

# VMP

## Vision Management Platform



User Manual

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# 1 Software Introduction

VMP, short for Vision Management Platform, is an application in the brand-new control system COEX series. Featuring innovative interaction design and plenty of practical functions, such as project management, screen configuration, input settings, display correction, color processing, screen settings, system backup, monitoring and maintenance, screen brightness schedule, and preset management, it provides users with an efficient and easy operation and control experience.

✦ **Easy and convenient management at screen level**

Devices of the same model and version can be added to the same screen for management, allowing for batch operations and greatly increasing work efficiency.

✦ **Fast and flexible configuration**

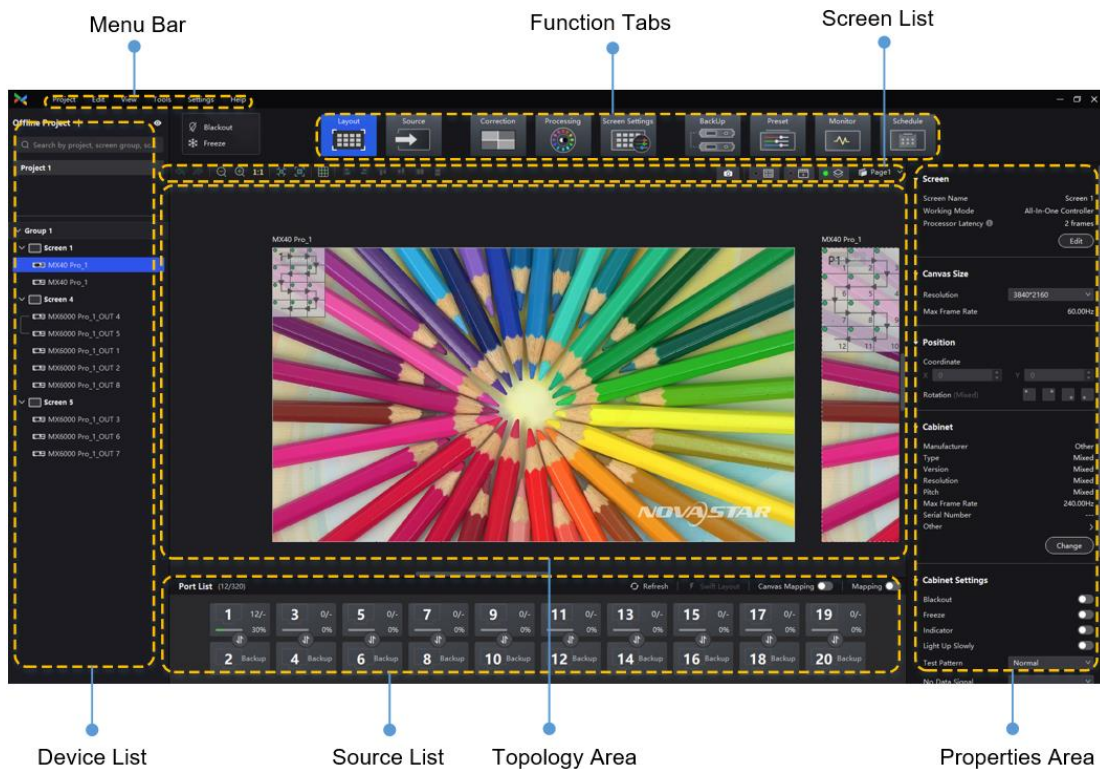
The cabinets can be quickly connected, flexibly arranged and aligned, significantly simplifying screen configuration.

✦ **Distinct topology area and properties areas**

The screen topology is clear at a glance, the input source can be previewed in real time in the topology area and various properties can be easily set.

## 2 UI Introduction

Figure 2-1 UI Introduction



### Note:

- All the figures in this document use operations in Windows10 as examples.
- You can refer to section [7.3 Lock and Unlock Correction Page](#) to lock the **Correction** page to avoid changing the display content due to misoperation.

## 3 Install VMP

### Prerequisites

- The VMP software package is prepared.
- A computer meeting the following requirements is available.
  - OS: Windows 10 (64-bit) or later
  - CPU: i5 or later
  - RAM: 8GB or greater


#### Note:

ARM-based Windows computers are not supported.

### Installing Method

Run the **Coex VMP Setup.exe** and follow the setup wizard to complete the installation. If a firewall prompt appears, choose to allow the installation.

### Installation Result

If the installation is successful, the VMP software shortcut  appears on the desktop.

## 4 Device Management

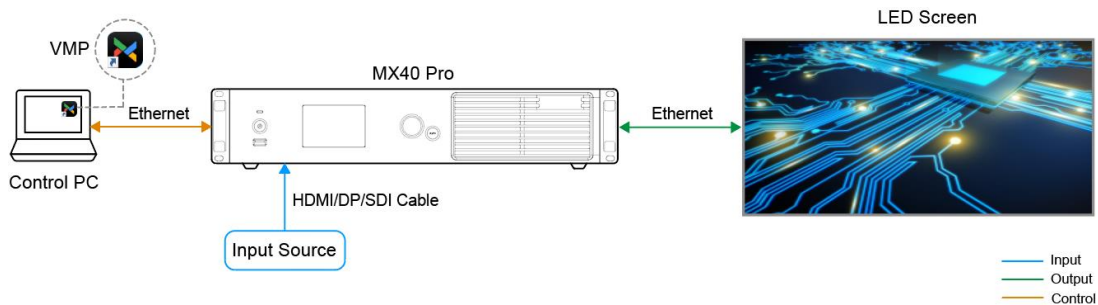
### 4.1 Connect Online Device

#### Via Ethernet Cable

Connect the controller and the control PC directly via Ethernet cable and set a static IP address for the controller to let the controller and control PC be on the same network segment. The MX40 Pro LED display controller is used as an example in this section.

Step 1 Follow [Figure 4-1](#) to complete the hardware connection.

Figure 4-1 Connecting devices via Ethernet cable



Step 2 Press the knob of the controller to enter the menu and choose **Communication Settings > Network Settings**.

Step 3 Set **Mode** to **Manual**.

Step 4 Set **IP Address**, **Subnet Mask** and **Default Gateway** and ensure the controller and control PC are on the same network segment.

To reset the network settings to the default values, please select **Default** and press the knob.

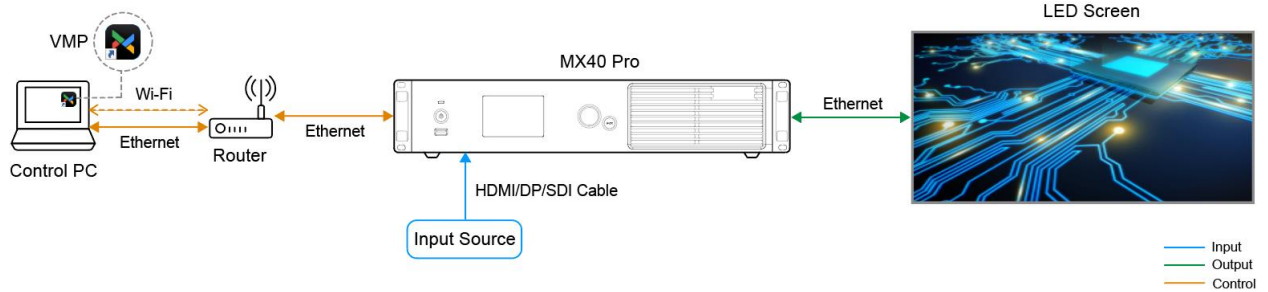
Step 5 After the settings, select **Apply** and press the knob.

## Via LAN

Connect the controller and the control PC to the same LAN via a router and set the controller to automatically obtain an IP address. The MX40 Pro LED display controller is used as an example in this section.

Step 1 Follow [Figure 4-2](#) to complete the hardware connection.

Figure 4-2 Connecting devices via LAN



Step 2 Press the knob of the controller to enter the menu and choose **Communication Settings > Network Settings**.

Step 3 Set **Mode** to **Auto**.

Step 4 Select **Apply** and press the knob.

## Related Information


- The online devices that are connected will be categorized according to the projects, screen groups, and individual screens of each device. Any new devices will be shown in the default project.
- For card-based devices like the MX6000 Pro and MX2000 Pro, you can install different models of output cards for the same device. However, output cards of different models do not support loading the same screen.

## 4.2 Add Offline Device

Before the LED screen is constructed on-site, you can add offline devices and pre-configure the screen settings. You can then easily import the pre-configured project settings for swift and hassle-free usage of the LED screen.

### Operating Procedure

Step 1 From the menu bar, choose **Tools > Offline Mode > Enter Offline Mode**.

Step 2 Click  at the top left and then select **Add Device** to add offline devices.

Step 3 Add one or multiple devices as needed. Up to 25 offline devices can be added.


Step 4 Click **Add Controller** in the pop-up window.



To add multiple devices of the same model, click **Batch Add**.

Figure 4-3 Add controller

No.	Controller Model	Card Type	Name	IP Address	Operation
1	MX6000 Pro	IN (1/8), OUT (1/8)	MX6000 Pro_1	192.168.0.10	Copy, Delete

Step 5 Enter the device type, device name, and IP address.

For card-based devices like the MX6000 Pro and MX2000 Pro, click  to enter the input/output card model. You can install different models of output cards for the same device. However, output cards of different models do not support loading the same screen.

Click  to copy the current controller and click  to delete it.

Step 6 Click **OK** once you are done.

### Related Information


- The added offline devices will be displayed at the bottom of the selected project/screen.
- When no target is selected, added offline devices will be displayed at the bottom of the Default Project.
- To exit offline mode, choose **Tools > Offline Mode > Exit Offline Mode**, or close VMP and reopen it.

## 4.3 Manage Project List

The project list is categorized into four levels: project, screen group, screen, and controller. Screen groups, screens, and controllers can be added to the project for centralized management and batch operations.

This chapter will introduce the operations related to the project list by using the example of creating a new project and screen, as well as managing the connected controllers.

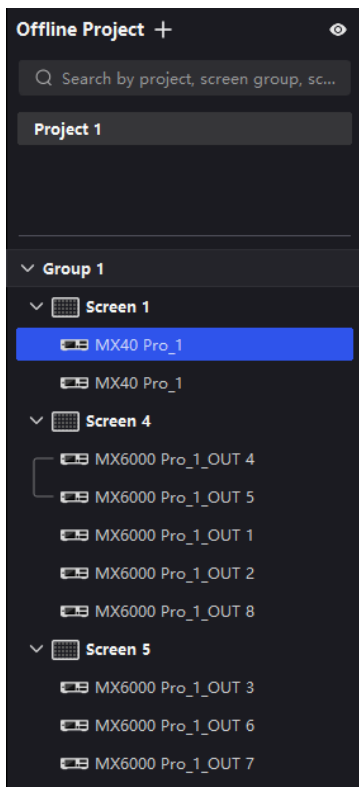
### Operating Procedure


Step 1 Click  at the top left and then select **New Project** to create a project.

To delete a project, right-click the project and then select **Close** from the pop-up menu.



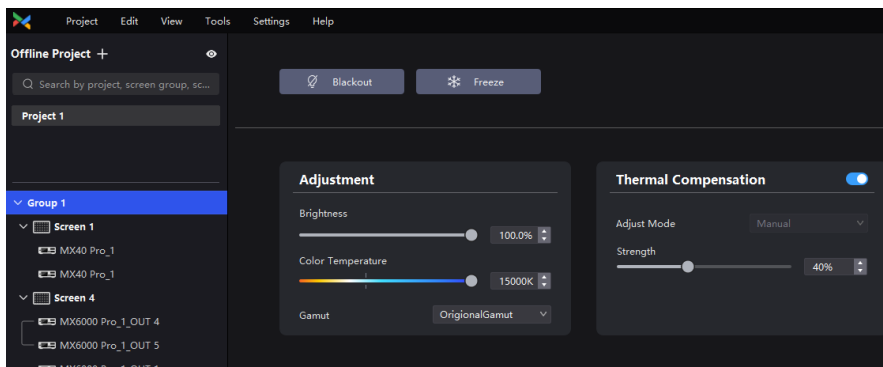
Figure 4-4 Project list



Step 2 To create a screen for a project, first select the project and then click  at the top left and then select **New Project**.


- When you have multiple screens in the project, you can drag a screen to overlap with another one and create a screen group.

You can perform screen control (blackout/freeze), image quality adjustment, and thermal compensation settings on the selected screen group.



- You can drag and drop a screen group or screen to another project.

Step 3 You can also drag and drop a controller to another screen.

- Controllers and output cards of different models or firmware versions cannot be added to the same screen.
- Dragging a controller to a new screen will apply all the sending card parameters of that screen.
- Click the  icon at the top right of the list to hide controllers and only show projects, screen groups, and screens.

## Related Operations

### **Rename:**

Right-click a project/screen group/screen/controller and then select **Rename** from the pop-up menu.

### **Screen Control:**

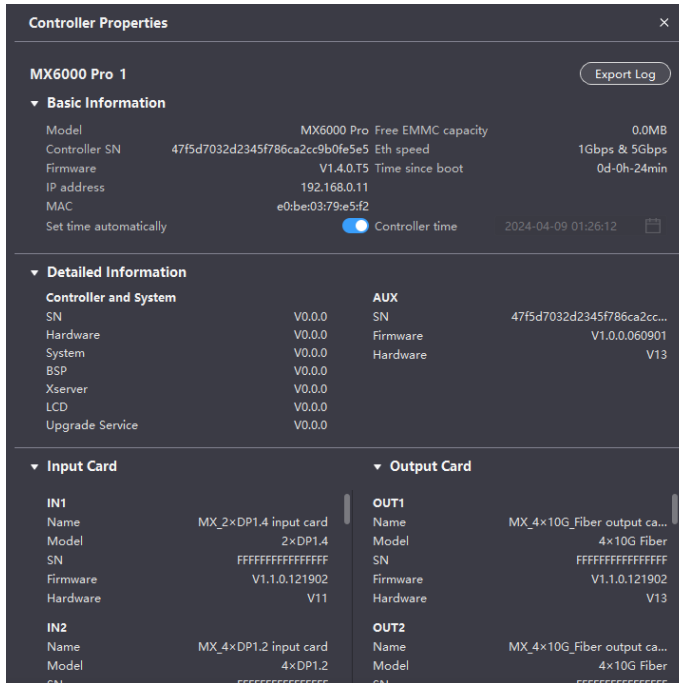
Right-click a project/screen group/screen/controller and then select **Blackout** or **Freeze** from the pop-up menu.

#### ✦ Enable Mapping:

Right-click on a screen/controller and select **Mapping**, **Controller Finder**, and **Canvas Mapping** for a clear view of the positions and connection topology of the receiving cards, as well as the controller and canvas positions.

#### ✦ Controller Properties

Right-click a controller and then select **Controller Properties** to open the corresponding interface.



- Check the basic information

Check the controller model, SN, firmware version, IP address, MAC address, etc.


- Check the detailed information

Click  to expand the panel and check the detailed controller hardware and software information.

- Check input/output card information

Check the input/output card name, model, SN, firmware version, hardware version and other information when connecting to card-based controllers (MX6000 Pro and MX2000 Pro).

- Sync time

Toggle on the **Set time automatically** (). If the device is connected to VMP, it will automatically sync the time from the control computer to the device.

- Modify time

When **Set time automatically** is toggled off () , click the **Controller time** widget and then modify the time.

- Export logs

Click **Export Log**, select a save path, set the file name, and click **Save**.

## 4.4 Export and Import Project

Export the project files (.nprj) so that you can import the files to apply the configuration data to the same kind of devices, improving the configuration efficiency.

### Prerequisites

The project file can be imported to a device that is of the same model. For card-cased controllers (MX6000 Pro and MX2000 Pro), you also need to make sure the card slot and model in the file match the device.

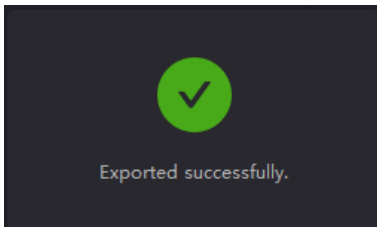
- If the project file version is higher than that of the device, you will be prompted to upgrade the device firmware during the import. Please note that the features of the new version will not be supported by the device.

- If the project file version is lower than that of the device, you can import it without any issues.

## Export Project Files

- Step 1 From the menu bar, choose **Project > Export** and select a project.  
You can also right-click a project and select **Export** from the pop-up menu.
- Step 2 Select a local directory and click **Save**.
- Step 3 After successful export, click **OK** to close the prompt box.

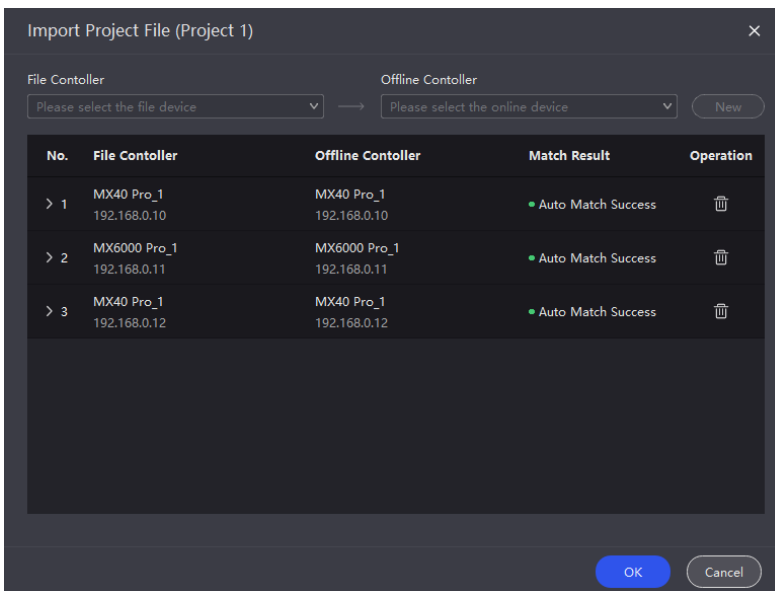
Figure 4-5 Successful export



## Import Project Files

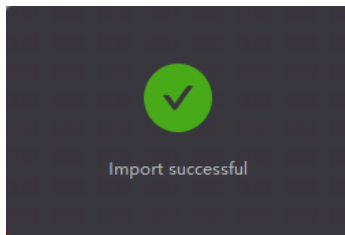
- Step 1 From the menu bar, choose **Project > Import** and select a project.  
You can also right-click a project and select **Import** from the pop-up menu.
- Step 2 Select a local project file and click **Open**.  
After successful device matching, a dialog box as shown in [Figure 4-6](#) is displayed.

Figure 4-6 Matching devices



- Step 3 Click **Confirm**.
- Step 4 After successful import, click **OK** to close the prompt box.

Figure 4-7 Successful import



## 4.5 Manage Peripherals

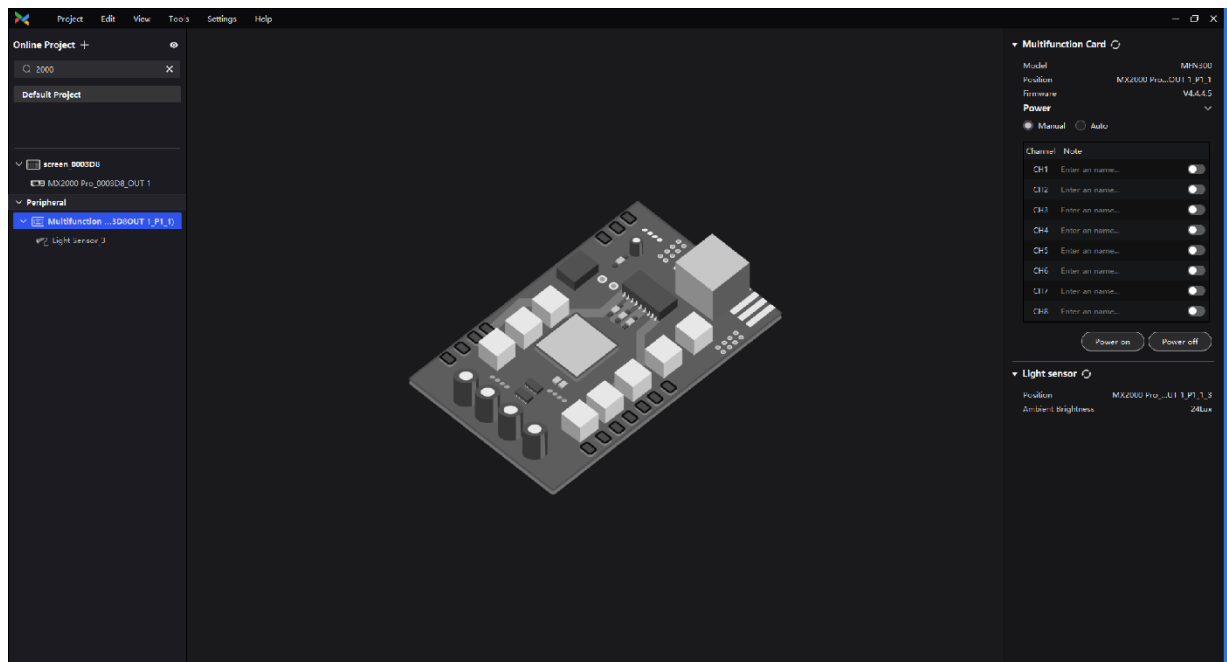
VMP supports detecting all multifunction cards and light sensors connected to the project controllers, as well as enabling power control through the multifunction cards.

### Applicable Products

- Multifunction card: MFN30
- Light sensor: NS060

### Operating Procedure

Step 1 Select a project from the project list.



Step 2 In the **Peripheral** section below the project list, you can check the multifunction cards connected to all the controllers with the project, as well as the light sensors connected to the multifunction cards.

Step 3 Select a peripheral to view its information in the properties area on the right.

- Multifunction card: You can view the model, position, and firmware version.
- Light sensor: You can view the position and ambient brightness.

#### Note

When using the multifunction card (MFN300-B V4.4.2.0 or later), make sure to connect it to the controller's first 16 ports. For other versions of the multifunction card, it is advisable to connect it to port 1 of the controller.

Step 4 Perform power control operations as needed.

Select a multifunction card and set the power control mode in the properties area on the right. You can choose between the auto and manual mode. You can also click **Power on** or **Power off** to control the state of all power channels.

- Manual mode: Set the state of each individual power channel.
- Auto mode: Different start and shutdown times can be set for each power channel, with default times retrieved from the multifunction card.

## 4.6 Art-Net Control

Enable the Art-Net protocol switch to realize control via third-party device.

### Applicable Products

MX40 Pro, MX30, MX20, KU20

### Prerequisites

To apply the Art-Net protocol, make sure the transmitter ends (such as console and control PC) and the receiver ends (such as LED display control system and lighting system) are on the same LAN.

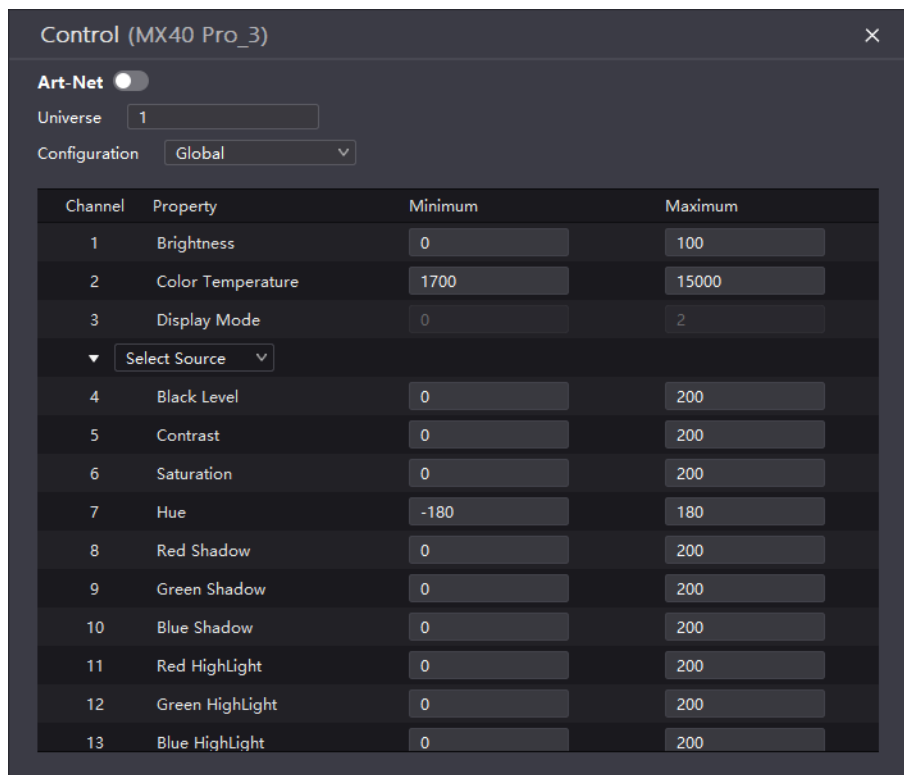
### Related Information

After the Art-Net protocol switch is enabled, the configured parameters cannot be modified. For the protocol details, see *Art-Net Protocol Instructions*.

### Operating Procedure

From the menu bar, choose **Tools > Control**, enable the Art-Net switch, and complete the **Source**, **Image Quality** and **Preset** parameter configurations.

Figure 4-8 Art-Net switch



# 5 Screen Configuration

## 5.1 Edit Screens

Edit the settings of the selected screen.

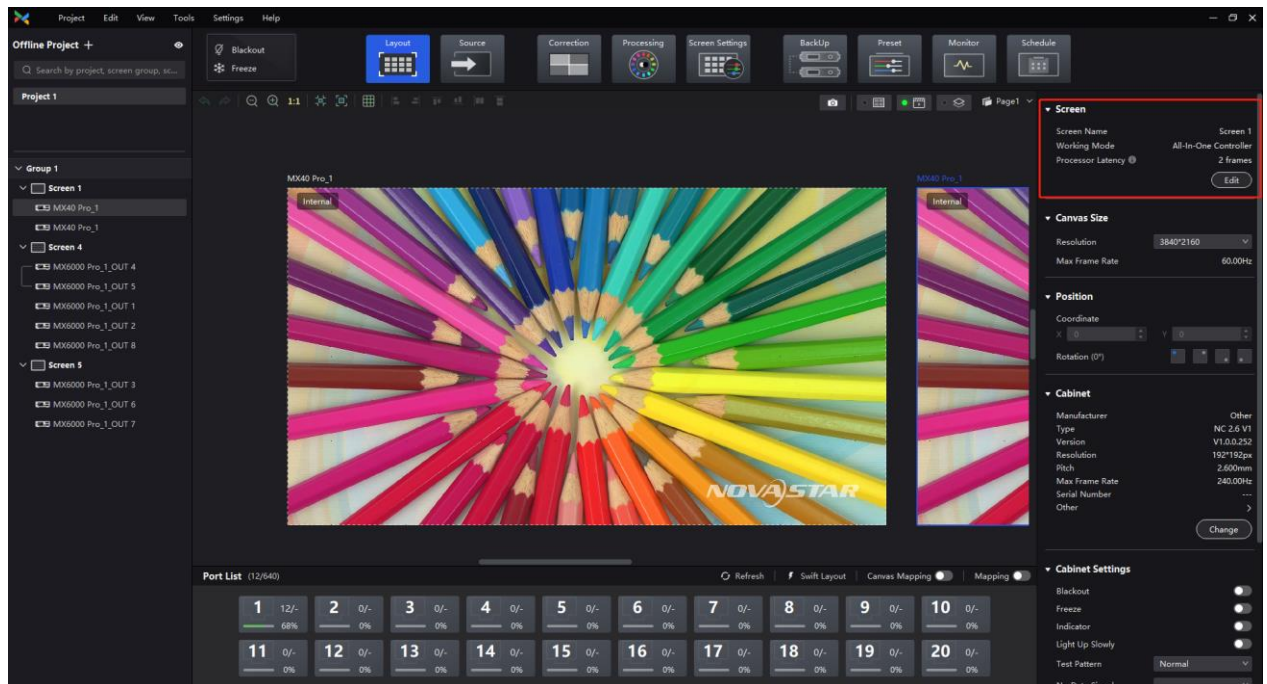
### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Operating Procedure

Step 1 Select a screen from the project list and then select **Layout**.

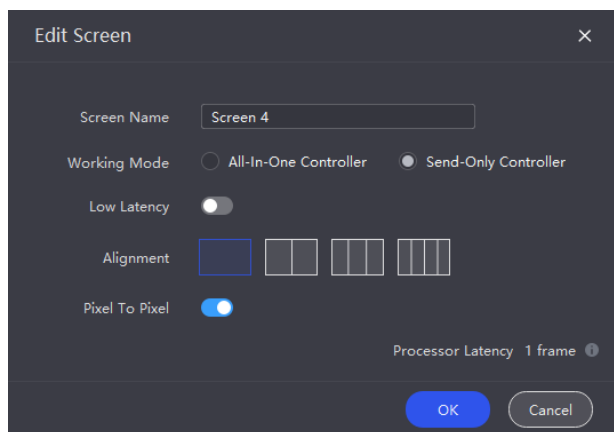
Figure 5-1 Layout



Step 2 Click **Edit** in the properties area on the right.


Step 3 Enter a screen name on the pop-up window.

Figure 5-2 Edit screen






Step 4 Select a **Working Mode**. When operating as a **Send-Only Controller**, the display latency is reduced by 1 frame.

**Step 5 Set Low Latency.**

When low latency is set to , the latency at the data sending end is reduced by 1 frame.


**Step 6** When a card-based controller (MX6000 Pro or MX2000 Pro) operates as a **Send-Only Controller**, you also need to do the following.


1. Choose a layer alignment from the four options.

For , , or , you can adjust the layer size by dragging the layer divider, or setting a value under the **Canvas Size** section.



2. Set the state of **Pixel to Pixel**.

When **Pixel to Pixel** is enabled (), it will output the display based on the size of the input source in a pixel-to-pixel manner.

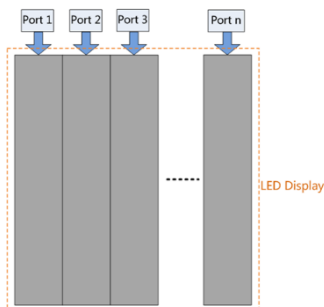
When **Pixel to Pixel** is disabled (), the input source will automatically scale to fill the layer based on the configured layer size.

**Step 7** Click **OK** once you are done.

### Note

Pay attention to the following when using the low latency function.

- Low latency, frame multiplication, and 3D cannot be enabled at the same time.
- When low latency is enabled, the sync source cannot be set to Genlock.
- To enable low latency, please make sure all Ethernet ports load the cabinets vertically and share the same Y coordinate. Free screen configuration (for example, Ethernet port 2 loads cabinets horizontally, or its Y coordinate is different from that of Ethernet port 1) will reduce the load capacity.



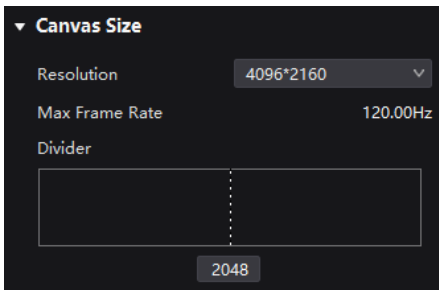
## 5.2 Set Canvas Size

**Step 1** Select a screen, controller, or output card from the project list and then select **Layout**.




**Step 2** In **Canvas Size** section, select a pre-defined resolution from the drop-down list or customize the width and height of the canvas. The maximum supported setting is 16384.

The system will automatically calculate the maximum frame rate for the canvas based on the current resolution.

Figure 5-3 Canvas size



Step 3 When a card-based controller (MX6000 Pro or MX2000 Pro) operates as a **Send-Only Controller**, you can set the layer divider.

For , , or , you can adjust the layer size by dragging the layer divider, or setting a value for the divider.



### 5.3 Configure Screen Topology

Configure the cabinet topological diagram to complete the logical connection of the cabinets.

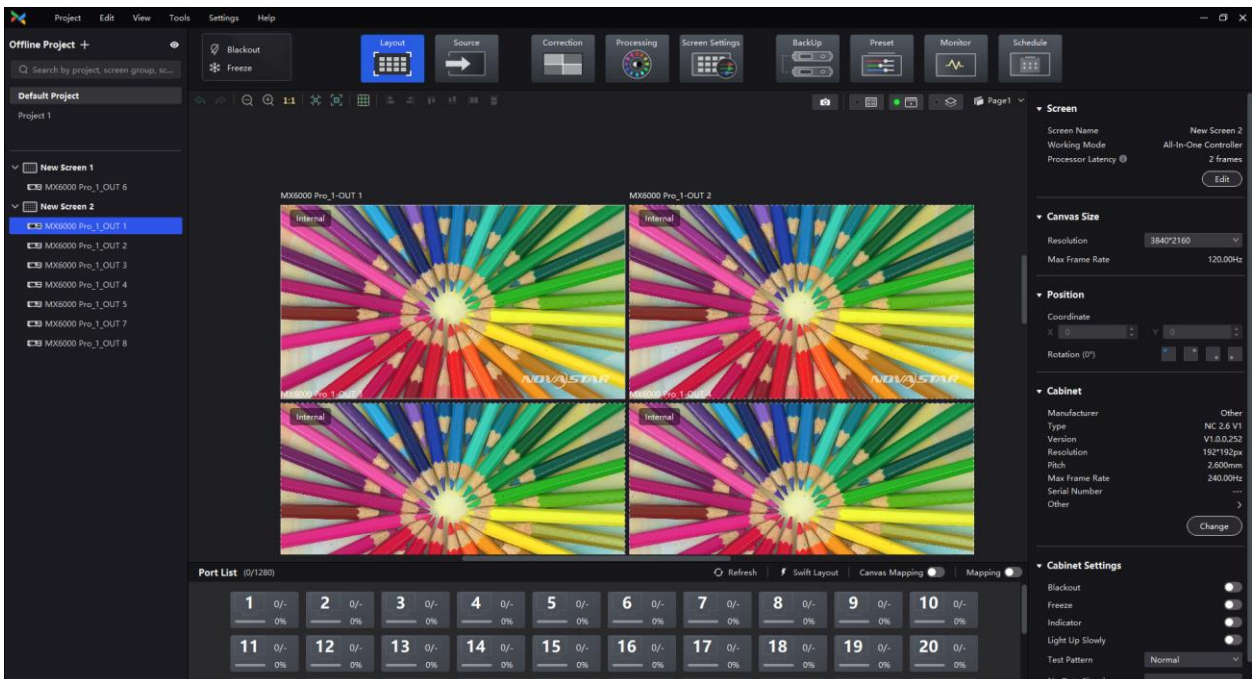
#### Prerequisites

The controller is connected and cabinets are connected to the controller.

#### Operating Procedure

Step 1 Select a controller from the project list and then select **Layout**.





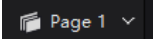

Figure 5-4 Layout

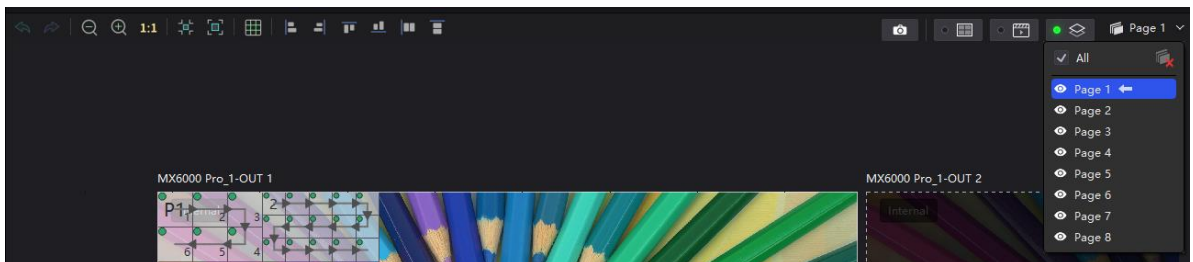




Step 2 Choose **View > Display** from the menu bar, select a view for the topology area, and choose what to display on the topology.

Select a view or switch pages by clicking one of the icons in the top right corner of the topology area:

- : Show the cabinets only.
- : Show the preview image of the input source only.
- : Show the cabinets and preview image of the input source at the same time.
- : Click to enable **Source Snapshot**. When this is enabled, the source playback in VMP will freeze on the last frame and the display on the LED screen will not be affected. Users can then adjust screen settings based on the frozen image without needing to look at the LED screen. To disable **Source Snapshot**, simply click the icon again.
- : Click to switch pages in the dropdown menu. VMP supports a fixed total of 8 pages. When multiple screens are displaying the same content, you can configure screen layout at different pages and choose to show or hide them as needed. Click  to clear all topologies.



You can choose the content to be displayed in the topology area, including cabinet topology, cabinet status, group names, source tags, and overlapping cabinets.

Step 3 Select an Ethernet port at the bottom and then drag or click the mouse in the topology area to add cabinets.

The cabinets will be automatically connected when you are adding them, as shown in [Figure 5-5](#). The Ethernet port's load capacity information will be displayed, as shown in [Figure 5-6](#). The properties area will display the cabinet specifications, as shown in [Figure 5-7](#). You can also select a custom cabinet and click **Edit** to modify the specifications of the cabinet.

Figure 5-5 Cabinets connected automatically

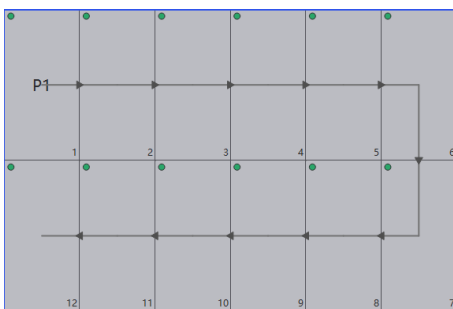
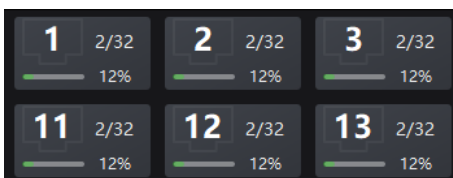
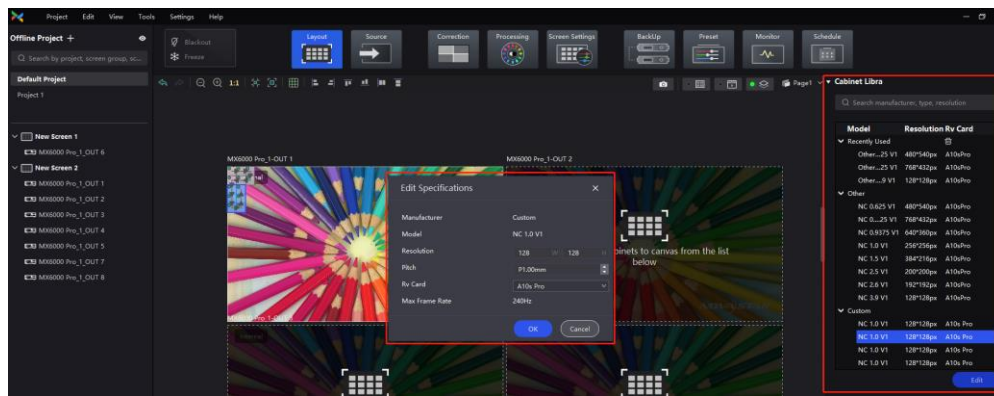


Figure 5-6 Ethernet port capacity



- 2/32: Indicates that there are 32 cabinets connected to Ethernet ports 1 and 2 which are added to the topology.
- 12%: Indicates these 2 cabinets have used 12% of the Ethernet port's capacity.

Figure 5-7 Edit cabinet specifications (only available in offline mode)



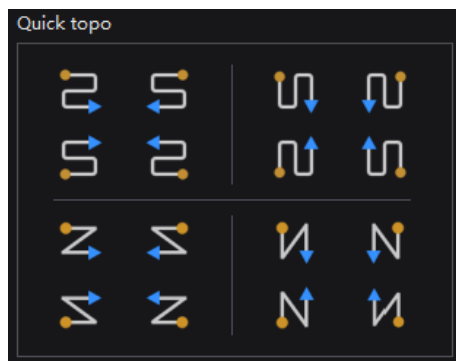
**Note**

- Swift Layout: If all the cabinets loaded by the Ethernet ports have the same model, resolution, and connection topology, you can use the Swift Layout function to quickly add and connect the cabinets for all the Ethernet ports.
- Operating procedure: Click **Swift Layout** and then drag the mouse on the canvas to add cabinets that match the actual requirements. In the properties area, select a layout and click **Done**.

Step 4 Select other Ethernet ports and continue to add cabinets until all cabinets are connected.

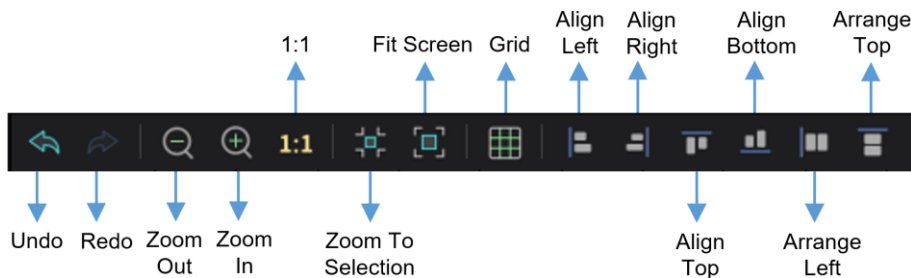
Step 5 For cabinets that have the same size and consecutive serial numbers, if you want to change the cabinet connection topology, select the cabinets and then select a quick topology under **Quick topo** in the properties area, as shown in Figure 5-8. For other cabinets, skip this step.

Figure 5-8 Quick topology




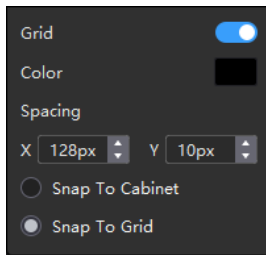
Step 6 Do any of the following to arrange and align the cabinets and cabinet groups to let the cabinet positions meet the display requirements.



**Use the function buttons**



- 1:1: The canvas size equals the input source resolution.
- Zoom to Selection: The selected element is zoomed and displayed in the center of the canvas.
- Fit Screen: The canvas size is automatically adjusted to fit the topology area size.

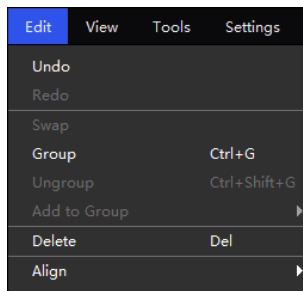
Click  to show its drop-down menu shown below. The menu can be used to set the canvas grid.



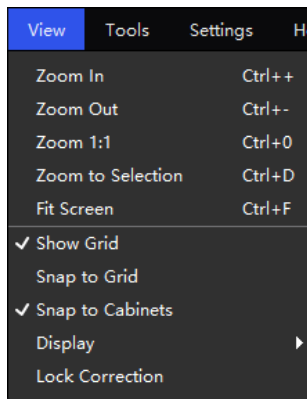
- Grid: When toggled on () , a grid is displayed on the canvas. If you do not need to display the grid, set the switch to .
- Color: Set the grid color.
- Spacing: Set the spacing of horizontal and vertical lines of the grid. The spacing is set to the resolution of the first cabinet by default.
- Snap to Cabinet: When positioning a cabinet near another one, the cabinet being moved will automatically align and snap to the edge of the adjacent cabinet, effectively eliminating gaps.
- Snap to Grid: The cabinet will be snapped to the grid.

#### Use the function menus on the menu bar

- **Edit menu**

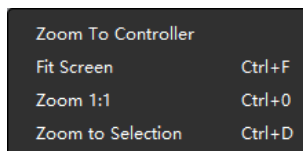


- **View menu**



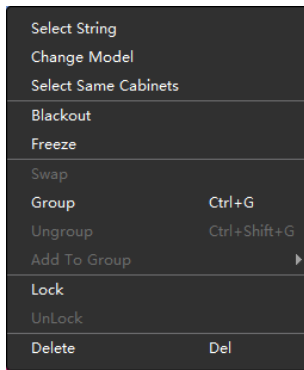
#### Use the right-click function menus

- Right click the canvas



Zoom to Controller: The selected controller is zoomed and displayed in the middle of the topology area.

- Right click the cabinet



Select String: Select all the cabinets on the connection line of the current cabinet.

Swap: Swap the positions of the two selected cabinets.

Group: Group the selected cabinets. To set the group name and color, please select the group and set them in the properties area.

Ungroup: Ungroup the cabinets.

Add to: Add the selected cabinets to a group.

Move to: Move the selected cabinets to the specified page.

#### ✦ Set cabinet coordinates and rotation

Select a cabinet and specify its coordinates and rotation angle in the properties area. Once the cabinet is rotated, the input source will display at the adjusted angle.

The cabinet rotation in 90° increments feature is only supported by certain models of receiving cards, as detailed below:

Table 5-1 Receiving cards supporting cabinet rotation

Model	Description
CA50E, XA50Pro, A10s Pro	Supported by all versions.
A8s-N, A7s Plus, A5s Plus	Supported by V4.9.0.0 or later.

## 5.4 Set the Cabinet

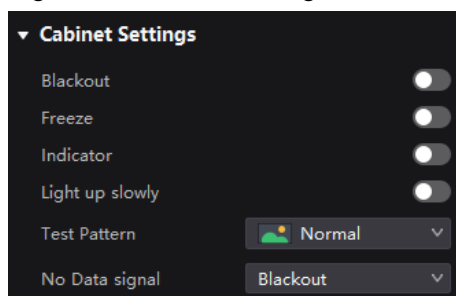
### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Operating Procedure

Select a cabinet, canvas, or screen and then select **Layout**. Do any of the following operations in the properties area.


Figure 5-9 Cabinet settings




#### ✦ Control Display Status

Set the **Blackout** or **Freeze** switch to .

#### ✦ Enable Indicator

If the cabinet has a running status indicator, you can set the **Indicator** switch to .

#### ✦ **Enable the Light Up Slowly Function**

Set the **Light up slowly** switch to  so that after the screen is powered on, the display brightness will slowly change from 0 to the target value.

#### ✦ **Set Test Pattern**

Select a test pattern from the drop-down list of **Test Pattern** to perform screen aging test and troubleshoot problems.

#### ✦ **Set Image for Abnormal Situations**

Select an option from the **No data signal** drop-down list.

- Blackout: The screen displays a black image.
- Last Frame: The screen always displays the last frame.

## 5.5 Set OPT Ports

### Applicable Products

MX40 Pro

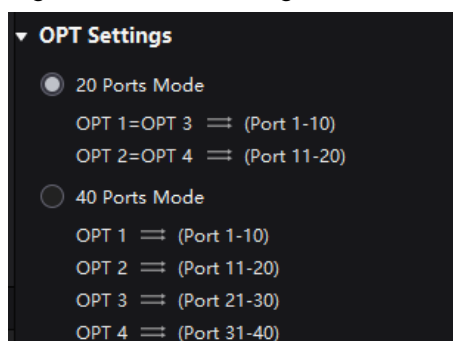
### Operating Procedure

Step 1 Select a screen from the project list and then select **Layout**.

Step 2 Set the output mode of the OPT ports under OPT Settings. You can choose either **20 Ports Mode** or **40 Ports Mode**.

- **20 Ports Mode**
  - OPT 1 transmits the data of Ethernet ports 1 to 10. OPT 3 is the copy channel of OPT 1.
  - OPT 2 transmits the data of Ethernet ports 11 to 20. OPT 4 is the copy channel of OPT 2.
  - You can use the optical port alongside the physical Ethernet port, with priority given in the following order: OPT 1/2 > OPT 3/4 > Ethernet ports 1–20.
- **40 Ports Mode**
  - OPT 1 copies and outputs the data of Ethernet ports 1–10.
  - OPT 2 copies and outputs the data of Ethernet ports 11–20.
  - OPT 3 copies and outputs the data of Ethernet ports 21–30.
  - OPT 4 copies and outputs the data of Ethernet ports 31–40.
  - You can use the optical port alongside the physical Ethernet port, with priority given in the following order: OPT 1/2 > Ethernet ports 1–20.

Figure 5-10 OPT settings



---

 **Note**

- When both the optical and Ethernet ports are used simultaneously, please do NOT connect the device's Ethernet port with the same number as the one of the optical port to the receiving card at the same time. If they are connected simultaneously, the display effect of the optical port will take precedence.
  - When Ethernet port backup is enabled in 40-port mode, the last 20 Ethernet ports are backed up by the first 20 Ethernet ports. When switching to the 20-port mode, please remember to remove the loop backup setup of the receiving card.
  - While in the 40-port mode, additional Ethernet ports can be used to create easier screen topology without reducing the device's maximum load capacity.
-

## 6 Input Source Configuration

### 6.1 Set Layers

Add layers and set the layer properties.

#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

#### Prerequisites

- For single-card controllers (MX40 Pro, MX30, MX20, KU20), the Layers function is only available while under All-In-One Controller mode. Please refer to [5.1 Edit Screens](#) for more details.
- For card-based controllers (MX6000 Pro and MX2000 Pro), the Layers function is available for both All-In-One Controller and Send-Only Controller modes.
  - All-In-One Controller supports free layer layout;
  - Send-Only Controller follows a fixed layer layout with a predetermined layer quantity.

#### Related Information

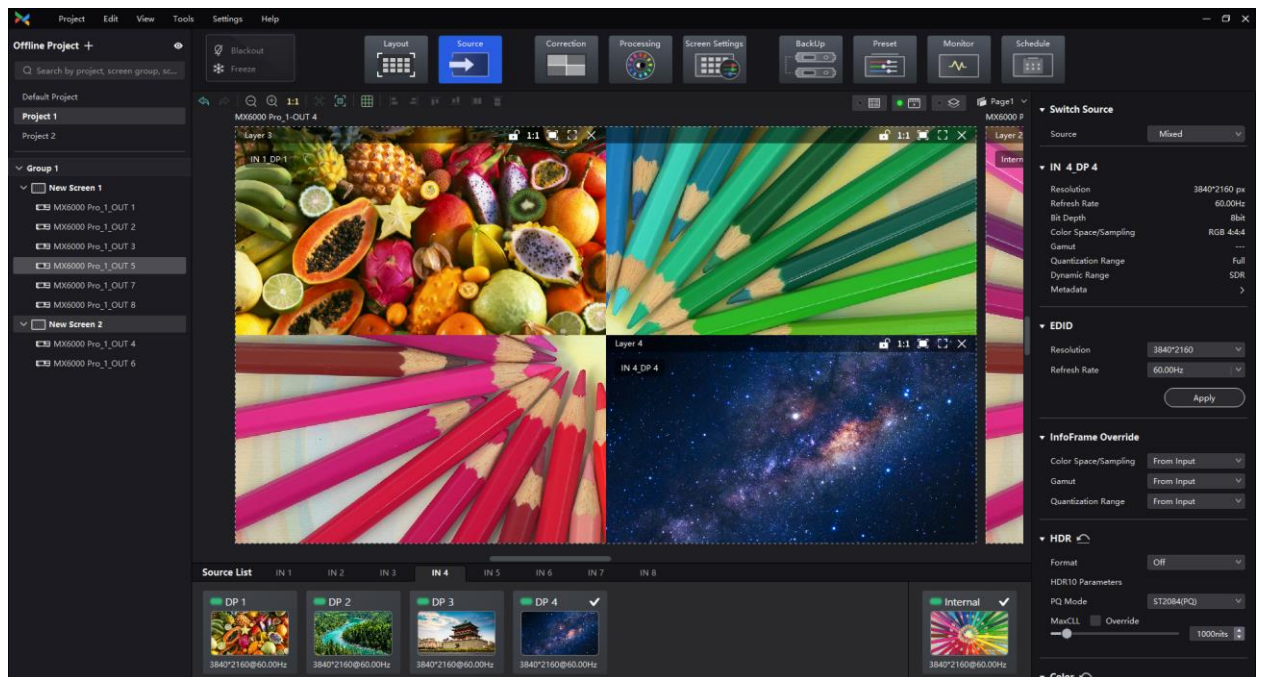
The maximum number of layers that can be added depends on the connected device. When the supported layer quantity is 1, layer position, border, input crop and other operations are not supported.

Device Model	Number of Supported Layers
MX40 Pro	4
MX30	3
MX20	3
KU20	1
MX6000 Pro	32 (Each input card supports 4 layers, and up to 8 input cards can be used at the same time.)
MX2000 Pro	8 (Each input card supports 4 layers, and up to 2 input cards can be used at the same time.)

#### Operating Procedure

Step 1 Select a controller or screen from the project list and then select **Source**.

Figure 6-1 Input source



Step 2 Select an input card at the bottom of the page when there are multiple input cards.

Step 3 Double-click the thumbnail of the input source or drag the input source to the target position to add a layer.

You can check the source status according to the source indicator:

- Green: The input source is connected.
- Red: The input source is being used for the screen but is not connected.
- Gray: The input source is not connected.

Step 4 Make layer adjustments as needed.

#### ✦ Lock layer



#### ✦ Switch source

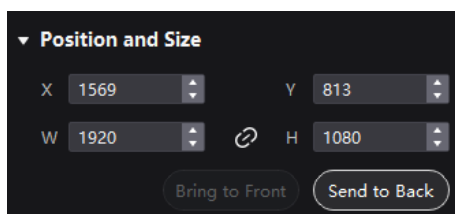
- Select a layer and select another source in the properties area.



- Right-click a layer, select **Source** from the pop-up menu, and select another source.

#### ✦ Adjust layer size and position

- Select a layer and set the layer size and coordinates in the properties area. You can also bring the layer to front or send it to back.



- Right-click a layer and select **Bring to Front**, **Send to Back**, **Bring Forward** or **Send Backward** from the pop-up menu.



- At the top right of a layer, click a function icon to set the layer.



: Lock the layer.



: Unlock the layer.



: The layer size is the same as the input source resolution.



: The layer automatically fills the screen.



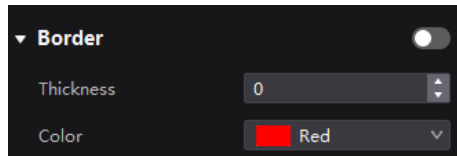
: The layer size changes automatically according to the canvas size.



: Delete the layer.

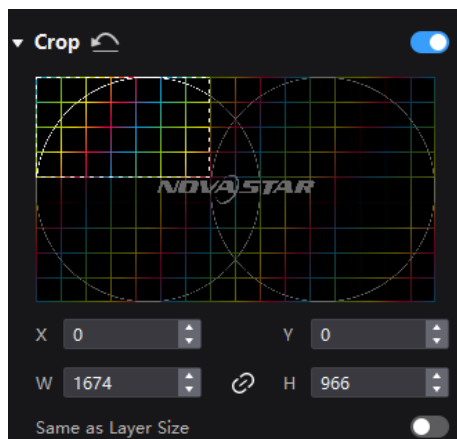
#### ✦ Set borders

Select a layer and enable or disable the layer borders function in the properties area. After enabling the function, you can set the border thickness and color.



#### ✦ Crop the input source

Select a layer and enable or disable the **Crop** function in the properties area. Then, you can set the crop size and position on the thumbnail of the layer. You can also make adjustments by setting the parameter values below the thumbnail. When **Same as Layer Size** is set to , the input source image will be cropped according to the layer size.



## 6.2 Set External Sources

Select a controller from the project list and then select **Source**. Select an external source from the source list and do the following as required.

### 6.2.1 Set Max Bandwidth for Input Source

When installing an 8K input card in a card-based controller, it is necessary to configure the maximum bandwidth for the input source in order to calculate the layer resources of the input ports.

#### Applicable Products

MX6000 Pro, MX2000 Pro

#### Operating Procedure

Select an option from the drop-down list to calculate the layer resources. [Figure 6-2](#) takes the MX\_2xDP1.4 input card as an example.

- 4096\*2160@60Hz: Up to 4 layers can be added.
- 8192\*2160@60Hz: The maximum number of layers that can be added is determined based on the size of the input source used in the currently enabled layers of the input card. For example:
  - When using two input sources of 8192×2160@60Hz, a maximum of two layers can be added.
  - When using one input source of 8192×2160@60Hz and two input sources of 4096×2160@60Hz, a maximum of three layers can be added.

Figure 6-2 Maximum bandwidth



### 6.2.2 Set ST 2110 Parameters

When installing ST 2110 input cards in card-based controllers like the MX6000 Pro and MX2000 Pro, you need to configure the video stream for the input source, set the IP addresses for the primary and backup OPT ports, and establish the PTP configuration.

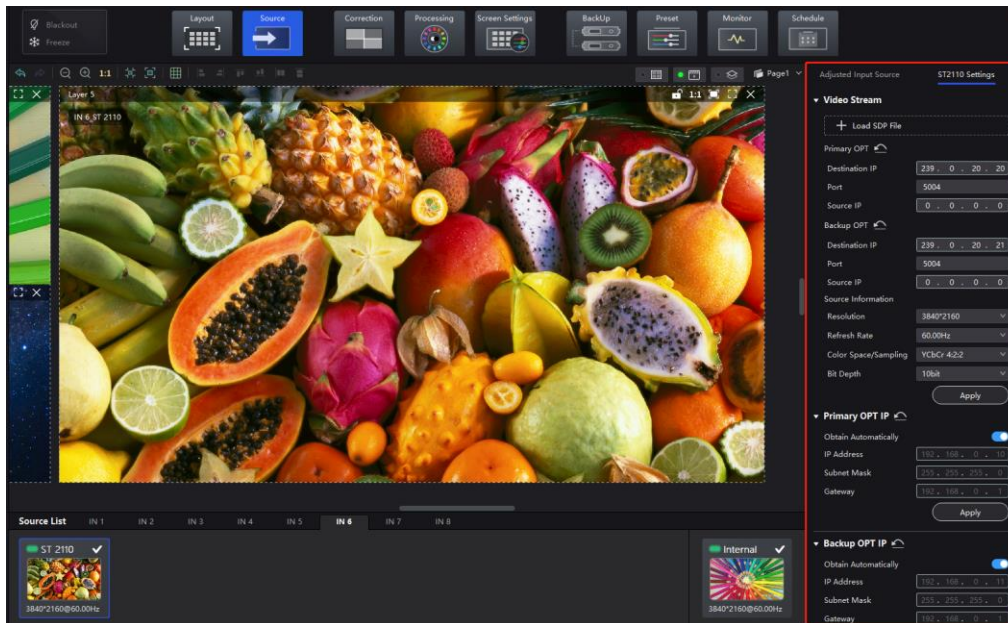
#### Applicable Products

MX6000 Pro, MX2000 Pro


#### Operating Procedure

- Step 1 Select the ST 2110 input card from the source list and navigate to the **ST 2110 Settings** in the properties area on the right.

Figure 6-3 ST 2110 settings



Step 2 Under the **Video Stream** section, you can set the ST 2110 port information using either of the following two methods.

- Method 1: Click  to load the SDP file for configuration.
- Method 2: Fill in the below parameters to complete the OPT configuration.
  - Destination IP (primary/backup OPT ports)
  - Port (primary/backup OPT ports)
  - Source IP (primary/backup OPT ports)

Step 3 Under the **Video Stream** section, you can set the ST 2110 source information.

Select an option from the drop-down lists of **Resolution**, **Refresh Rate**, **Color Space/Sampling**, and **Bit Depth** and then click **Apply**. You can also set a custom resolution.

Step 4 Set the primary and backup OPT IP addresses for the ST 2110 input card under the **Primary OPT IP** and **Backup OPT IP** sections.

You can enter the IP address manually or simply toggle on **Obtain Automatically**. Remember to click **Apply** once you are done.

#### **Note:**

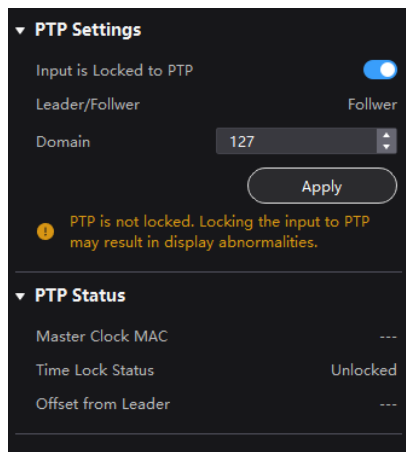
Please assign different subnet IP addresses to the optical ports on the ST 2110 card. Failure to do so may result in NMOS malfunctions due to network card routing issues.

Example: (SFP1: 192.168.0.20, SFP2: 192.168.1.20).

Step 5 Enable or disable **Input is Locked to PTP** under the **PTP Settings**.

When this is enabled, it can synchronize with the master clock on the network. Remember to click **Apply** once you are done.

Figure 6-4 PTP



#### Note

If the **Time Lock Status** in the **PTP Status** section shows **Unlocked**, enabling **Input is Locked to PTP** may result in display abnormalities.

Step 6 You can view the **Master Clock MAC**, **Time Lock Status**, and **Offset from Leader** under **PTP Status**.

### 6.2.3 Set Resolution and Refresh Rate

#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

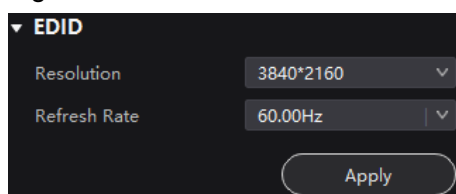
#### Related Information

If the resolutions of the input source and screen are the same, the image can be displayed pixel to pixel. A lower frame rate may result in image flickering, while a higher refresh rate helps stabilize the display image.

#### Operating Procedure

Select a value from the drop-down lists of **Resolution** and **Refresh Rate** and click **Apply**.

Figure 6-5 EDID



### 6.2.4 Adjust the Color

#### Applicable Products

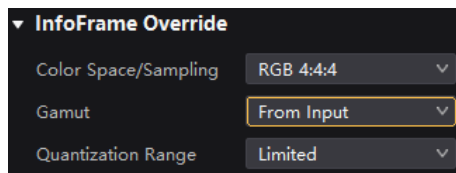
MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

#### Operating Procedure

Step 1 In the **InfoFrame Override** area, select a value from the drop-down lists of **Color Space/Sampling**, **Gamut** and **Quantization Range**.

The override parameter will be used in the calculation of color adjustment. Select **From Input** and the software will read the attribute value that comes with the input source.

Figure 6-6 InfoFrame Override



Step 2 In the **Color** area, drag the sliders to adjust the parameter values.

Figure 6-7 Color

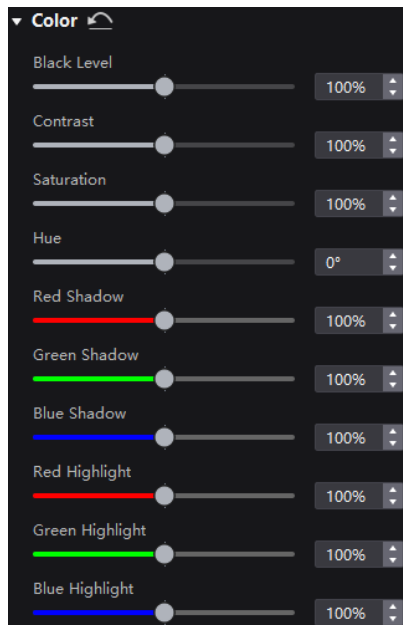


Table 6-1 Descriptions of color adjustment parameters

Parameter	Description
Black Level	It is used to adjust the brightness of the dark areas of the image. The smaller the value, the darker the dark part of the screen.
Contrast	It is used to adjust the brightness of the highlighted areas of the image. The greater the value, the brighter the highlight part of the screen. Contrast and black level together affect the overall contrast of the image.
Saturation	It is used to adjust the color purity of the image. The greater the value, the more vivid the color.
Hue	It is used to adjust the color effect of the displayed image color. Generally, it is divided into warm, cool and intermediate tones.
Red Shadow/Green Shadow/Blue Shadow	It is used to adjust the brightness of the dark areas of the image. The principle is the same as that of black level, but only the RGB components are adjusted.
Red Highlight/Green Highlight/Blue Highlight	It is used to adjust the brightness of the highlighted areas of the image. The principle is the same as that of contrast, but only the RGB components are adjusted.

## 6.2.5 Set HDR Parameters

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30

### Related Information

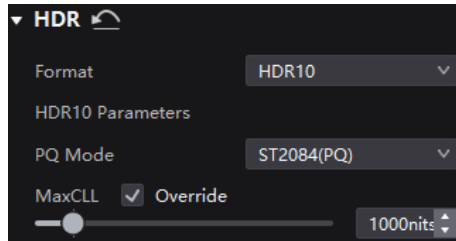
Supports automatic parsing and manual setting of HDR. For 12G-SDI, DP1.2, and non-standard HDR sources, they can only be set to HDR properties manually.

Using the HDR function together with the A10s Pro and CA50E receiving cards will not reduce the Ethernet port load capacity by half. For details, see the COEX series LED display controller specifications.

## Operating Procedure

Select an HDR format from the drop-down list of **Format** and set related parameters. Select **Auto** and the software will read the attribute value that comes with the input source.

Figure 6-8 HDR



HDR10 parameters:

- PQ Mode: The mapping method of video source brightness.
  - ST2084 (PQ): This mode 1:1 maps the brightness of the video source. The part that exceeds the maximum screen brightness will still be displayed as the maximum screen brightness.
  - ST2086 (Linear mapping): This mode linearly maps the brightness of the video source. It globally adjusts the video source brightness according to the maximum screen brightness to ensure that the ratio of the brightness of the entire source content remains unchanged.
- MaxCLL: The override value of the maximum video source brightness. MaxCLL takes effect when **Override** is selected.

### Note

HDR 2084 and brightness scheme cannot be enabled at the same time. If HDR 2084 is selected while the brightness scheme is already enabled, the brightness scheme will take precedence.

## 6.3 Set Internal Sources

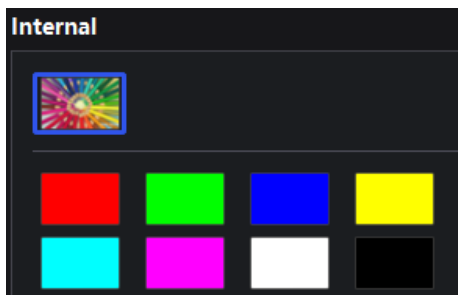
Select the internal source and set the related parameters for screen testing and troubleshooting.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

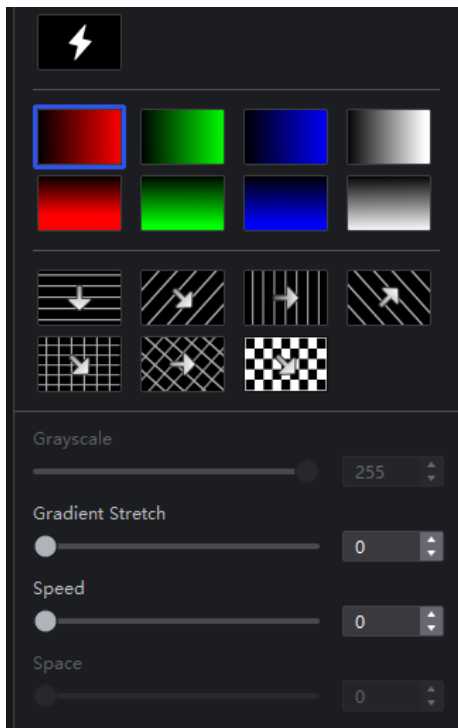
### Operating Procedure

- Step 1 Select a controller from the project list and then select **Source**.
- Step 2 Double-click the thumbnail of internal source in the source list at the bottom of the page, or select **Internal Source** from the drop-down list next to **Select Source** in the properties area on the right.
- Step 3 Select an image and set the **Grayscale**, **Gradient Stretch**, **Speed**, and **Space**. The adjustable parameters for each image may vary based on the interface.
  - Static images
    - These images come with VMP, as shown in the figure below.



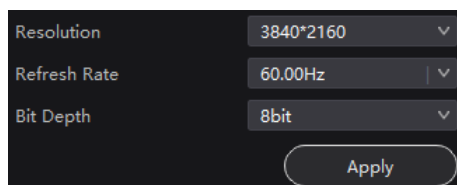
- Dynamic images

These images come with VMP, as shown in the figure below.



Step 4 Set the resolution, refresh rate and bit depth for the internal source.

Figure 6-9 Internal source parameters



Step 5 After the settings, click **Apply**.

# 7 Display Correction

This chapter describes output configuration with one device selected.

## 7.1 Seams

### 7.1.1 Correct Seams

Adjust the seams between cabinets or modules to improve the display effect.

#### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

#### Related Information



If brightness correction has been done for the screen, the screen brightness can be adjusted in nits. Otherwise, it can be adjusted only in percentage.

#### Operating Procedure

- Step 1 Select a screen from the project list and then select **Correction**.
- Step 2 On the **Seams** tab in the properties area, toggle on the **Seam Correction**.

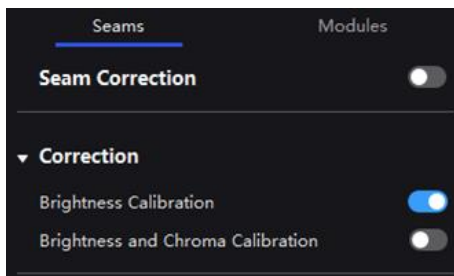
#### Note

Currently, apart from the A10s Pro receiving card, the **Seam Correction** switch will not be displayed on this interface. In this case, simply toggling on the **Brightness Calibration** or **Brightness and Chroma Calibration** will ensure that the seam correction takes effect.

- Step 3 Toggle on **Brightness Calibration** or **Brightness and Chroma Calibration** to view the correction effect.
  - Brightness Calibration: Set the **Brightness Calibration** switch to  to make the screen apply the calibration effect made by the calibration platform.
  - Brightness and Chroma Calibration: Set the **Brightness and Chroma Calibration** switch to  to make the screen apply the calibration effect made by the calibration platform.

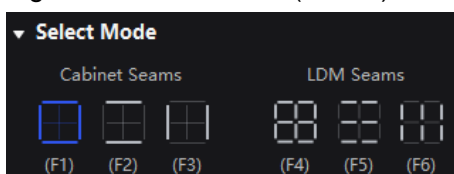
The **Brightness Calibration** and **Brightness and Chroma Calibration** are mutually exclusive.

Figure 7-1 Correction (seams)



- Step 4 Select a correction mode.

Figure 7-2 Select mode (seams)





- Cabinet Seams: Correct the seams of cabinets.
- LDM Seams: Correct the seams of modules.


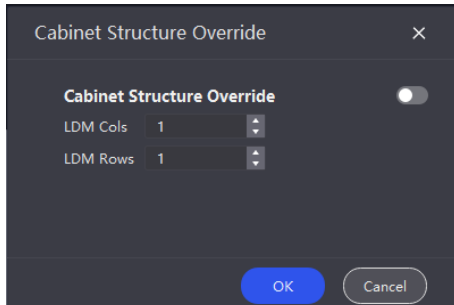
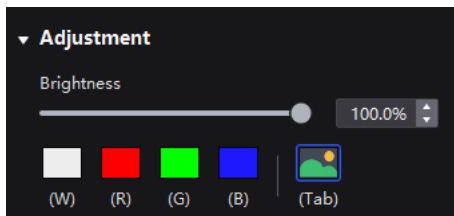
Step 5 When correcting the module seams, if you need to override the numbers of module columns and rows, click the  icon next to **Select Mode** and then perform the settings on the **Cabinet Structure Override** window. Otherwise, skip this step.


Figure 7-3 Cabinet structure override



Step 6 Set the screen display parameters and check the seam correction effect.

Figure 7-4 Adjustment (seams)



- Brightness: Adjust the display brightness.
- Display image: Set the image displayed on the screen. By default, the current input source is being displayed (). You can switch to a monochrome display in white, red, green, and blue.  
To do so, simply press the shortcut keys W, R, G, B, and Tab.

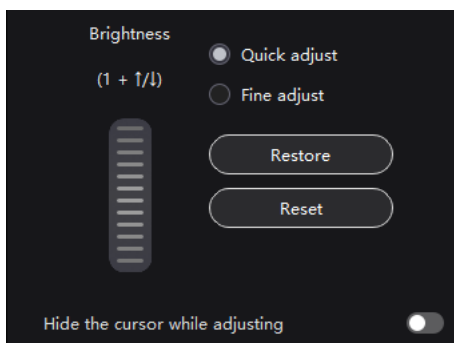
#### Note

You can only configure the displayed image for the currently selected page. All other pages will show a black screen.


Step 7 In the topology area, click or click and drag the mouse to select the seams to be corrected.

Step 8 Set the adjustment parameters.

Figure 7-5 Set the parameters.



- Quick adjust: Has a large range of adjustment.
- Fine adjust: Has a small range of adjustment.

- Hide cursor on screen: When this is enabled (  ), the cursor will not be displayed on the screen while adjusting brightness and chroma.

Step 9 Place the mouse on the scroll wheel icon and adjust the brightness by dragging the wheel icon up or down, scrolling the mouse wheel, or using the keyboard shortcuts 1+↑/↓.

- Restore: Restore the configuration to the last saved.
- Reset: Reset the configuration to factory defaults.

Step 10 After the settings, click **Save**.

## 7.1.2 Erase Seam Correction

### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

### Related Information

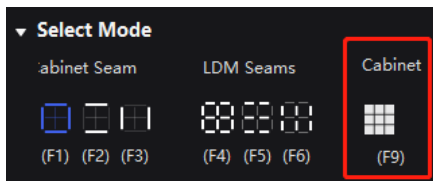
If there are any changes made to the cabinets, such as moving a receiving card from one cabinet to another or replacing the cabinet module, it may cause bright or dark lines that had been previously corrected to appear in the middle of the cabinet or module. In such cases, you have the option to remove the seam correction that was applied.

### Operating Procedure

Step 1 Select a screen from the project list and then select **Correction**.

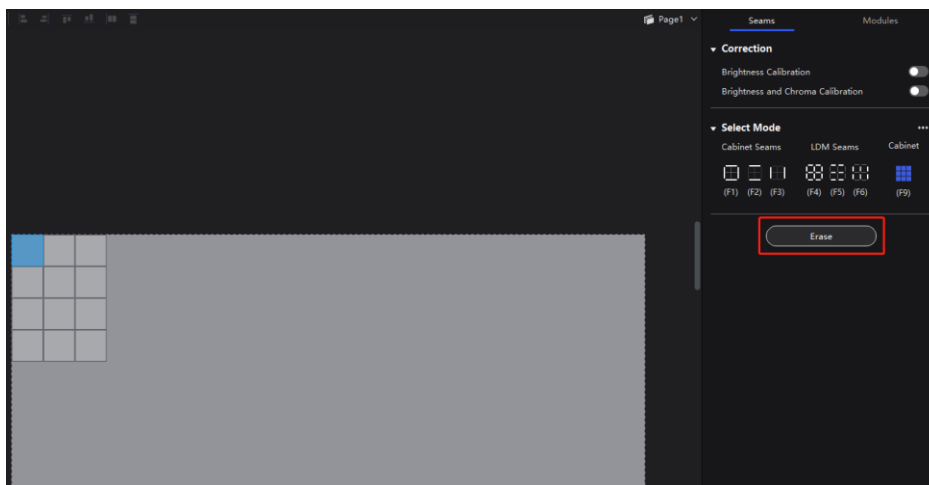
Step 2 Select the **Cabinet** mode.

Figure 7-6 Select mode (cabinet)



Step 3 Select the target cabinets and then click **Erase** to remove the seam correction that was applied to them. The erasion will be automatically saved to the hardware once you are done.

Figure 7-7 Erase seam correction



## 7.2 Correct Multi-Batch Cabinets/Modules

Adjust the chroma of cabinets or modules from multiple batches to make the overall chroma of the display more balanced and uniform.

### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, XA50 Pro, CA50E (V1.3.0.0 or later)



### Related Information

If brightness correction has been done for the screen, the screen brightness can be adjusted in nits. Otherwise, it can be adjusted only in percentage.

### Operating Procedure

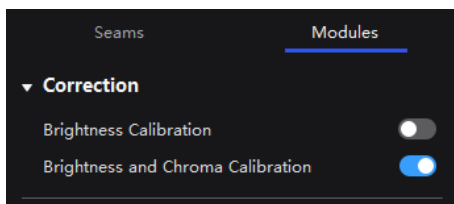
Step 1 Select a screen from the project list and then select **Correction**.

Step 2 On the **Modules** tab in the properties area, you can enable the correction switches including **Brightness Calibration** and **Brightness and Chroma Calibration** to view the correction effect.

- Brightness Calibration: Set the **Brightness Calibration** switch to  to make the screen apply the calibration effect made by the calibration platform.
- Brightness and Chroma Calibration: Set the **Brightness and Chroma Calibration** switch to  to make the screen apply the calibration effect made by the calibration platform.

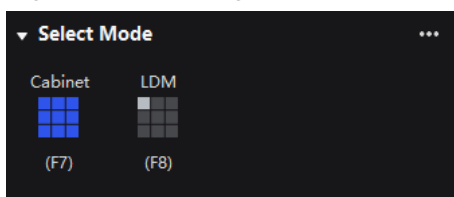
The **Brightness Calibration** and **Brightness and Chroma Calibration** are mutually exclusive.

Figure 7-8 Correction (modules)



Step 3 Select a correction mode.

Figure 7-9 Selecting mode



- Cabinet: Correct the multi-batch cabinets.
- Module: Correct the multi-batch modules.


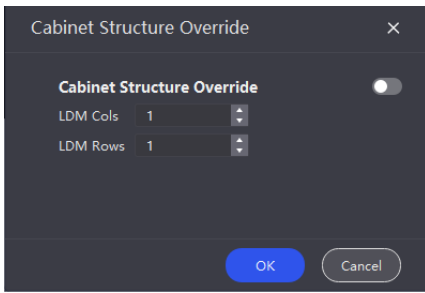
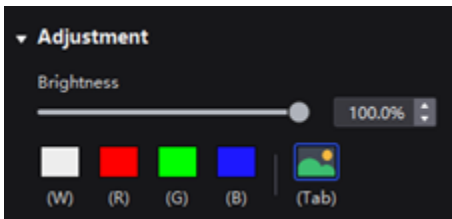
Step 4 When correcting multi-batch modules, if you need to override the numbers of module columns and rows, click the  icon next to **Select Mode** and then perform the settings on the **Cabinet Structure Override** window. Otherwise, skip this step.

Figure 7-10 Cabinet structure override



Step 5 Set the screen display parameters and check the display effect.

Figure 7-11 Adjustment (modules)



- Brightness: Adjust the display brightness.
- Display image: Set the image displayed on the screen. By default, the current input source is being displayed (🖼️). You can switch to a monochrome display in white, red, green, and blue.

To do so, simply press the shortcut keys W, R, G, B, and Tab.

#### Note

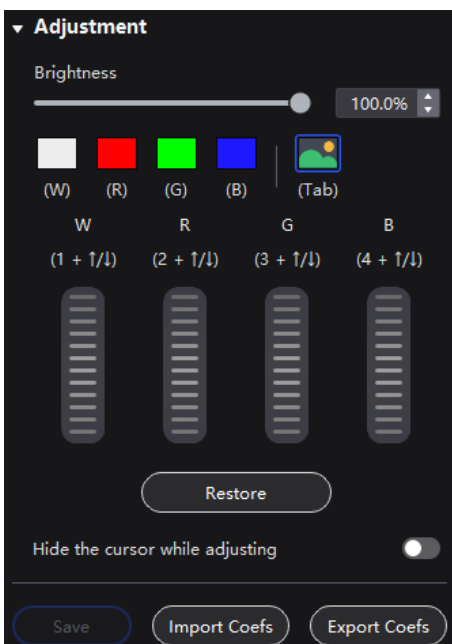
You can only configure the displayed image for the currently selected page. All other pages will show a black screen.


Step 6 In the topology area, click or click and drag the mouse to select the cabinets or modules to be corrected.

Step 7 Adjust the parameters.

Different colors have different adjustment parameters. These settings can be adjusted using the shortcut keys shown in brackets.

Figure 7-12 Adjustment (White/Red/Blue/Green)



- **Restore:** Restore the configuration to the last saved.
- **Hide cursor on screen:** When this is enabled (  ), the cursor will not be displayed on the screen while adjusting brightness and chroma.
- **Import Coefs:** Import the existing correction coefficients to the current cabinet/module.
- **Export Coefs:** Export the correction coefficients of the current cabinet/module

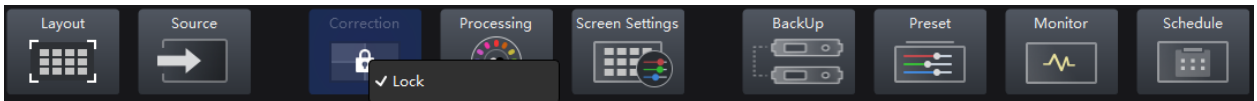
After setting the parameters of one cabinet, you can right-click to copy the parameters of the current cabinet and paste them to other cabinets, or you can use the shortcut keys **Ctrl+C/Ctrl+V** to complete the copy/paste operation.

Step 8 After the settings, click **Save**.

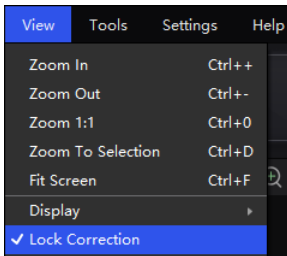
## 7.3 Lock and Unlock Correction Page

After the screen correction is finished, you can lock the Correction page by either of the following methods to avoid changing the display content due to misoperation.

- Right-click the **Correction** icon and click **Lock**. Clicking **Lock** again unlocks the page.



- From the menu bar, choose **View > Lock Correction**. Clicking **Lock Correction** again unlocks the page.



### Note

Once the **Correction** page is locked and you navigate to another page, you will need to manually unlock the page if you wish to return to the **Correction** page.

## 8 Color Processing

This chapter describes color processing with one device selected.

### 8.1 Color Replacement

Replace a color with another color according to the settings.

#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro

#### Notice

Replacement of highly saturated colors is recommended for better effect.

#### Operating Procedure

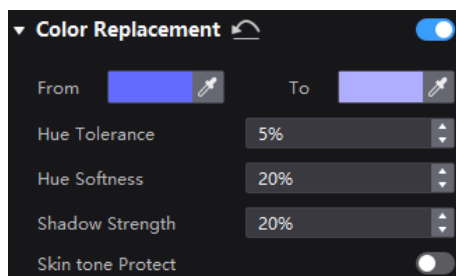
Step 1 Select a screen from the project list and then select **Processing**.

Step 2 Set the **Color Replacement** switch to .

Step 3 Set the colors before and after replacement.

- Method 1: Click the color area in  to open the color palette and set a color.
- Method 2: Click the eyedropper in  and select a color in the topology area.

Figure 8-1 Color replacement



Step 4 Set **Hue Tolerance**, **Hue Softness**, **Shadow Strength**, and **Skin Tone Protect**.

- Hue Tolerance: Indicates the hue range of the color to be replaced. The larger the value, the larger the replacement area.
- Hue Softness: Indicates the hue softness of the transition area.
- Shadow Strength: Indicates the gradient parameter of the highlight or shadow area. The larger the value, the smoother the gradient.
- Skin Tone Protect: Keeps the skin tone as original as possible.

### 8.2 14Ch Color Correction

Precisely adjust the hue, saturation and brightness of black, white, and the 12 derived standard colors of the red, green and blue primary colors.


#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20

#### Operating Procedure

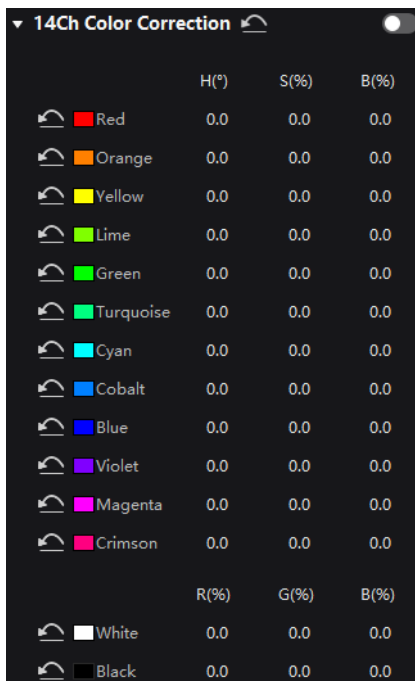
Step 1 Select a screen from the project list and then select **Processing**.

Step 2 Set the **14h Color Correction** switch to .

Step 3 Click a value of a color to enable the editing status and change the value, , for example.

Parameter	Change Trend
Hue (H)	Positive values: The color hue angle changes counterclockwise.
	Negative values: The color hue angle changes clockwise.
Saturation (S)	Decreases to -100%: The 12 colors gradually become diluted.
	Increases to +100%: The 12 colors become more vivid and rich.
Brightness (B)	Decreases to -100%: The 12 colors gradually darken.
	Increases to +100%: The 12 colors become brighter, and the colors appear to be diluted.

Figure 8-2 14Ch color correction



## 8.3 Set Curves

This feature allows you to quickly adjust image brightness and color tone, customize the response curves for red, green, blue, and white, and fine-tune highlights and shadows independently. It ensures that highlights are not overexposed and that low-grey areas retain rich details. Additionally, you can use this feature to make precise tweaks to the screen display, compensating for variations due to ambient light or camera performance.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro

### Operating Procedure

Step 1 Select a screen from the project list and then select **Processing**.

Step 2 Set the **Curve** switch to .

Figure 8-3 Curves





Step 3 Select the white, red, green or blue channel.

Step 4 Drag the slider at the bottom of the curve diagram to set the curve adjustment range.

Step 5 Click anywhere on the curve to add an adjustment point and drag the point to adjust the curve.

**Input** and **Output** indicate the absolute coordinates of the adjustment point in the curve diagram.

To delete the adjustment point, drag the point outside the curve diagram, or select the point and press **Delete**.

Click the  icon at the right of **Channel** to reset the curve of the current channel. Click the  icon next to **Curves** to reset all the curves.

## 8.4 Enable 3D LUT

A 3D Lookup Table file (.cube) defines a set of mappings that enable color adjustments in video sources. Widely used in film and image processing, it allows you to modify target colors without affecting neutral grays and other hues. This technique addresses blending and layering challenges to ensure smooth color transitions. By providing precise control over the entire three-dimensional color space, it delivers a more accurate color representation.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro

### Prerequisites

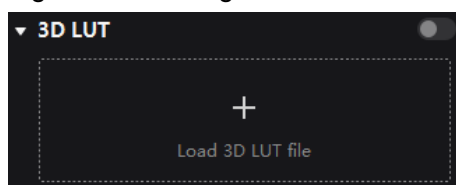
Please prepare a 3D LUT file in the .cube format with a file precision of either 17×17×17, 33×33×33, or 65×65×65 (all precisions will be processed according to a 17×17×17 base).

### Operating Procedure

Step 1 Select a screen from the project list and then select **Processing**.

Step 2 Click anywhere in the **Load 3DLUT File** area, select a file and open it.

Figure 8-4 Loading 3D LUT file




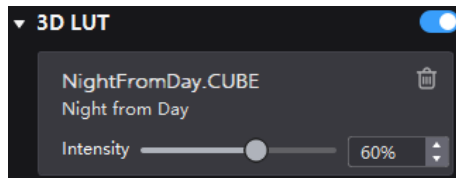

Step 3 Set the **3D LUT** to  and drag the slider to adjust the applying level of the 3D LUT.



Figure 8-5 Adjusting intensity



To delete the file, click .

## 8.5 Enable Dynamic Booster

Dynamic Booster can significantly improve the display contrast and image details for better visual experience and effectively control and lower the display power consumption.

### Applicable Products

- LED display controller: MX40 Pro
- Receiving cards: A10s Pro

### Prerequisites

Before the operation, color gamut and brightness correction by using the CA410-VP427, CA410-P427 or CA410-P427H colorimeter must be done. Otherwise, the Dynamic Booster switch is grayed out and the function is unavailable.

### Operating Procedure


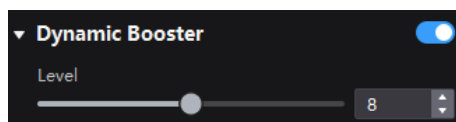
- Step 1 Select a screen from the project list and then select **Processing**.
- Step 2 Set the **Dynamic Booster** switch to .
- Step 3 Drag the slider to adjust the applying level of the Dynamic Booster.

Figure 8-6 Dynamic Booster



## 9 Screen Settings

### 9.1 Adjust Image Quality

#### 9.1.1 Adjustment Mode

Switch the cabinet display mode to let the screen of the same specifications have the optimal display effect under different application scenarios.

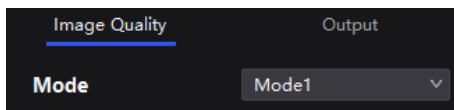
#### Prerequisites

The NCP file is uploaded, and the NCP files of the receiving card and the controller must match. For details, see [16.2 Manage Cabinet Library](#).

#### Operating Procedure

- Step 1 Select a screen from the project list and then select **Screen Settings**.
- Step 2 On the **Image Quality** tab, select a mode based on the application scenario to let the screen have the optimal display effect.

Figure 9-1 Mode



#### 9.1.2 Adjust Brightness and Gamma

Manually adjust the screen brightness and gamma to change the screen brightness and chroma performance in real time, and enable or disable brightness overdrive as needed.

#### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

#### Prerequisites

To use the brightness overdrive function, please make sure the NCP file is uploaded, and the NCP files of the receiving card and the controller must match. For details, see [16.2 Manage Cabinet Library](#).

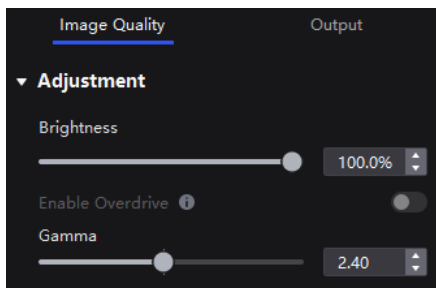
#### Related Information

If brightness correction has been done for the screen, the screen brightness can be adjusted in nits. Otherwise, it can be adjusted only in percentage.

#### Operating Procedure

- Step 1 Select a screen from the project list and then select **Screen Settings**.
- Step 2 On the **Image Quality** tab, adjust the brightness and gamma value, and enable or disable **Brightness Overdrive** as needed.

Figure 9-2 Adjustment



### 9.1.3 Set LED Image Booster

Set the LED Image Booster function to improve the delicacy and accuracy of the image color and gradation and realize free switching of the display color gamut.

#### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

#### Prerequisites


Before the operation, color gamut and brightness correction by using the CA410-VP427, CA410-P427 or CA410-P427H colorimeter must be done.

#### Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.

Step 2 Select the **Image Quality** tab on the **Screen Settings** page. In the **LED Image Booster** area on the right, select an output color gamut from the **Gamut** drop-down list.

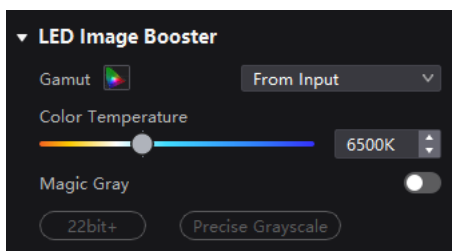
The output gamut options include standard gamuts, custom gamuts, the original screen gamut and the input gamut (**From input**).

To set the custom gamut, click , select a gamut in the properties area on the color gamut diagram, and adjust the red, green, blue and white parameters based on the selected gamut. The custom gamut name can be changed.

Step 3 Drag the slider to adjust color temperature.

Step 4 Enable or disable **Magic Gray** as needed.

Figure 9-3 LED Image Booster



### 9.1.4 Set Thermal Compensation

Adjust the application intensity of the thermal coefficients.

#### Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

## Prerequisites

Before operation, it is necessary to complete the thermal calibration of the screen. Use the Cabinet Tool to create an NCP file containing thermal coefficients and upload it.

## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.


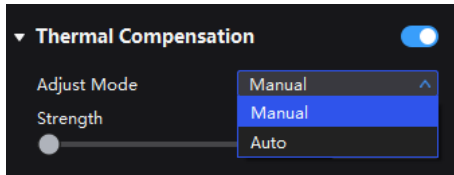
Step 2 On the **Image Quality** tab, set the **Thermal Compensation** switch to .

Figure 9-4 Thermal compensation



Step 3 You can adjust the thermal coefficients manually or automatically.

- Manual: Drag the slider to adjust the strength of applying the thermal coefficients.
- Automatic: The system automatically generates the application strength of thermal coefficients based on the screen status and does not support manual modification.

### 9.1.5 Adjust EOTF

## Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, XA50 Pro

## Related Information

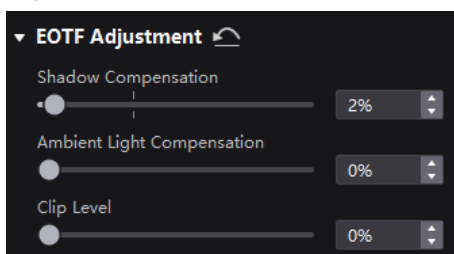
The supported adjustment parameters depend on the HDR settings.

## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.

Step 2 On the **Image Quality** tab, drag the sliders to adjust the values of **Shadow Compensation**, **Ambient Light Compensation**, and **Clip Level**.

Figure 9-5 EOTF adjustment



## 9.2 Set Output

### 9.2.1 Set Video Parameters

Set the output bit depth and additional frame latency.

## Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20 (output bit depth is fixed to 8bit)

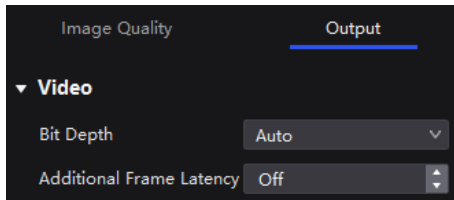
## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.

Step 2 In the Output tab, select an option from the drop-down list of **Bit Depth**.

If **Auto** is selected, the output bit depth is the same as the input bit depth.

Figure 9-6 Output bit depth



Step 3 Set a value for **Additional Frame Latency**.

When the controller is used with high-latency devices and there is a need to increase the latency, you can adjust the value for **Additional Frame Latency**.

### Note

It is not possible to set Additional Frame Latency when Low Latency is enabled.

## 9.2.2 Set Sync Parameters

Set the sync source and phase offset.

## Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

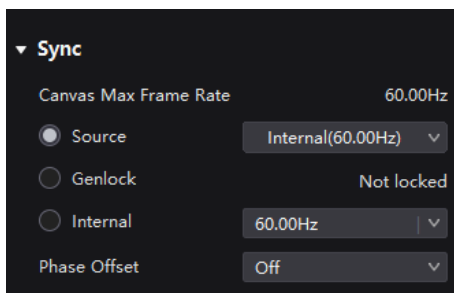
## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.

Step 2 Select the **Output** tab.

Step 3 Select a synchronization signal for the display frame rate and set the phase offset.

Figure 9-7 Sync



- Canvas Max Frame Rate: This displays the maximum frame rate of the current output card's canvas. If all canvases have the same maximum frame rate, it will show the value. If the frame rates are different, it will display **Mix**.
- Source: Sync with the frame rate of the active source.

- Genlock: Sync with the frame rate of the Genlock signal. When the shutter fit function of the controller is effective, please select this option. In addition, the controller and the camera need to use the same Genlock signal generator.
- Internal: Sync with the frame rate of the controller's internal clock.

#### Note

- When low latency is enabled, the sync source cannot be set to Genlock.
- The genlock parameter adjustment only takes effect on the selected device, while other output adjustments applies to all devices of the screen.

### 9.2.3 Set Frame Multiplication

Frame multiplication can make the screen output multiple frames within the original one frame time and provide them to different cameras.

#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro

#### Related Information

- Frame multiplication, low latency, and 3D cannot be enabled at the same time.
- MX6000 Pro and MX2000 Pro are capable of supporting a max frame rate of 480 Hz when using the A10s Pro and CA50E receiving cards.
- MX40 Pro is capable of supporting a max frame rate of 240 Hz when using the A10s Pro receiving card.
- The specific maximum frame rate that can be set is related to the hardware configuration of the screen.

#### Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.


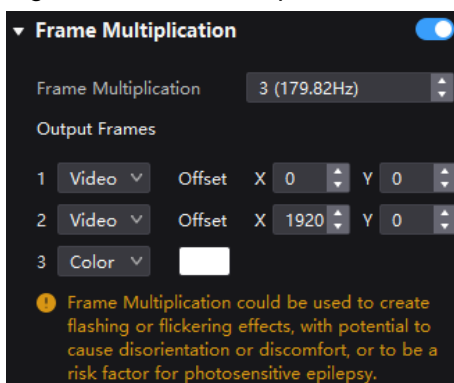
Step 2 Select the **Output** tab and set **Frame Multiplication** to .

Figure 9-8 Frame multiplication



Step 3 Set the number of frames and the display mode of each frame.

Take the above figure as an example. The parameters are described as follows:

- Frame Multiplication: After the current frame rate (59.94) is multiplied by 3, it is 179.82 Hz. Three frames are output in 1/59.94 second.
- Video: The first and second frames display the input source image. The first frame displays the image from the coordinates (0, 0) and the second frame displays the image from the coordinates (1920, 0).
- Color: The third frame displays a pure white image.

### 9.2.4 Set Shutter Fit

The screen can fit the camera shutter to make the picture shooting have a better effect.

## Applicable Products

- LED display controllers: MX6000 Pro, MX2000 Pro, MX40 Pro
- Receiving cards: A10s Pro, CA50E, XA50 Pro

## Prerequisites

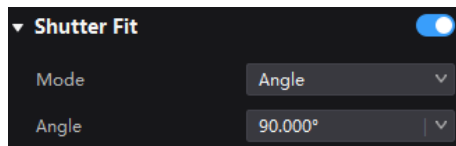
It requires that the sync signal must be Genlock and the controller and camera need to use the same Genlock signal generator.

## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.

Step 2 Select the **Output** tab and set **Shutter Fit** to .

Figure 9-9 Shutter fit



Step 3 Set the relevant parameters.

### 9.2.5 Enable 3D Function

Enable the 3D function and set the related parameters for all users to wear 3D glasses to view stereoscopic images.

## Applicable Products

MX40 Pro, MX6000 Pro, MX2000 Pro

## Notice

The 3D function and the low latency or frame multiplication function cannot be enabled at the same time.

## Related Information

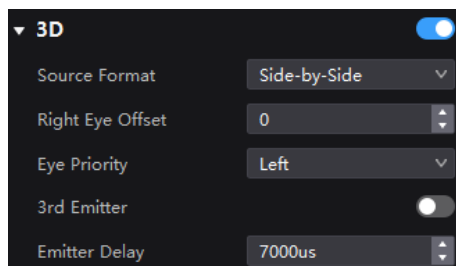
To use the 3D function, specified 3D glasses are needed. Please contact NovaStar technical support.

## Operating Procedure

Step 1 Select a screen from the project list and then select **Screen Settings**.


Step 2 Select the **Output** tab and set **3D** to .

Figure 9-10 3D



Step 3 Set the related parameters.

- **Source Format:** Set the format of the 3D video source. Set the format to **Side-by-side**, **Top-and-Bottom** or **Frame Sequential** according to the format of the accessed video source.

- **Right Eye Offset:** Set the start position of the right eye image. When the video source format is side-by-side or top-and-bottom and the left and right eye images are provided, this parameter can be set.
- **Eye Priority:** Set which image is sent first, the right eye image or the left eye image. Wear the 3D glasses to watch the display. If the display is abnormal, set the parameter value to the other one. If the display is normal, the setting is done.
- **3rd Emitter:** When a third-party 3D signal emitter is used, set the switch to .
- **Emitter Delay:** Set the delay time of sending the synchronization signal from the 3D signal emitter to the 3D glasses. This setting ensures that the switching between left and right eye images of the 3D glasses is in sync with the switching between the left and right eye images on the display. This parameter is applicable to both the NovaStar and third-party emitters.

## 9.2.6 Check the Load

Check the capacity usage of each Ethernet port of the device.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Operating Procedure


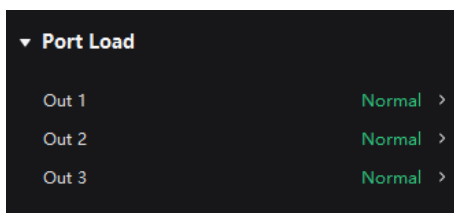
- Step 1 Select a screen from the project list and then select **Screen Settings**.
- Step 2 Select the **Output** tab. Under **Port Load**, click  next to the device information to check the usage of the controller's load capacity.

Figure 9-11 Port load





# 10 Backup Settings

## 10.1 Device Backup

You can configure device-level hot backup for devices within the same screen, enabling the backup device to take over as the primary device in case of a failure.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

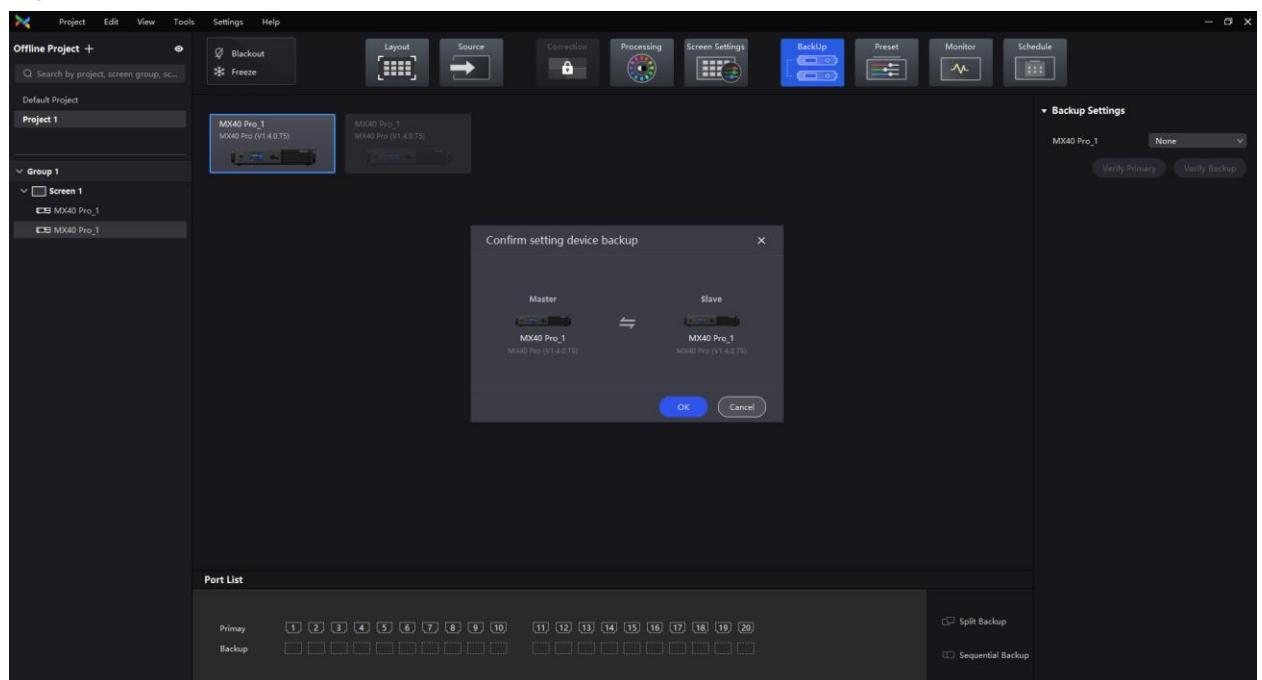
### Prerequisites

- A primary device can only have one backup device.
- The primary and backup devices must be of the same model and firmware version. For card-cased controllers (MX6000 Pro and MX2000 Pro), please also make sure the number, slot, model, and firmware version of the daughter cards also match.
- Device backup and Ethernet port backup are mutually exclusive. You can only configure one type of backup at a time. For card-cased controllers (MX6000 Pro and MX2000 Pro), device backup, card backup, and Ethernet port backup are all mutually exclusive. However, devices that have not been backed up support simultaneous configuration of card backup and Ethernet port backup.

### Operating Procedure

Step 1 Select a screen/device from the project list and then select **Backup**.

Figure 10-1 Device backup



Step 2 All devices of the screen will be shown in the canvas area. You can drag and drop a device onto another to establish a backup relationship.

The device being dragged is considered the backup, while the one being dropped onto becomes the primary. Upon dropping, a pop-up window will appear showing information about the primary and backup devices. If everything is correct, simply click **OK**.

Step 3 Click **Verify Primary** or **Verify Backup** to examine whether the devices are working properly.

- Verify Primary: Disconnect the backup and examine whether the primary is working properly.

- **Verify Backup:** Disconnect the primary and examine whether the backup is working properly.

## 10.2 Card Backup

You can configure card-level hot backup for output cards within the same screen, enabling the backup card to take over as the primary card in case of a failure.

### Applicable Products

MX6000 Pro, MX2000 Pro

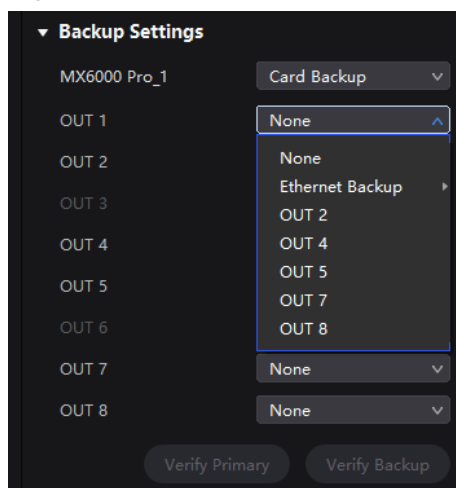
### Prerequisites

- The primary and backup output cards must be of the same model and firmware version.
- Device backup and card backup are mutually exclusive. You can only configure one type of backup at a time.

### Operating Procedure

- Step 1 Select a screen/output card from the project list and then select **Backup**.
- Step 2 Under the **Backup Settings** section, select **Card Backup** from the drop-down list.
- Step 3 Set a backup card for the primary.

Figure 10-2 Card backup



- Step 4 Click **Verify Primary** or **Verify Backup** to examine whether the cards are working properly.

- **Verify Primary:** Disconnect the backup and examine whether the primary is working properly.
- **Verify Backup:** Disconnect the primary and examine whether the backup is working properly.

## 10.3 Ethernet Port Backup

You can configure Ethernet port hot backup within the same device or output card, enabling the backup port to take over as the primary port in case of a failure.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Prerequisites

Device backup and Ethernet port backup are mutually exclusive. You can only configure one type of backup at a time.

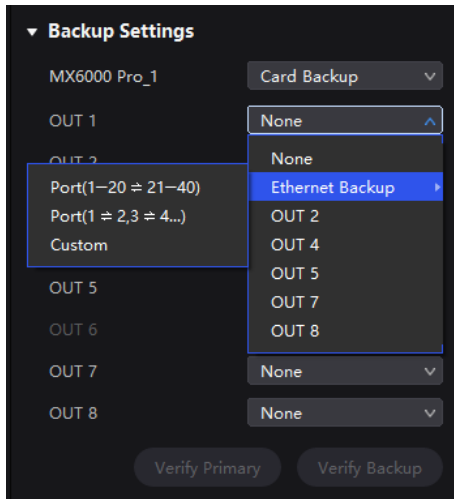
## Operating Procedure

Step 1 Select a screen/device/output card from the project list and then select **Backup**.

Step 2 Under the **Backup Settings** section, select **Ethernet Backup** from the drop-down list.

For card-cased controllers (MX6000 Pro and MX2000 Pro), you need to first select **Card Backup** before configuring Ethernet port backup for the cards.

Figure 10-3 Ethernet port backup




Step 3 Select an option from the sub-menu of **Ethernet backup**.

- Port (1~20) ⇔ (21~40): Split Backup where Ethernet ports 21 to 40 are the backups to Ethernet ports 1 to 20.
- Port (1 ⇔ 2, 3 ⇔ 4...): Sequential Backup where Ethernet port 2 is the backup to Ethernet port 1, Ethernet port 4 is the backup to Ethernet port 3, and so on.
- Custom: Select a device or output card from the project list, and then you can drag and drop the port icon in the port list to customize the backup settings. You can also select a backup mode first and then adjust the backup settings according to your needs.

Figure 10-4 Port list



### Note

You can click **Split Backup** or **Sequential Backup** on the right side of the port list to switch between backup modes. When hovering the mouse over the line between the Ethernet ports, you will see a  icon. Click the icon to delete the backup relationship between the ports.

Step 4 Click **Verify Primary** or **Verify Backup** to examine whether the ports are working properly.

- Verify Primary: Disconnect the backup and examine whether the primary is working properly.
- Verify Backup: Disconnect the primary and examine whether the backup is working properly.

# 11 Preset Management

## 11.1 Save Presets

After completing the display effect adjustment, you can save the settings on the **Source**, **Layout**, **Processing** and **Screen Settings** pages as presets so that they can be directly applied in the future. You can save up to 128 presets in VMP.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Related Information

The preset of a specific device can only be applied by this device itself and the preset of a screen can be applied by all the devices of the screen.

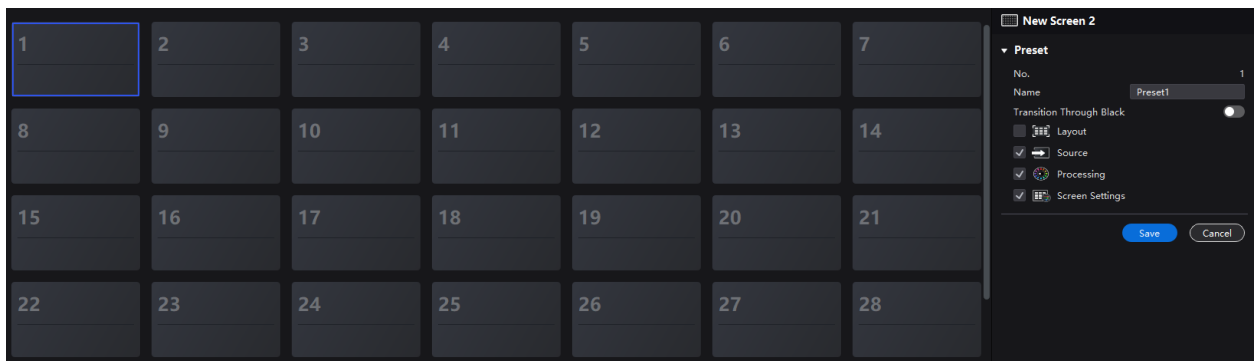
### Operating Procedure

Step 1 Select **Preset**

Step 2 On the preset management page, click  to enter the page shown in [Figure 11-1](#).

To go back to the preset management page, click a blank area in the properties area.

Figure 11-1 Preset management



Step 3 Click a preset icon and in the properties area, set a name for the preset.

Step 4 Select the data you need to save. You can also enable **Transition Through Black** as needed.

If the preset you selected is not empty, the original data will be overwritten.

Step 5 Click **Save**.

## 11.2 Apply Presets

Apply a saved preset to quickly complete settings of the parameters on the **Source**, **Layout**, **Processing** and **Screen Settings** pages.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Related Information

The preset of a specific device can only be applied by this device itself and the preset of a screen can be applied by all the devices of the screen.

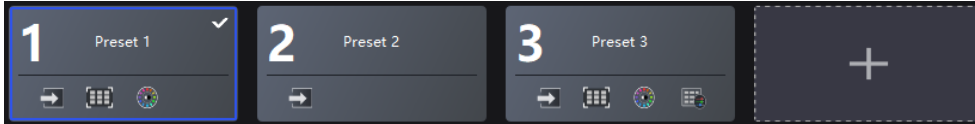
## Operating Procedure

Step 1 Select **Preset**

Step 2 On the preset management page, double-click a preset and wait for it to be loaded.

The preset that is being used has a  at the top right.

Figure 11-2 Apply presets



## 11.3 Manage Presets

Select **Preset** and do the following operations as needed.

### Modify a Preset

Select a preset. In the properties area, change the related information and click **Save**.

### Delete a Preset

- Right-click a preset and select **Delete** from the pop-up menu.
- On the preset management page, select a preset and click **Delete** in the properties area.

### Clear Presets

Right-click a preset and select **Delete All** from the pop-up menu.

# 12 Screen Monitoring

## 12.1 Check Device Status

Check the controller related information and working status, including the receiving card temperature, cabinet voltage and total bit error.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Related Information







Only MX6000 Pro and MX2000 Pro can view the card information.




### Operating Procedure

Choose **Monitor** > **Status** and click the function icons on the left to check the related information. The below figure takes MX6000 Pro as an example.




Figure 12-1 Status



- : The controller.
  - Check the status of the connectors on the rear panel of the controller.
  - Check the controller's name, current uptime, total uptime, mainboard temperature, mainboard voltage, and fan status.
  - Check the temperature and voltage of the cards.
  - Set on/off of the **Controller Finder** switch. When set to , you can locate the controller.
  - Set on/off of the **Bit Error** switch. When set to , you can monitor the errors.
  - Set on/off of the **Fan** switch. When set to , you can monitor the fan status and display it in the **Controller** area.
- : The receiving card temperature. In the properties area, you can check the temperature information.
- : The cabinet voltage. In the properties area, you can check the voltage information.

- : The total bit errors. In the properties area, you can check the detailed information of the errors. Click  to clear the errors and click  to check the error information in a specified time range.

### Note

Selecting , , or  enables you to check the cabinet position, voltage, total uptime, and current uptime under the **Cabinet** section of the properties area. You can also blackout, freeze, or enable test patterns for cabinets under the **Cabinet Settings** section.

## 12.2 Check Monitoring Records

Check the exception records of the system.

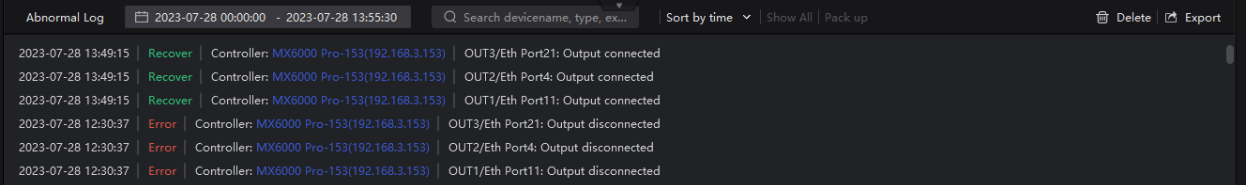
### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Operating Procedure

Choose **Monitor > Status** and at the bottom of the page, do the operation as needed.

Figure 12-2 Monitoring records



Time	Status	Controller	Port	Event
2023-07-28 13:49:15	Recover	MX6000 Pro-153(192.168.3.153)	OUT3/Eth Port21	Output connected
2023-07-28 13:49:15	Recover	MX6000 Pro-153(192.168.3.153)	OUT2/Eth Port4	Output connected
2023-07-28 13:49:15	Recover	MX6000 Pro-153(192.168.3.153)	OUT1/Eth Port11	Output connected
2023-07-28 12:30:37	Error	MX6000 Pro-153(192.168.3.153)	OUT3/Eth Port21	Output disconnected
2023-07-28 12:30:37	Error	MX6000 Pro-153(192.168.3.153)	OUT2/Eth Port4	Output disconnected
2023-07-28 12:30:37	Error	MX6000 Pro-153(192.168.3.153)	OUT1/Eth Port11	Output disconnected

#### ✦ Search records

Enter the key words in the search box.

#### ✦ Query records

Click the time widget and set the start and end time. If you select **Now**, the monitoring records will be updated in real time.

#### ✦ Set how the records are displayed

From the drop-down list, select **By Time**, **By Equipment**, **By Type**, and **By Level**. If the latter three are selected, the records can be expanded or collapsed.

#### ✦ Clear records

Click **Delete** and then click **OK**.

#### ✦ Export records

Click **Export**, select a save path, set a file name, and click **Save**.

# 13 Display Schedule

## 13.1 Create Brightness Schedule

You can create a brightness adjustment schedule for the LED display screen. When a light sensor is connected to the system, it can automatically adjust the brightness of the LED screen based on the real-time ambient light conditions. This adjustment occurs within a predetermined time frame, with the sensor measuring the ambient light brightness and referring to a mapping policy that correlates the LED display brightness with ambient light levels.

### Applicable Products

MX6000 Pro, MX2000, Pro MX40 Pro, MX30, MX20, KU20

### Operating Procedure

Step 1 Select a screen from the project list and then select **Schedule**.

Step 2 Click **Create Schedule**, select the **Brightness** tab, and then set the date and time range.

Figure 13-1 Create brightness schedule

The screenshot shows a 'Create Schedule' dialog box with the following settings:

- Type:** Brightness (selected), Preset
- Date:** 2024-04-09, Full-day checkbox is unchecked
- Time:** 08:00 to 09:00
- Adjust By:** Light sensor
- Repeat:** Toggle is turned on
- Days:** Mon., Tue., Wed., Thu., Fri., Sat., Sun. (all buttons are visible)
- End Time:** 2069-12-31
- Buttons:** OK, Cancel

Step 3 Specify how the brightness is adjusted, by **Light sensor**, or by **Specified brightness**.

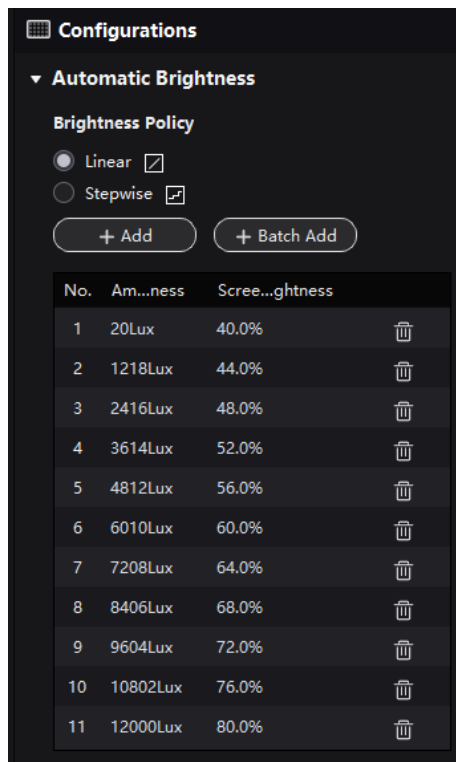
If you choose to adjust by a light sensor, remember to configure the brightness policy on the right side of the interface (refer to [Step 4](#) to [Step 5](#)).

Step 4 Select **Linear** or **Stepwise** under the **Automatic Brightness** section to specify how the brightness is adjusted.

- **Linear:** When there is a change in ambient brightness across two adjacent ranges, the average brightness value is continuously calculated according to the measuring rules, and the screen brightness is then adjusted based on the brightness policy.
- **Stepwise:** When there is a change in ambient brightness across two adjacent ranges, the screen brightness is only adjusted at the range margins according to the brightness policy.



Figure 13-2 Brightness policy

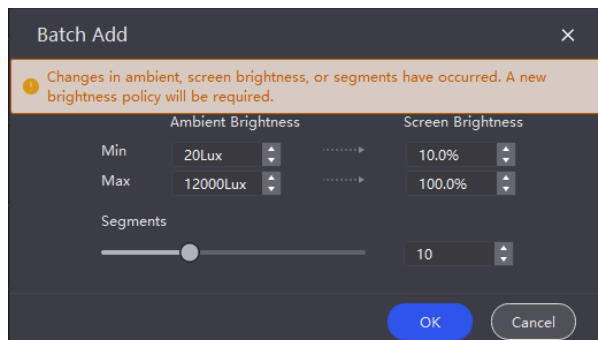


#### Note

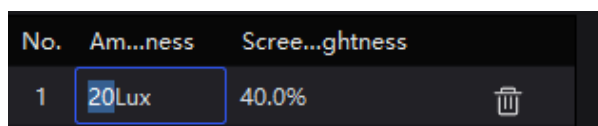
When all the cabinets of the screen support the multi-mode function and use the same NCP file, you can manually link the brightness policy to the multi-mode and display data based on the maximum brightness of the multi-mode.

Step 5 You can add a policy individually or in batch. Up to 29 brightness policies can be added.

- Batch add: Click **Batch Add** and then set the **Ambient Brightness**, **Screen Brightness**, and **Segments** in the pop-up window.



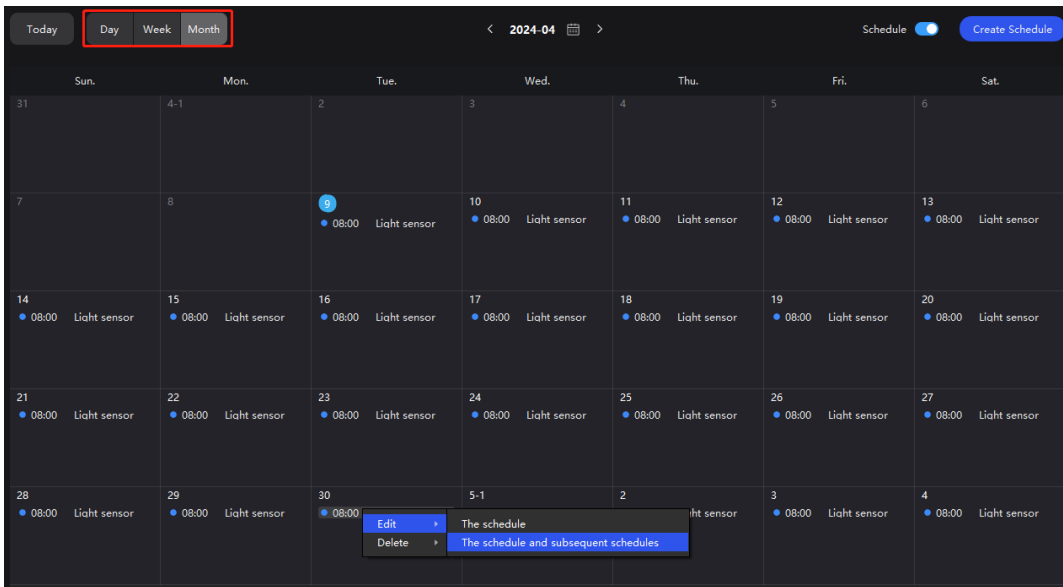
- Add: Click **Add** to add a new brightness policy and then adjust the values for **Ambient Brightness** and **Screen Brightness**.



Step 6 Specify if the schedule should repeat and provide the end time for the repetition.

Step 7 Click **OK** once you are done. The created schedule will be displayed in the schedule chart.

You can click Day Week Month on the top-left corner to switch between daily view, weekly view, and monthly view to review the overall schedule plan.



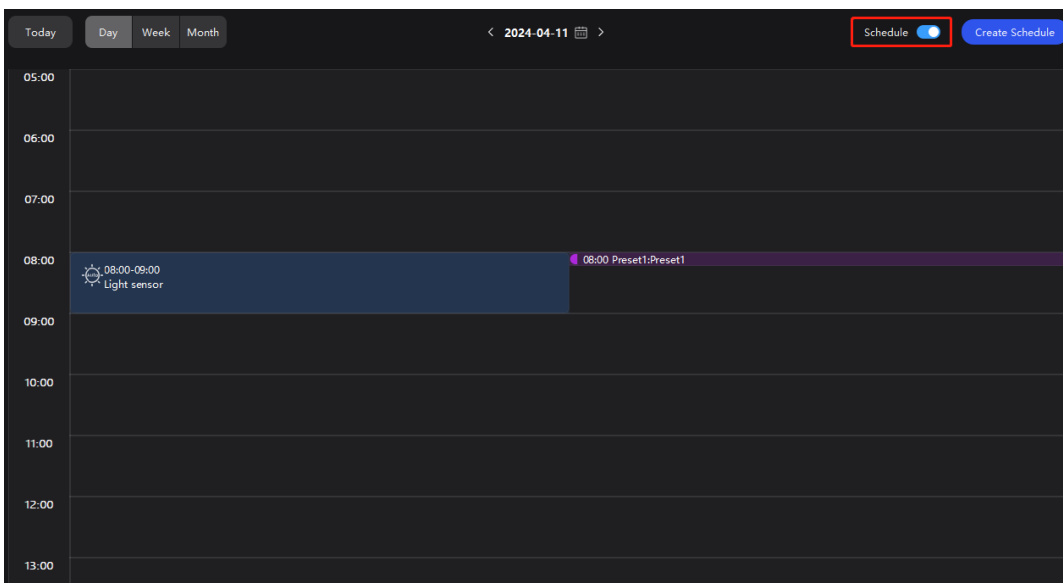
Step 8 Right-click a schedule in the chart to **Edit** or **Delete** it.

Edit: You can edit the **Current schedule** or **Current and follow-up schedules**.

Delete: You can delete the **Current schedule**, **Current and follow-up schedules**, or **All schedules**

Step 9 To activate the schedule, please toggle on **Schedule** in the upper right corner of the chart.

Figure 13-3 Schedule



#### Note

Brightness schedule and HDR 2084 cannot be enabled at the same time. If brightness schedule is enabled after HDR 2084 is selected, the HDR function will be disabled.

## 13.2 Create Preset Schedule

You can create a predetermined schedule for the LED screen, enabling automatic switching of different presets according to the specified timetable.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Prerequisites

You need to save a preset for the screen before creating a preset schedule.

## Operating Procedure

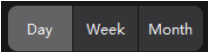
Step 1 Select a screen from the project list and then select **Schedule**.

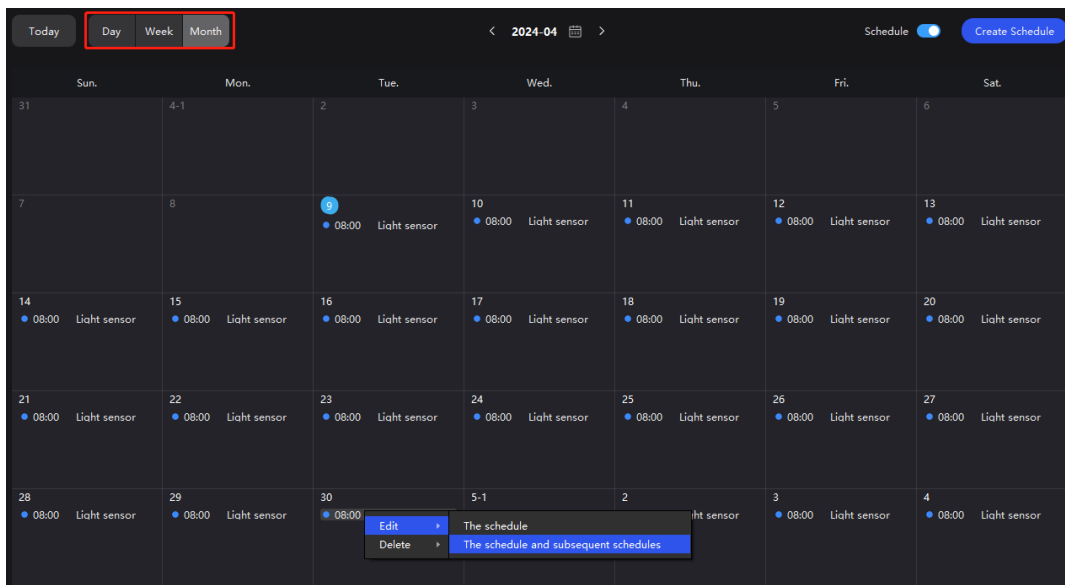
Step 2 Click **Create Schedule**, select the **Preset** tab, and then set the date and time range.

Step 3 Select the preset to be applied.

Step 4 Specify if the schedule should repeat and provide the end time for the repetition.

Step 5 Click **OK** once you are done. The created schedule will be displayed in the schedule chart.

You can click  on the top-left corner to switch between daily view, weekly view, and monthly view to review the overall schedule plan.



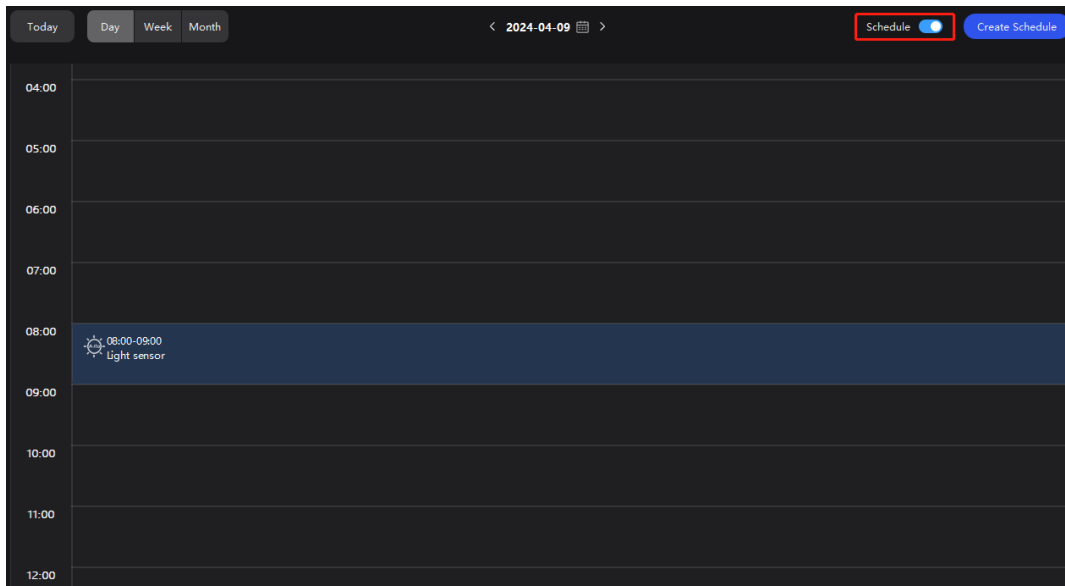
Step 6 Right-click a schedule in the chart to **Edit** or **Delete** it.

Edit: You can edit the **Current schedule** or **Current and follow-up schedules**.

Delete: You can delete the **Current schedule**, **Current and follow-up schedules**, or **All schedules**

Step 7 To activate the schedule, please toggle on **Schedule** in the upper right corner of the chart.

Figure 13-4 Schedule



### 13.3 Check Schedule Log

You can check the schedule log and history charts.

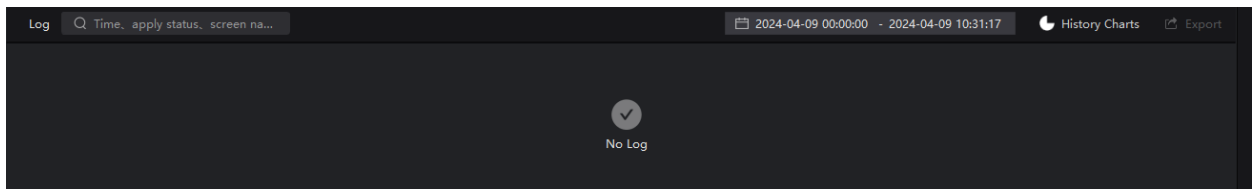
#### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

#### Operating Procedure

Select **Schedule** and at the bottom of the page, do the operation as needed.

Figure 13-5 Log



#### ✦ Search records

Enter the key words in the search box.

#### ✦ Query records

Click the time widget and set the start and end time.

#### ✦ History Charts

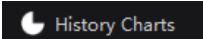
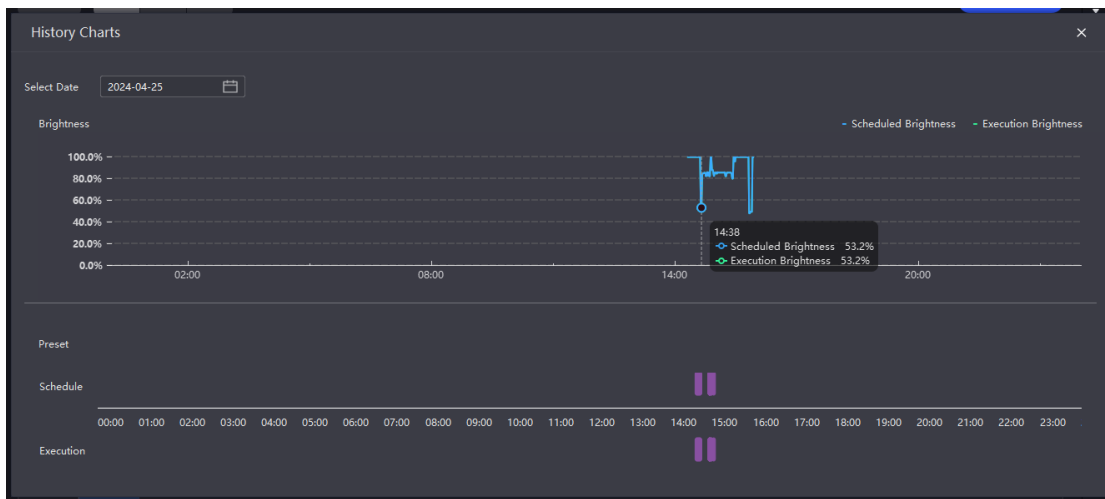
Click  and select a specific date to access the history charts displaying the brightness schedule and preset schedule log. Please note that you can only view the history on a daily basis.

Figure 13-6 History charts

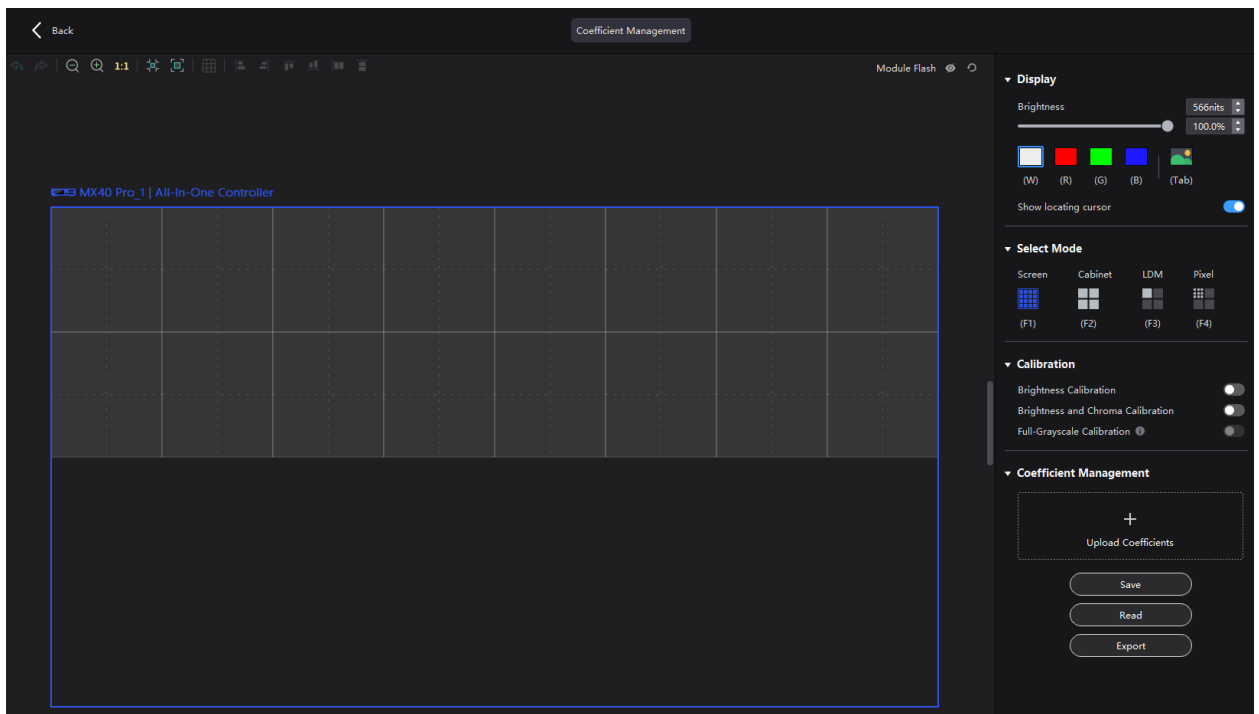


#### ✦ Export records

Click **Export**, select a save path, set a file name, and click **Save**.

## 14 Calibration Coefficient Management

From the menu bar, choose **Tools > Coefficient Management** and do operations such as uploading, saving, adjusting and reading the coefficients. You can also check the module flash status.







### 14.1 Check Module Flash Status

When replacing modules or reading back coefficients from the module flash, you have the option to visually inspect the status of the module flash.

Step 1 Select a screen from the project list.

Step 2 From the menu bar, choose **Tools > Coefficient Management**.

Step 3 On the canvas, click  to display the module flash status. Click  again to hide the module status. Click  to refresh the module status.

-  : Module flash is abnormal.


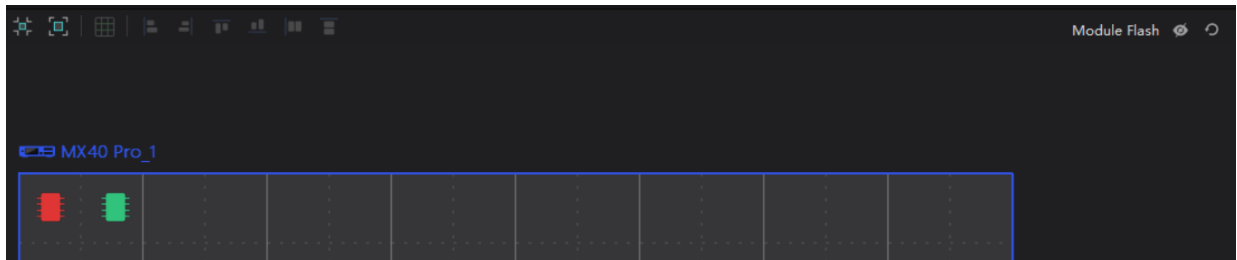
- : Module flash is normal.

Figure 14-1 Check module flash status



## 14.2 Upload Calibration Coefficients

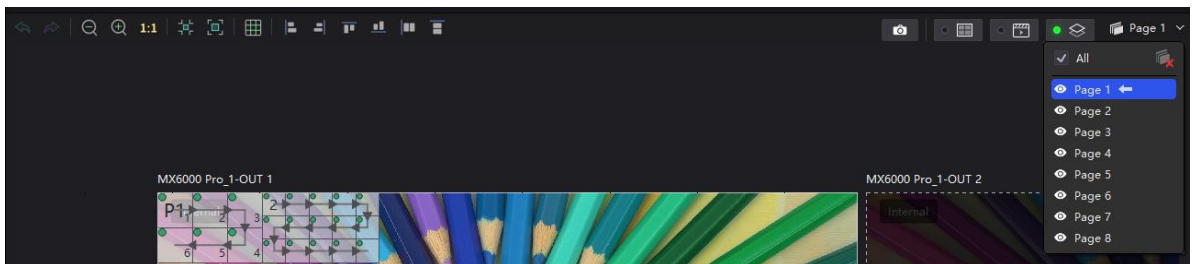
Upload the local calibration coefficient file to the current screen, cabinet or module and apply the coefficients to the display effect.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Prerequisites

- You can only upload coefficients from page 1.



- To upload screen coefficients, make sure:
  - The screen configuration is done, the cabinets are not rotated, and there are no cabinet gaps or overlapping.
  - The configured screen must be rectangular, and the top-left-corner coordinates of the circumscribed rectangle of the configured screen must be (0, 0).
  - To use the database file, you should prepare it in advance, and the resolutions of the configured screen and the screen in the database must be the same and the database must be a screen database.
- To upload cabinet coefficients, make sure:
  - The target cabinets have cabinet IDs. You will need to configure cabinet ID manually if the target cabinets have no ID.

### Notice

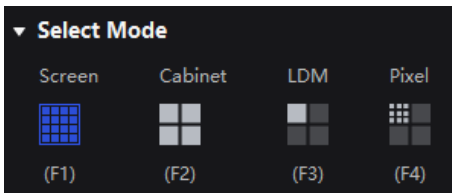
During coefficient uploading, if the controller and/or receiving cards go offline, the uploading will fail.


If the coefficient uploading fails, the coefficients will not be saved automatically. You can manually save them as needed.

### Operating Procedure

- Step 1 Select a screen from the project list.
- Step 2 From the menu bar, choose **Tools > Coefficient Management**.
- Step 3 In the **Select Mode** area, select the uploading range. The options include **Screen, Cabinet** and **LDM**.

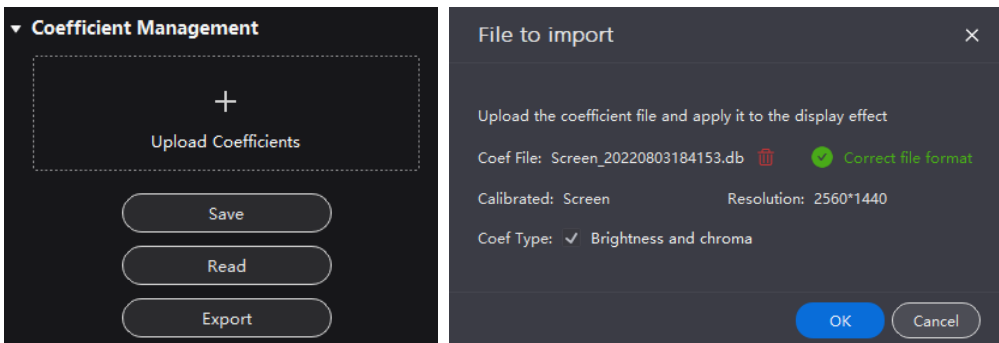
Figure 14-2 Select mode



Step 4 In the **Coefficient Management** area, click  and select the target calibration data file (.db) from the local computer.

The coefficient types in the file will be read automatically. You can select the range of coefficient types as needed.

Figure 14-3 Upload calibration coefficients



Step 5 Click OK to upload the coefficients to receiving cards.

## 14.3 Edit Calibration Coefficients

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

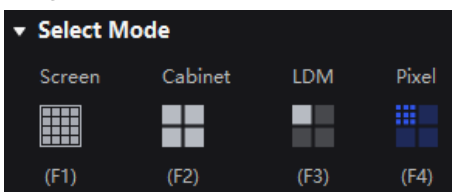
### Prerequisites

- Calibration coefficients are available.
- Cabinet configuration is done and the cabinets stay online.

### Operating Procedure

- Step 1 Select a screen from the project list.
- Step 2 From the menu bar, choose **Tools > Coefficient Management**.
- Step 3 In the **Select Mode** area, select **Pixel**.

Figure 14-4 Select mode



Step 4 In the topology, click to select a cabinet.

Step 5 In the displayed window, select the target pixels and enter the parameters in the **Coefficient Management** area to adjust the proportion relationship of the red components, green components and blue components in RGB.

The calibration coefficients of the selected pixels will be overridden and changed to the values you set.

Figure 14-5 Pixel calibration coefficients

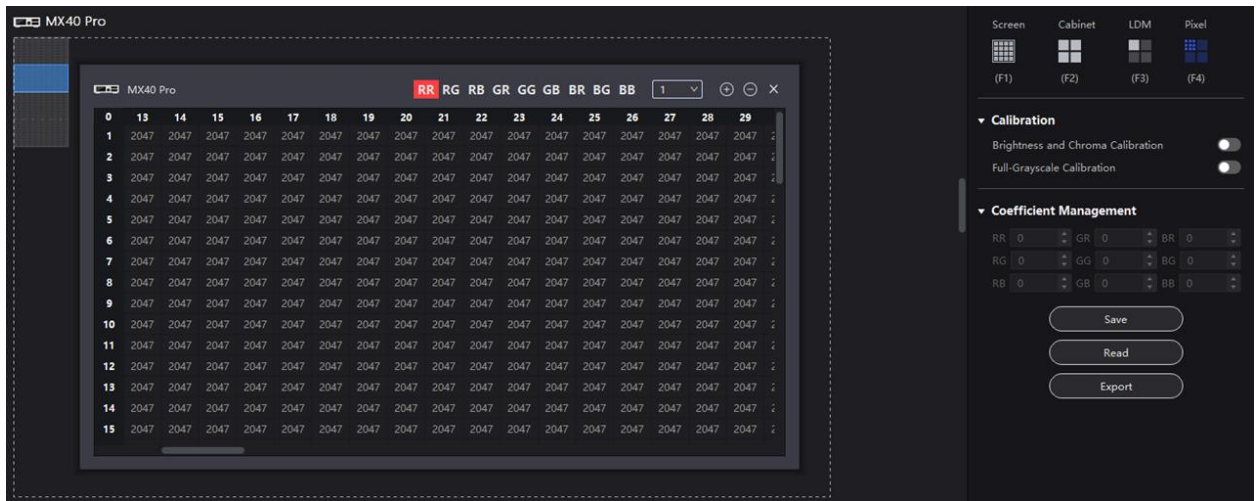


Table 14-1 Table 12-1 Parameter relationship and value range

/	Red-R	Green-G	Blue-B
Red-R	RR (512 — 2047)	GR (0 — 255)	BR (0 — 127)
Green-G	RG (0 — 255)	GG (512 — 2047)	BG (0 — 255)
Blue-B	RB (0 — 127)	GB (0 — 127)	BB (512 — 2047)

Table 14-2 Icon description

Icon	Description
	The step of single increase or decrease. Use it together with
	Increase or decrease the coefficient value of the selected pixel.
	Click to close the pixel topology.

## 14.4 View Calibration Effect

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Related Information

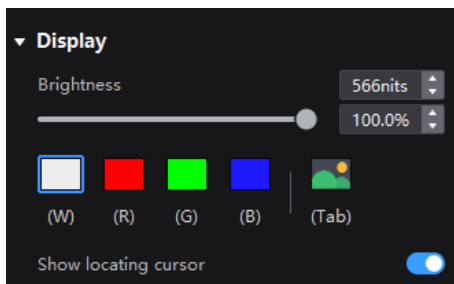
If brightness correction has been done for the screen, the screen brightness can be adjusted in nits. Otherwise, it can be adjusted only in percentage.

### Set the Display Content

In the **Display** area, you can adjust the screen brightness to clearly see the actual calibration effect change at each grayscale. You can also switch the color to see the uniformity of a single color and the entire display image.



Figure 14-6 Set display content



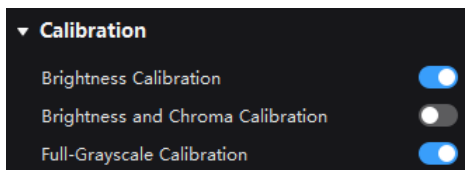
- **Brightness:** Adjust the screen brightness.
- **Display image:** Set the image displayed on the screen. By default, the current input source is being displayed (🌄). You can switch to a monochrome display in white, red, green, and blue. To do so, simply press the shortcut keys W, R, G, B, and Tab.
- **Show locating cursor:** When the switch is set to , the selected area on the screen will display blue borders. This helps you quickly locate the cabinets, modules or pixels that you are currently operating.

## Enable and Disable Calibration Effect

In the **Calibration** area, you can turn on or off the calibration switches and then view the display effects before and after the calibration.

The calibration switches include **Brightness Calibration**, **Brightness and Chroma Calibration**, **Full-Grayscale Calibration** and **Low-Grayscale Calibration**. The actual displayed switches depend on the existing coefficient types of the screen.

Figure 14-7 Calibration switches



The **Brightness Calibration** and **Brightness and Chroma Calibration** are mutually exclusive and cannot be enabled at the same time.

## 14.5 Save and Read Back Calibration Coefficients

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Notice

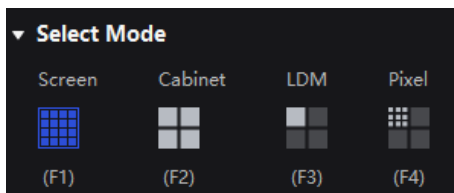
During coefficient saving or readback, if the receiving cards go offline, the uploading or readback will fail.

### Save Calibration Coefficients

Save the calibration coefficients of the current screen, cabinet or module to the receiving card to avoid calibration effect loss due to power failure.

- Step 1 Select a screen from the project list.
- Step 2 From the menu bar, choose **Tools > Coefficient Management**.
- Step 3 In the **Select Mode** area, select the saving range as needed, including **Screen**, **Cabinet**, **LDM** and **Pixel**.

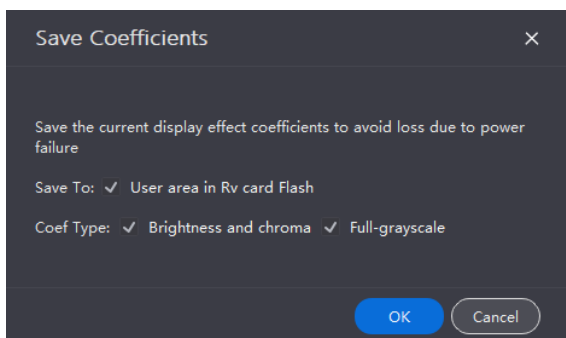
Figure 14-8 Select mode



Step 4 In the **Coefficient Management** area, click **Save** to save the current display effect coefficients to the receiving card. If the module has flash memory, it will also be saved to the flash.

The coefficient types of the current screen will be read automatically. You can select the range of coefficient types as needed.

Figure 14-9 Save coefficients



Step 5 Click **OK**.

## Read Back Calibration Coefficients

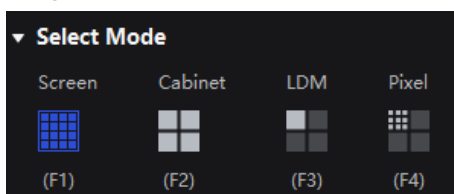
Read back the calibration coefficients saved in the receiving card and apply them to the current screen.

Step 1 Select a controller from the project list.

Step 2 From the menu bar, choose **Tools > Coefficient Management**.

Step 3 In the **Select Mode** area, select the reading range as needed, including **Screen**, **Cabinet**, **LDM** and **Pixel**.

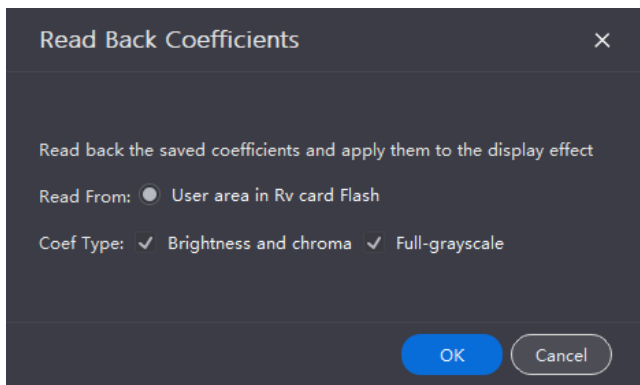
Figure 14-10 Select mode



Step 4 In the **Coefficient Management** area, click **Read** to read the saved coefficients and apply them to the display effect.

The coefficient types saved in the receiving card will be read back automatically. If the module has flash memory, it will also read from the flash. You can select the range of coefficient types as needed.

Figure 14-11 Read back coefficients



Step 5 Click **OK**.

## 14.6 Export Calibration Coefficients

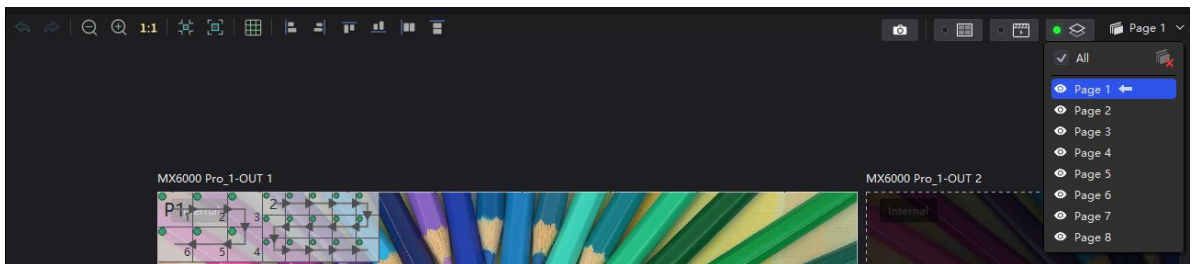
Export the calibration coefficients of the current screen, cabinet or module to the local computer. When the receiving card is replaced or the new screen has the same specifications, you can upload the exported calibration coefficients directly to use.

### Applicable Products

MX6000 Pro, MX2000 Pro, MX40 Pro, MX30, MX20, KU20

### Prerequisites

- You can only export coefficients from page 1.



- To export screen coefficients, make sure:
  - The screen configuration is done, the cabinets are not rotated, and there are no cabinet gaps or overlapping.
  - The configured screen must be rectangular, and the top-left-corner coordinates of the circumscribed rectangle of the configured screen must be (0, 0).
- To export cabinet coefficients, make sure:
  - The target cabinets must have cabinet IDs.

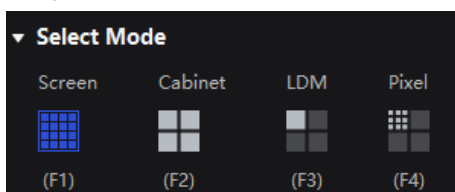
### Notice

During coefficient exporting, if the controller or receiving cards go offline, the exporting will fail.

### Operating Procedure

- Step 1 Select a screen from the project list.
- Step 2 From the menu bar, choose **Tools > Coefficient Management**.
- Step 3 In the **Select Mode** area, select the export range as needed, including **Screen**, **Cabinet**, **LDM** and **Pixel**.

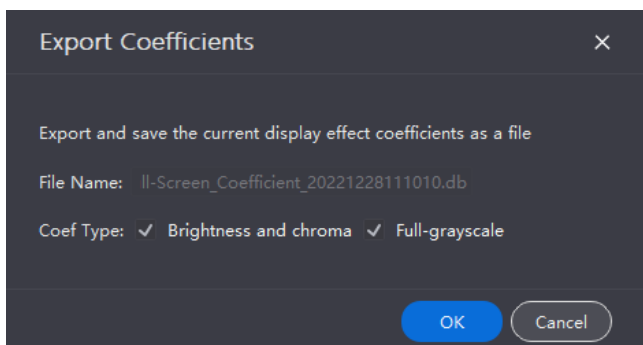
Figure 14-12 Select mode



Step 4 In the **Coefficient Management** area, click **Export** to export the current display effect coefficients as a file (.db).

The coefficient types of the current screen will be read automatically. You can select the range of coefficient types as needed.

Figure 14-13 Export coefficients



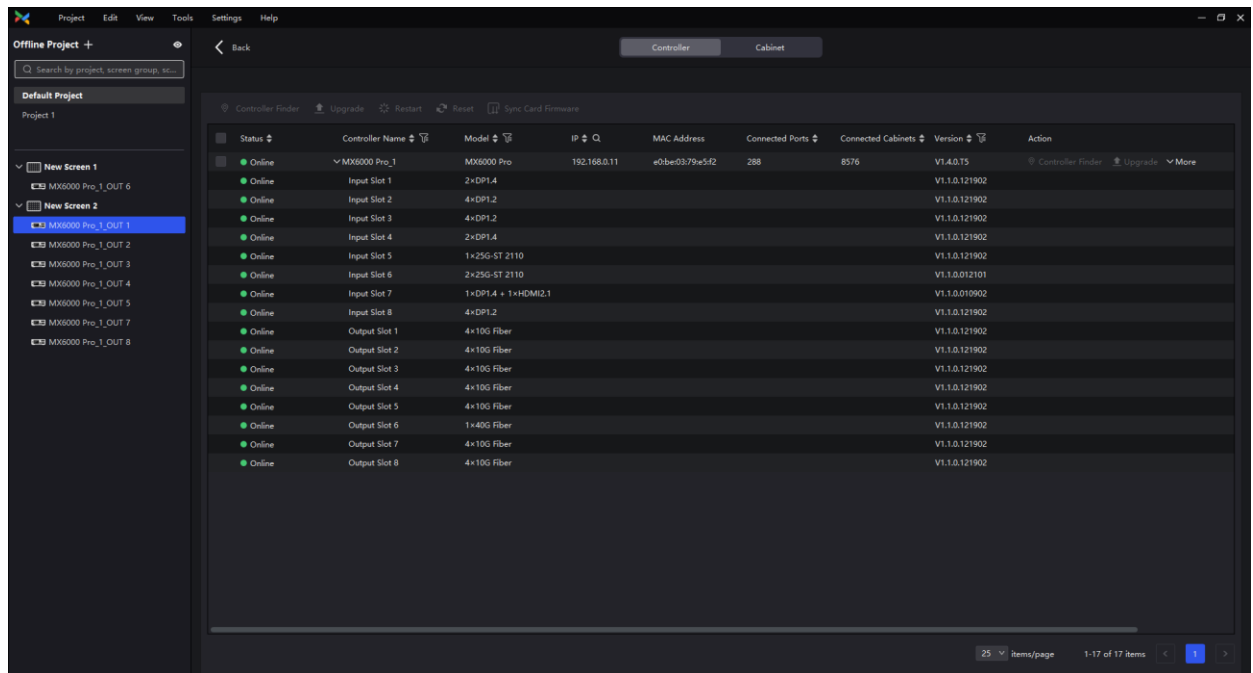
Step 5 Click **OK**.

# 15 Screen Maintenance

## 15.1 Maintain Controllers

- Step 1 From the menu bar, choose **Tools > Maintain**.
- Step 2 Select a project, screen group, screen, or controller from the project list on the left.
- Step 3 On the **Controller** page, select the target controllers and perform the following operations as needed.

Figure 15-1 Controller maintenance



### ✦ Controller finder

Click **Controller Finder** and the LCD screen of the controller becomes green, which helps you find the controller quickly.

### ✦ Sync card firmware

If the card firmware version does not match with the controller firmware version, you can click **Sync Card Firmware** to sync the controller firmware to the card. Alternatively, you can resolve this issue by upgrading the firmware.

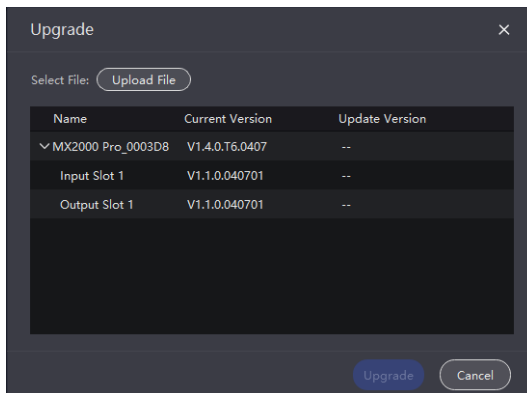
### ✦ Upgrade firmware

Click **Upgrade**, select the firmware program file (.img) or .zip file and click **Open**. On the displayed window, double-check the uploaded file name and version and click **Update** to start upgrading.

During the upgrade process, the controller will automatically restart. In addition, please do not close VMP or switch to another controller until the upgrade is complete.

**Note:**

- It is recommended to perform the upgrade using a wired network.
- All the devices of a screen must be upgraded at the same time.
- When upgrading card-based controllers (MX6000 Pro and MX2000 Pro), all of the cards must be upgraded at the same time. If the cards span across different screens, the devices that are under the same screen as the card must also be upgraded together.



- ✦ **Restart the controller**  
Click **Restart** and click **OK**.
- ✦ **Reset settings (proceed with caution)**  
Click **Reset** and click **OK**.

## 15.2 Maintain Cabinets

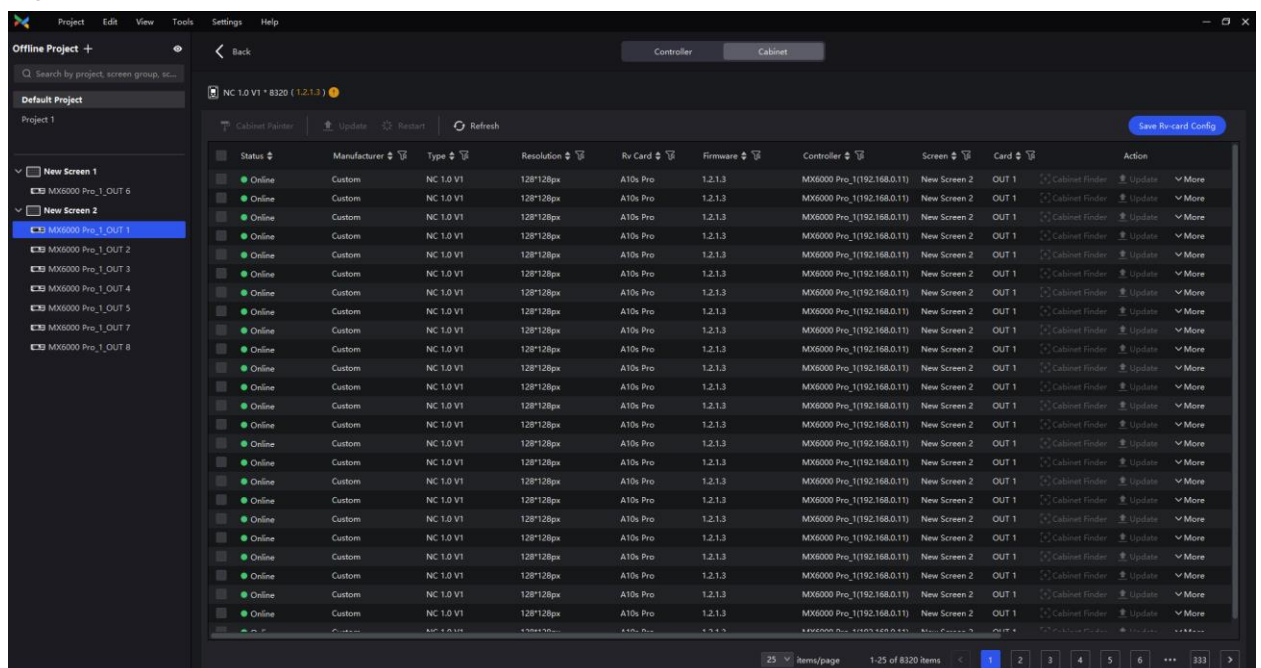
### Related Information

For the cabinet painter operation, the configuration parameters of the cabinet to be copied can be saved to local computer as an .rpk file for future use.

### Operating Procedure

From the menu bar, choose **Tools > Maintain** and select the **Cabinet** tab. In the project list, select the target screens and perform the following operations on the cabinets as needed.

Figure 15-2 Cabinet maintenance



Select the target cabinets and perform any of the following operations.

✦ **Check the cabinet information**

Check the cabinet status, manufacturer, model, firmware version, location, etc.

✦ **Copy the firmware program and configuration file**

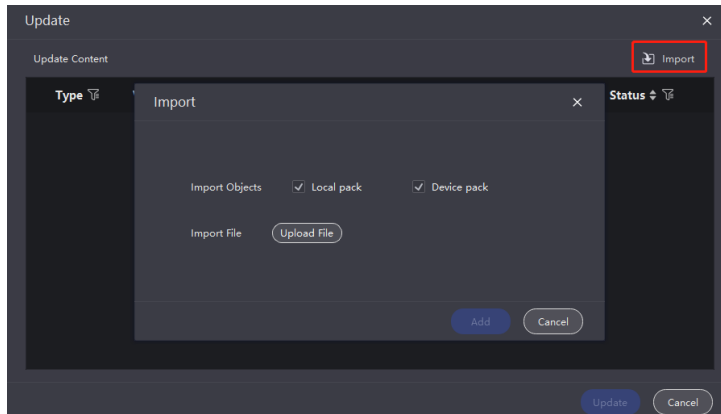
Click **Cabinet Painter** and select one or multiple cabinets so that other cabinets can have the same firmware program and configuration file as the current cabinet.

✦ **Restart the cabinet**

Click **Restart** and click **OK**.

✦ **Upload the NCP file, firmware program, configuration file, image quality file and update cabinet**

a. On the **Cabinet** tab page, select one or multiple cabinets, and then click **Update**.



b. Click **Import** and upload the file.

To upload NCP file, select **NCP File**.

To upload firmware program, select **Firmware**.

To upload configuration file, select **Config File**.

To upload image quality file, select **Image Quality File**.

c. Select the target row of cabinet data and click **Update**.

**Note:**

- It is recommended to perform the update using a wired network.
- When COEX series controllers work with the A10s Pro , A8s Pro , CA50E or XA50 Pro receiving card, you can only perform the update using (.ncp) files.

✦ **Refresh information**

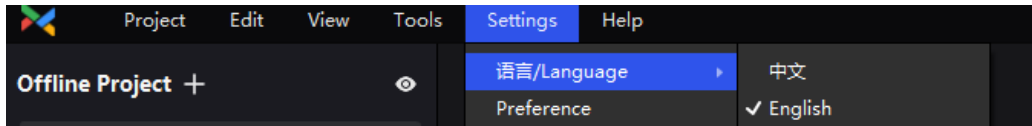
Click **Refresh**.

# 16 Software Settings

## 16.1 Change Language and Temperature Scale

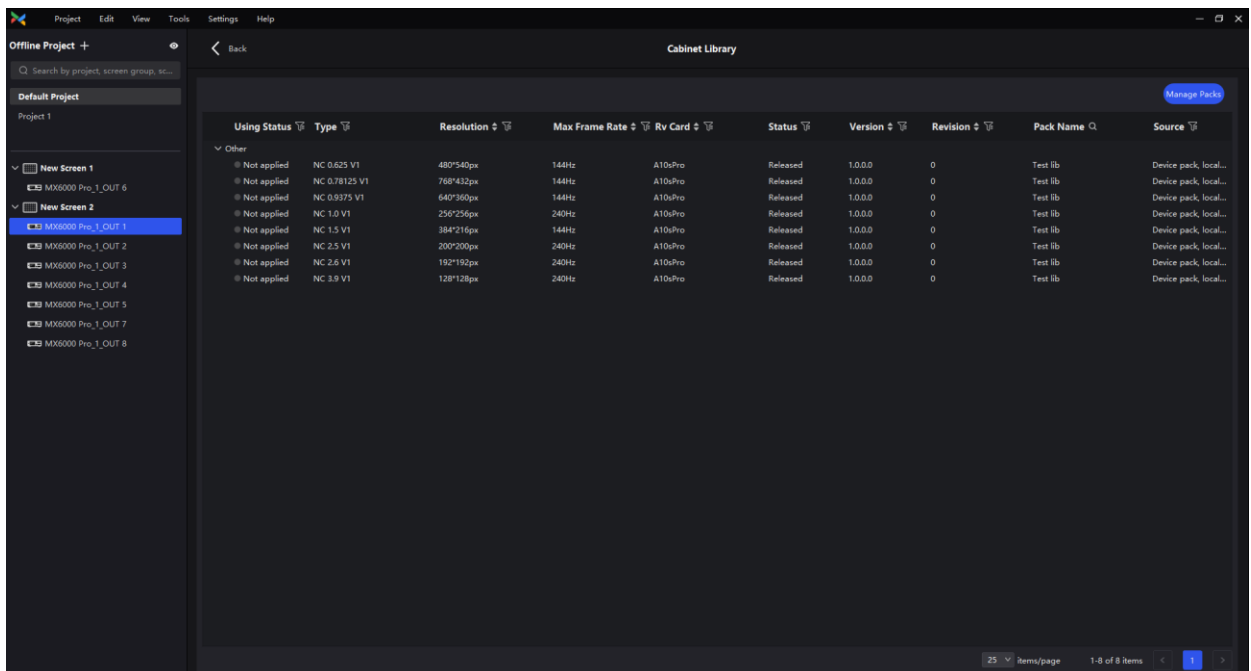
- From the menu bar, choose **Settings** > **语言/Language**, and then select the desired language option.
- From the menu bar, choose **Settings** > **Preference**, and then select the desired temperature scale.

Figure 16-1 Changing the language/temperature scale



## 16.2 Manage Cabinet Library

From the menu bar, choose **Settings** > **Cabinet Library**. Click **Manage Packs** and do the following operations as needed to manage the cabinet library files.

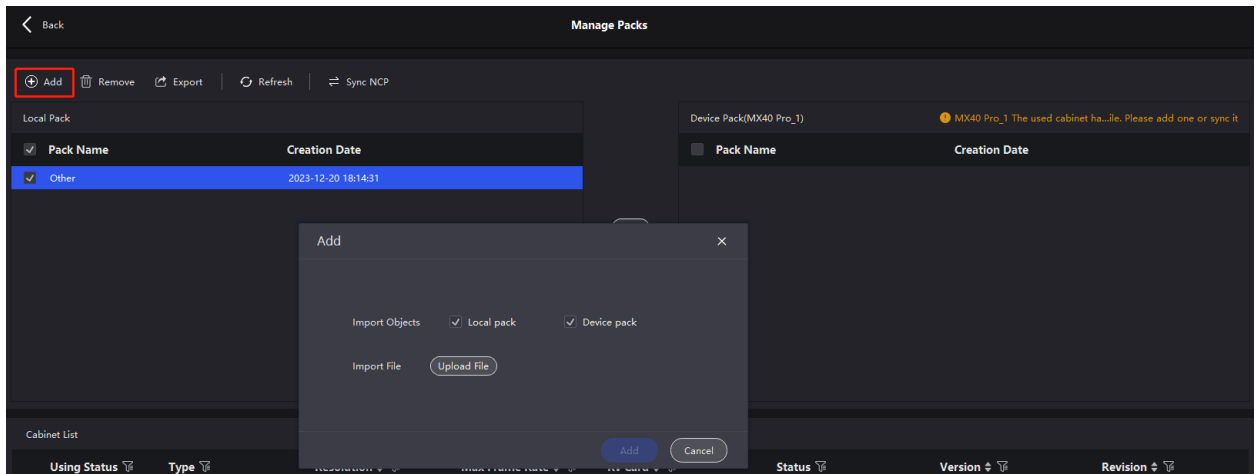


### Upload NCP File

Step 1 Click **Add**. On the displayed window, click **Upload File**.



Figure 16-2 Adding NCP file



Step 2 Select the object to be imported (multiple objects can be selected).

- When **Local pack** is selected, the file will be stored in the VMP installation directory.
- When **Device pack** is selected, the file will be stored in the internal space of the controller.

Step 3 Select the .ncp file to be imported from the local computer and click **Add**.

After the file is selected, you can click **Delete** to delete the uploaded file.

You can also click **Refresh** to refresh the NCP file list.

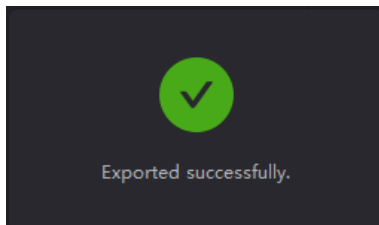
## Export NCP File

Step 1 Select one or more files on the **Manage Packs** screen and then click **Export**.

For batch export, multiple files will be compressed as a .zip file and exported.


Step 2 Select a local directory and click **Save**.

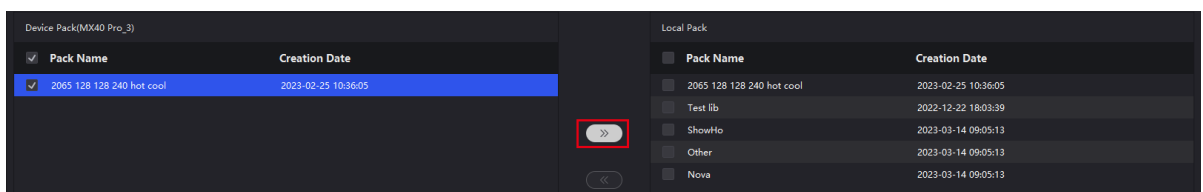
Figure 16-3 Successful export



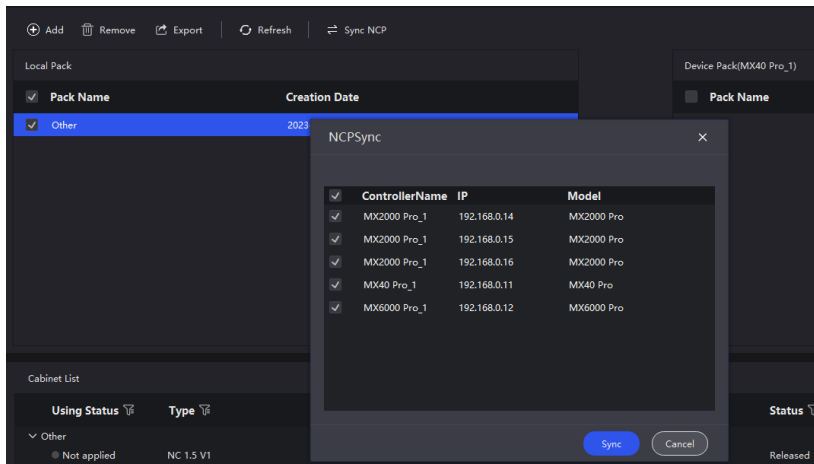
## Sync NCP File

- Sync NCP files between the device and local computer

Select the files to be synced (multiple files can be selected), and click .

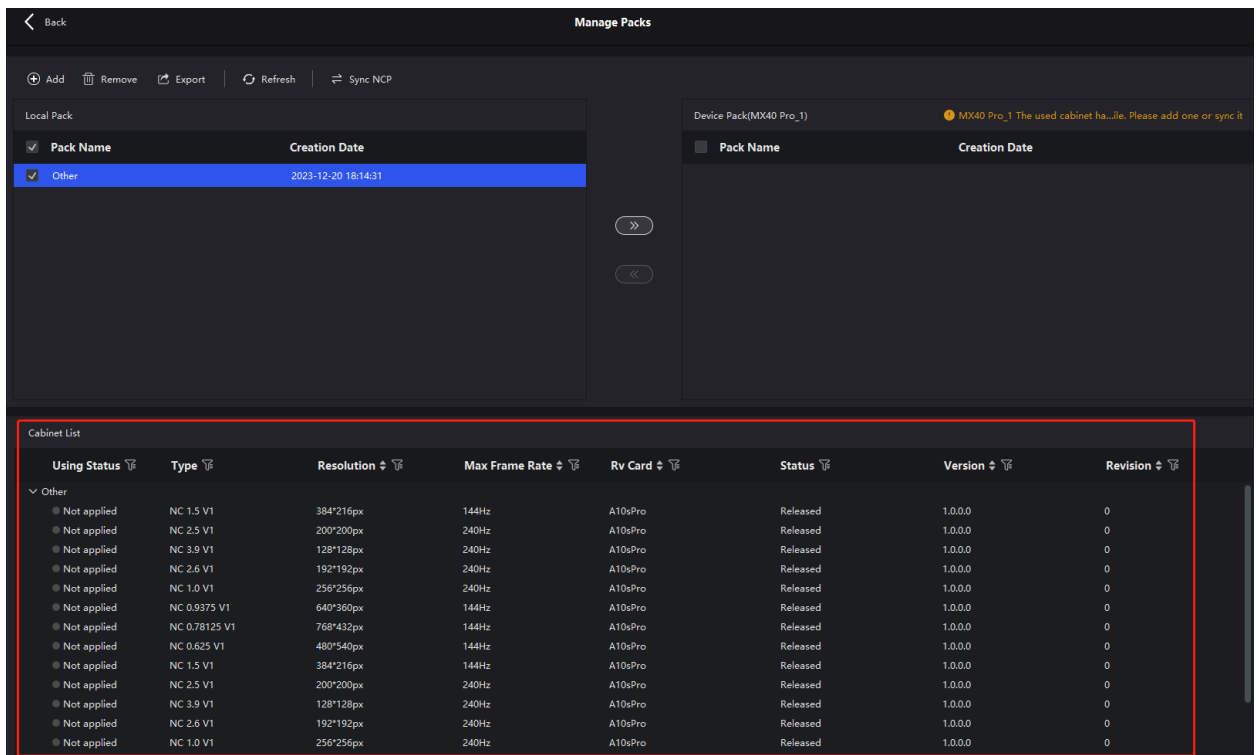


- Sync NCP files between devices
  - Select the files to be synced (multiple files can be selected), and click **Sync NCP**.
  - On the displayed window, select the devices to which the files are synced (multiple devices can be selected).
  - Click **Sync**.



## Check NCP File Information

Select an NCP file, and the information about all the cabinets that use this NCP file will be displayed in the **Cabinet List** area below. The information includes status, cabinet type, resolution, maximum frame rate, receiving card type, release status, version and revision.



## 16.3 Check User Manual

From the menu bar, choose **Help > User Manual** to open and check the VMP user manual.

## 16.4 Check Software Information

From the menu bar, choose **Help > About** and check the software information.

## 16.5 Check Keyboard Shortcuts

From the menu bar, choose **Help > Keyboard Shortcuts** and check the commonly used software operation shortcuts.

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