups from the left panel into the preview window.

Step 3 Save the layout as a preset.

Step 4 Click **Apply** to quickly apply a saved preset.

11.2.2 Custom Monitoring

Step 1 Enter the **Multiviewer** interface, select **Custom**, and click **HDMI 2.0-2**.

Step 2 Drag input signals or screen groups from the left panel into the monitoring window.

Step 3 Save the layout as a preset.

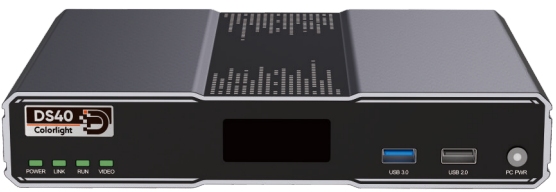
Step 4 Click **Apply** to apply a saved preset. The monitor displays the preset in sync.

12 KVM BOARD

The KVM board is shown below.

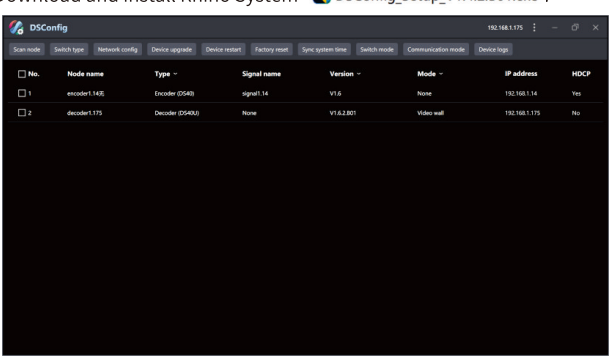
12.1 Board Installation

The KVM input board is installed by inserting it into the I or I/O slot of the video splicer. It must be used in conjunction with the DS40. The DS40 is shown in the figure below.



12.2 Firmware Upgrade

Step 1 Download and install Rhino System DSConfig_Setup_V1.4.2.B01.exe .



Step 2 Scan for nodes. Select the devices to be upgraded, then click **Device upgrade**.

Step 3 Select the upgrade package and start the upgrade process.

12.3 Environment Setup

Step 1 Connect the video splicer, KVM board, and DS40 to the same local area network (LAN).

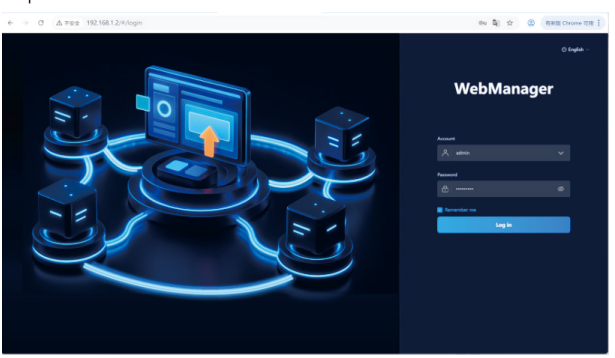
Step 2 Connect the input signal to the HDMI input of the DS40.

Step 3 Access the KVM board web application (192.168.1.2) to configure the screen.

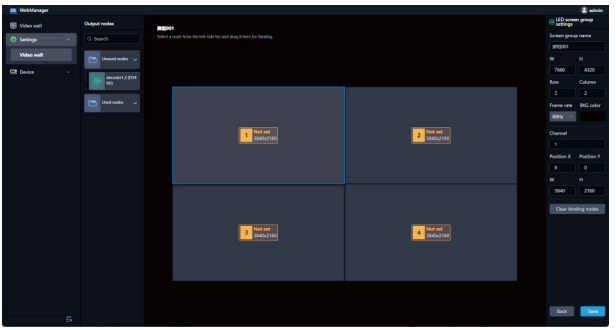
Step 4 Access the the video splicer web application, and drag the KVM input signal into the screen window, and display it.

12.4 Display Operations

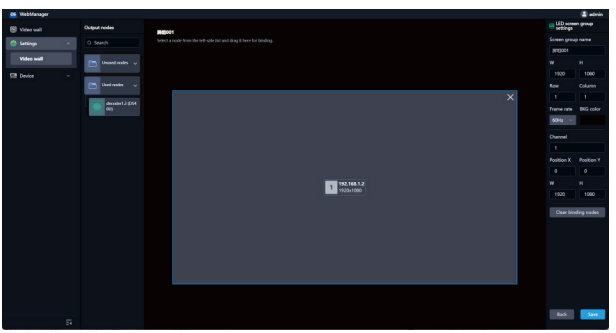
When using the KVM board for the first time, enter the board's default IP address 192.168.1.2 in a browser to access the login page. The default account is "admin", and the default password is "clt123456".



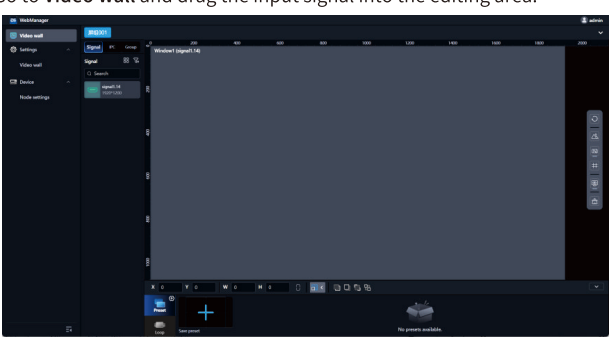
Step 1 Go to **Settings** > **Video wall** to add a screen group. Video wall parameters can be edited on the right panel.



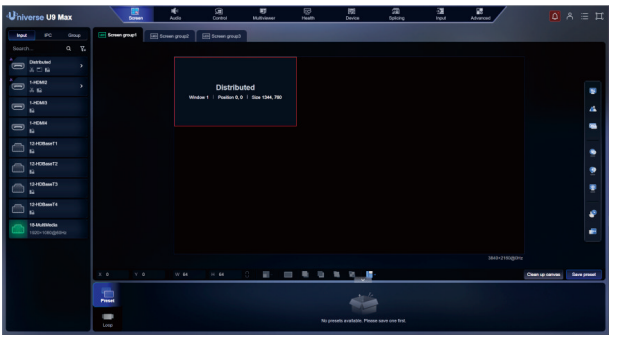
Step 2 Drag unused nodes into the editing area, then click **Save**.



Step 3 Go to **Video wall** and drag the input signal into the editing area.



Step 4 Display the input signal in the video splicer.



13 MULTIMEDIA BOARD

The multimedia board is shown below.

13.1 Overview

The multimedia board supports on-screen world clock display with comprehensive clock features, including time zone selection, national flags, font style and size, and time synchronization.

13.2 Board Installation

The multimedia board is installed by inserting it into the I or I/O slot of the video splicer.

13.3 Firmware Upgrade

Step 1 Copy the upgrade package to a USB drive and create a new folder named "Update".

Step 2 Rename the upgrade package to "Update.zip" and place it in the "Update" folder.

Step 3 Insert the USB drive into the USB port of the board. The board will automatically start the upgrade process.

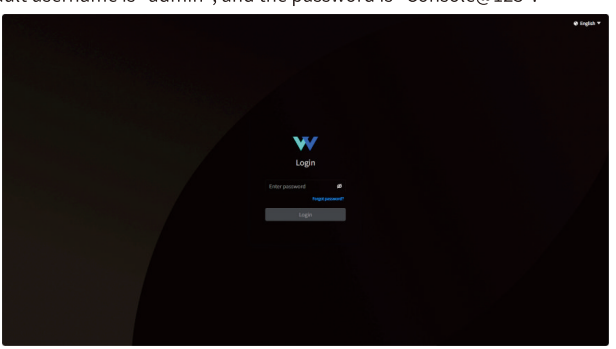
13.4 Board Ports

The ETH port is used for Internet connectivity, the LAN port for multimedia content configuration, and the USB 3.0 port for firmware upgrades via a USB drive.

13.5 Web Application Login

When using the multimedia board for the first time, enter the default IP address 192.168.1.52 in a web browser to access the login page. Alternatively, you can enter the **Device** interface and click **Go to Settings**, it will redirect to the login interface.

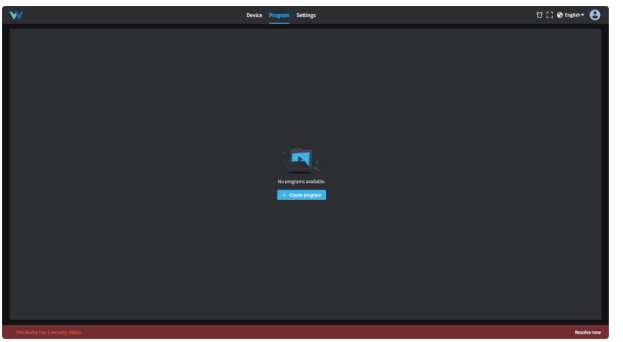
The default username is "admin", and the password is "Console@123".



13.6 Create a Program

Step 1 Switch to the **Program** tab.

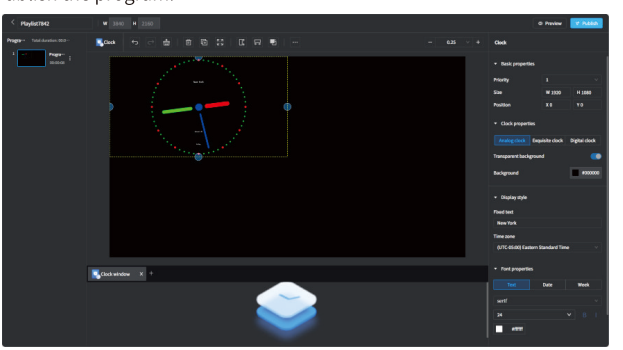
Step 2 Click **Create program**.



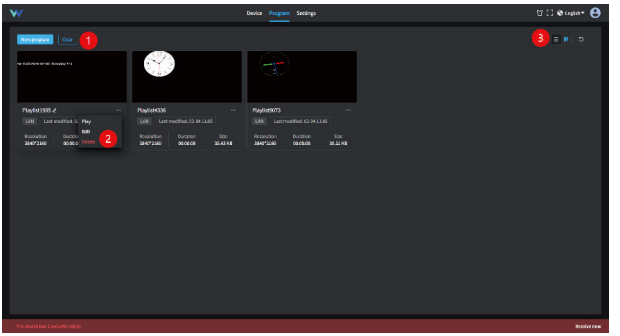
Step 3 Click to add clocks in a program as needed.

Step 4 Edit the display style, font properties, and time zone of a clock in the program.

Step 5 Publish the program.



13.7 Program Management



Step 1 Create a new program or clear all programs.

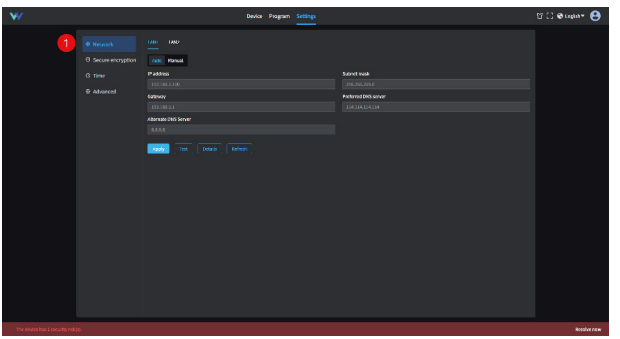
Step 2 Switch between programs, edit or delete a program.

Step 3 Sort the program list by grid or list view.

13.8 Board Settings

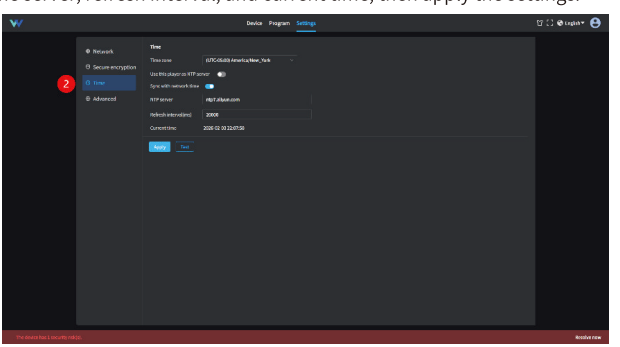
13.8.1 Network Settings

The ETH port connects to the Internet, while the LAN port is used for multimedia configuration. Set the IP address, gateway, subnet mask, primary DNS, and secondary DNS as needed, then apply the settings.



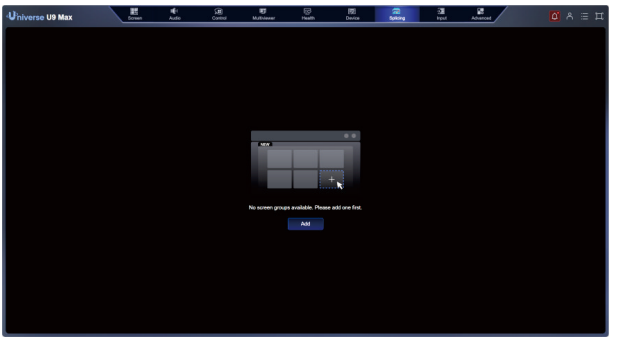
13.8.2 Time Settings

After configuring the network address, go to the Time settings interface to set the time zone, time server, refresh interval, and current time, then apply the settings.

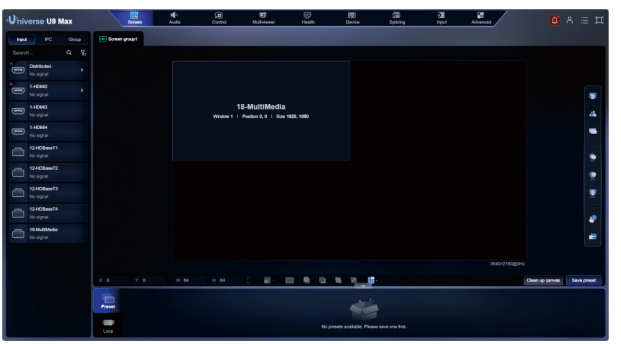


13.9 Display Clock

Step 1 Enter the video splicer web application and create a screen group.



Step 2 Drag the multimedia input signal into the window to display the clock on the screen.



14 TROUBLESHOOTING GUIDE

Problem	Possible Cause	Solution
Screen displays black	The input signal is lost.	Check the validity of the input signal and read the signal format.
	A black test pattern is being displayed.	Check whether the black pattern is selected as the test pattern in the web application or the front panel LCD.
	Blackout is enabled.	Check whether Blackout is enabled in the web application or the front panel LCD.
Image displayed in incorrect mapping order	The output does not match with the input.	Check the receiving cards mapping in the web application.
Poor image quality such as "double image"	The cable for output signal transmission is unqualified.	Replace with a higher-quality cable.
	The cable for output signal transmission is too long.	Lower the signal resolution or use a shorter HDMI cable.
No image output after signal switching	The new output channel has no signal.	Check the input signal connection.
	Poor cable contact.	Check the input and output cables and ensure good contact.
Inconsistency in accessories compared to packing list	Wrong delivery.	Contact Colorlight technical support for support.

15 STATEMENTS

Due to possible changes in product batches and production processes, the text and pictures in the document may be adjusted and revised to match accurate product information, specifications, and features. Colorlight may make improvements and changes to this document without prior notice. Please refer to the actual product.

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