

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 device management, input settings, screen configuration, display correction, color processing, screen settings, monitoring and maintenance, and preset management, it provides users with an efficient and easy operation and control experience.

✦ **Easy single-device and grouped-device controls**

Devices can be grouped and batch-operated as you wish, greatly improving work efficiency.

✦ **Fast configuration of regular or irregular screens**

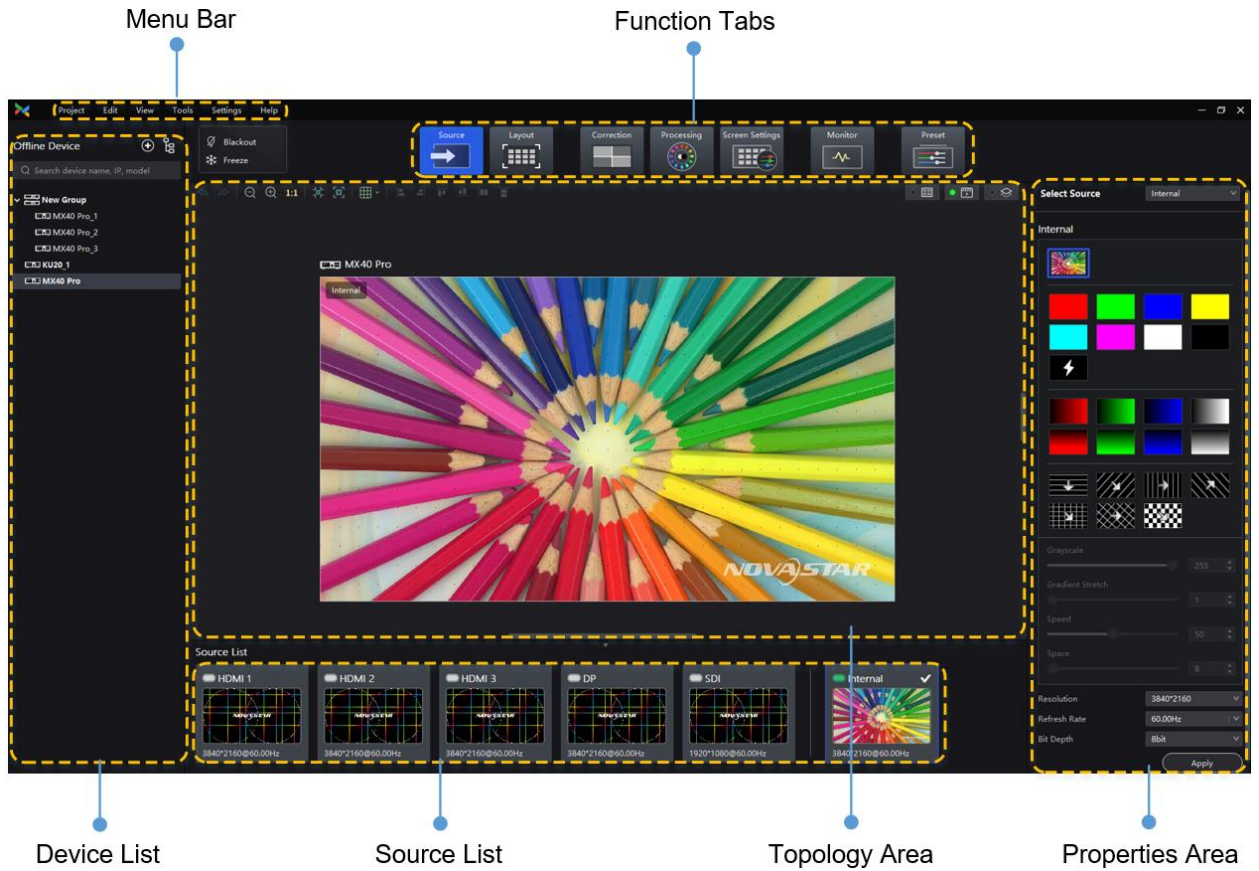
Cabinets can be quickly connected, flexibly arranged, and aligned, considerably simplifying screen configuration.

✦ **Distinct topology area and properties areas**

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

2 UI Introduction

Figure 2-1 UI Introduction
Menu Bar



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 Getting Started

3.1 Install VMP

3.1.1 Windows

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: 8 GB or greater

Note

ARM-based Windows computers are not supported.

Installation Method

Run the **Coex VMP Setup.exe** file 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.

3.1.2 MacOS

Prerequisites

- The VMP software package is prepared.
- A computer meeting the following requirements is available.
 - OS: MacOS 10.15 or later
 - CPU: Intel i5 or Apple M1 or later
 - RAM: 8 GB or greater

Installation Method

Step 1 After the installation package is downloaded, click **Finder** on the desktop, enter the **Downloads** page, and double-click the package to open VMP.dmg.


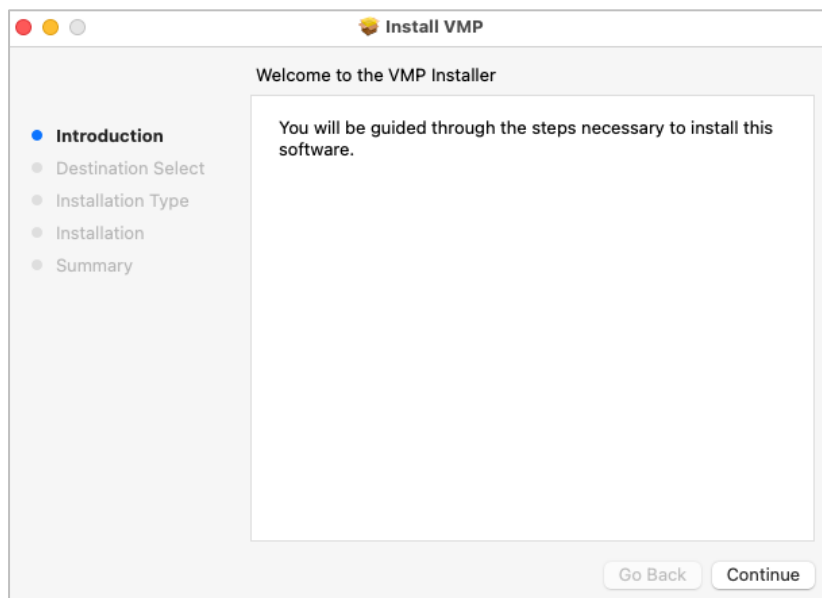
Step 2 Hold down the **control** key, click  and select **Open**.

Figure 3-1 VMP for Mac




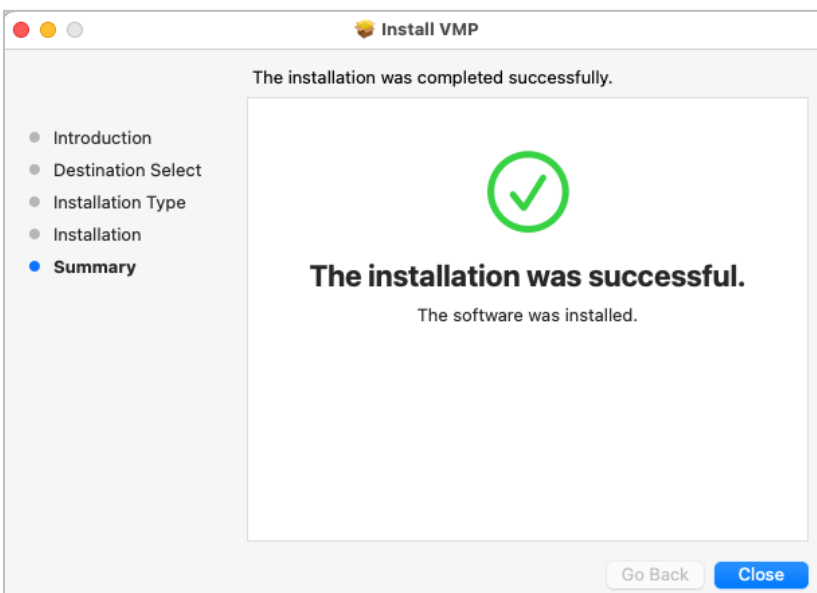
Step 3 In the **Install VMP** window, follow the installation guide to complete installation.

Figure 3-2 Install VMP



Installation Result

If the installation is successful, the following window is displayed and the VMP software shortcut  appears in Launchpad.



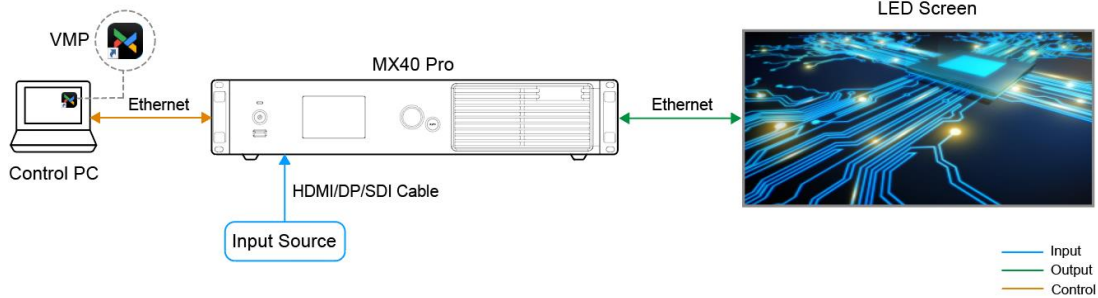
3.2 Connect Physical Devices

3.2.1 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 3-3](#) to complete the hardware connection.

Figure 3-3 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 **Reset** and press the knob.

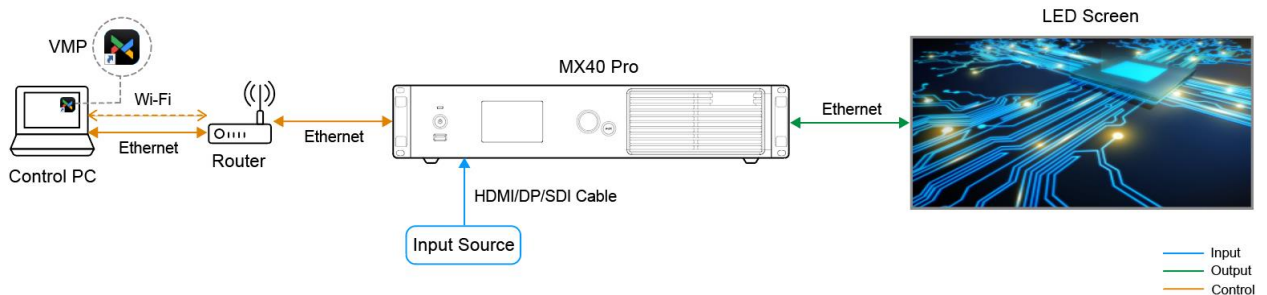
Step 5 After the settings, select **Apply** and press the knob.

3.2.2 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 3-4](#) to complete the hardware connection.

Figure 3-4 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.

3.3 Add Offline Devices

You can add offline devices before screen construction to complete screen solution configuration in advance so that the configuration can be imported onsite for use directly.


Applicable Products

MX40 Pro, MX30, MX20, KU20

www.novastar.tech

Operating Procedure

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

Step 2 Click  at the top left to add offline devices.

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

On the displayed page, click **Add Controller** and enter the device type, device name and IP address.



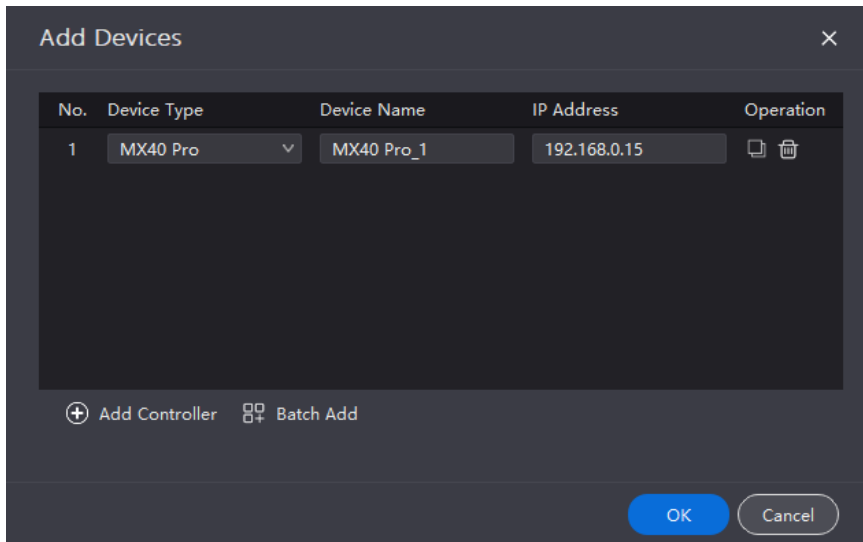
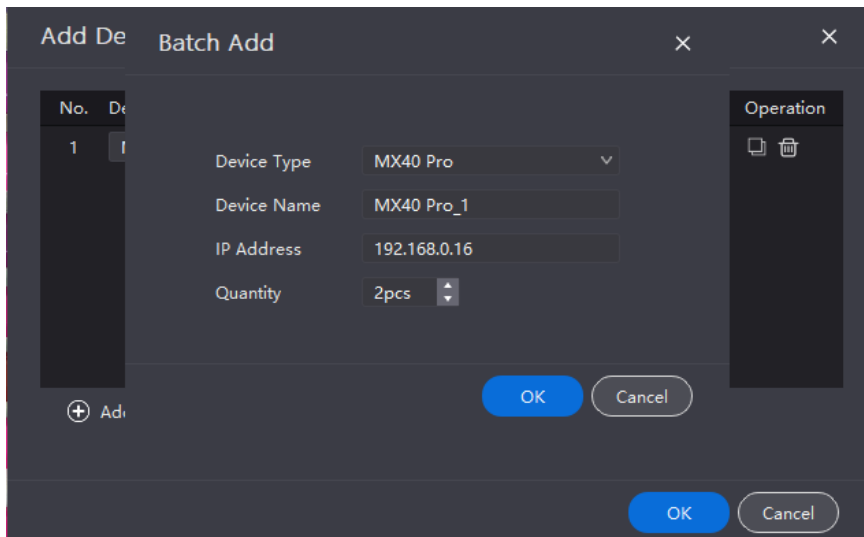
Click  to copy the current device and click  to delete it.

Figure 3-5 Add one device



To add multiple devices of the same model, click **Batch Add** and enter the device type, device name, IP address and quantity of devices to be added.

Figure 3-6 Add multiple devices



Step 4 After all the devices are added, click **OK**, and the added offline devices will be shown in the device list.

Note

To exit offline mode, choose **Tools > Offline Mode > Exit Offline Mode**, or close VMP and reopen it..

3.4 Load Cabinet Configuration Files

Use VMP to load cabinet configuration files (.ncp/.rcfgx) to let cabinets display the image normally.
www.novastar.tech

Prerequisites

The cabinet configuration files (.ncp/.rcfgx) are prepared in advance.

Related Information

The NCP file is generated by the Cabinet Tool software. To obtain the file, Please contact NovaStar.

Operating Procedure

- Step 1 Open VMP.
- Step 2 From the menu bar, choose **Tools > Maintain**.
- Step 3 Select the **Cabinet** tab.
- Step 4 From device list on the left, select a controller to let the information about all the cabinets loaded by the controller be displayed.

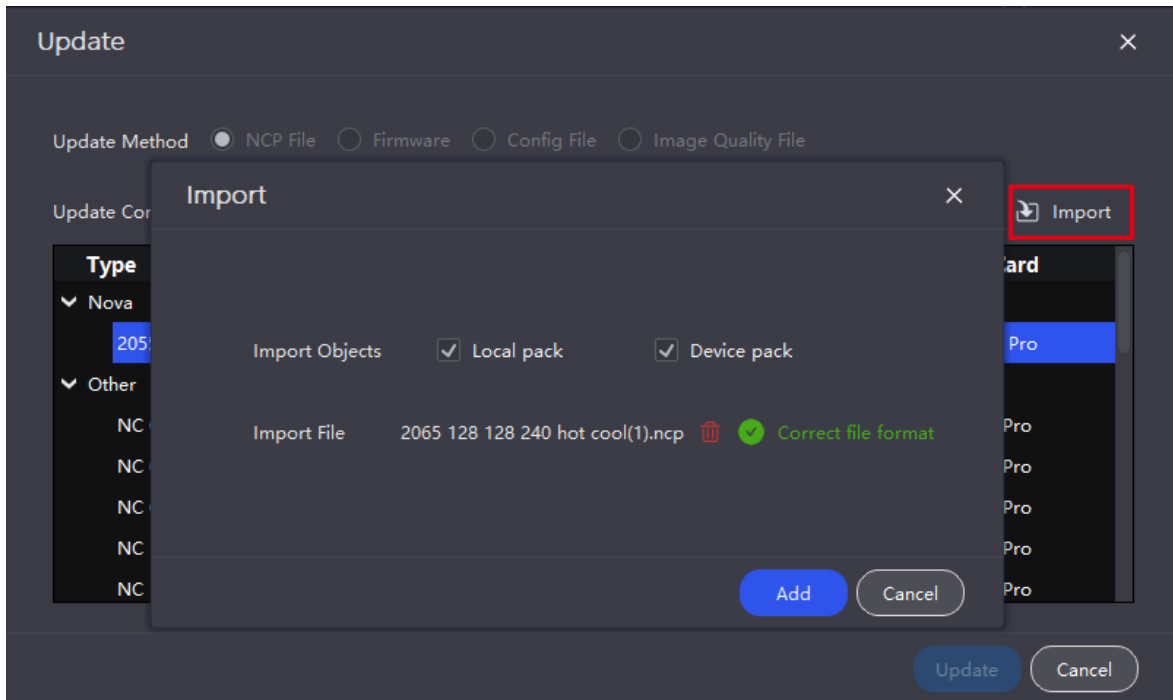
Figure 3-7 Cabinet maintenance

The screenshot shows the 'Cabinet' tab in the VMP interface. At the top, there are tabs for 'Controller' and 'Cabinet', and a 'Save Rv-card Config' button. Below the tabs, there are buttons for 'Cabinet Painter', 'Update', 'Restart', and 'Refresh'. The main area contains a table with the following columns: Status, Manufacturer, Type, Cabinet Resolution, Rv Card, Firmware, Controller, Controller IP, Location, and Action. The table lists 25 cabinets, all with a status of 'Online'. The bottom of the interface shows '1 items selected', '25 items/page', and '1-25 of 640 items'.

Status	Manufacturer	Type	Cabinet Resolution	Rv Card	Firmware	Controller	Controller IP	Location	Action
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-1	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-2	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-3	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-4	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-5	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-6	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-7	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-8	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-9	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-10	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-11	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-12	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-13	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-14	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-15	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-16	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-17	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-18	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-19	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-20	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-21	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-22	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-23	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-24	Cabinet Finder Upd.
Online	Other	NC 2.6 V1	192*192px	A10s Pro	V1.1.2.33	MX40 Pro_1	192.168.0.10	P1-25	Cabinet Finder Upd.

- Step 5 Select one or more cabinets, click **Update** and select an update method according to the type of file to be uploaded.

- To upload .ncp file, select **NCP File**.
- To upload .rcfgx file, select **Config File**.



Step 6 Choose **Import**. > **Upload File**, select the file to be uploaded, and click **Add**.

Step 7 After the file is uploaded, select the configuration file to be updated.

Step 8 Click **Update**.

3.5 Set Input Source

Select a desired input source and set its resolution and frame rate.

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 frame rate helps stabilize the display image.

Operating Procedure

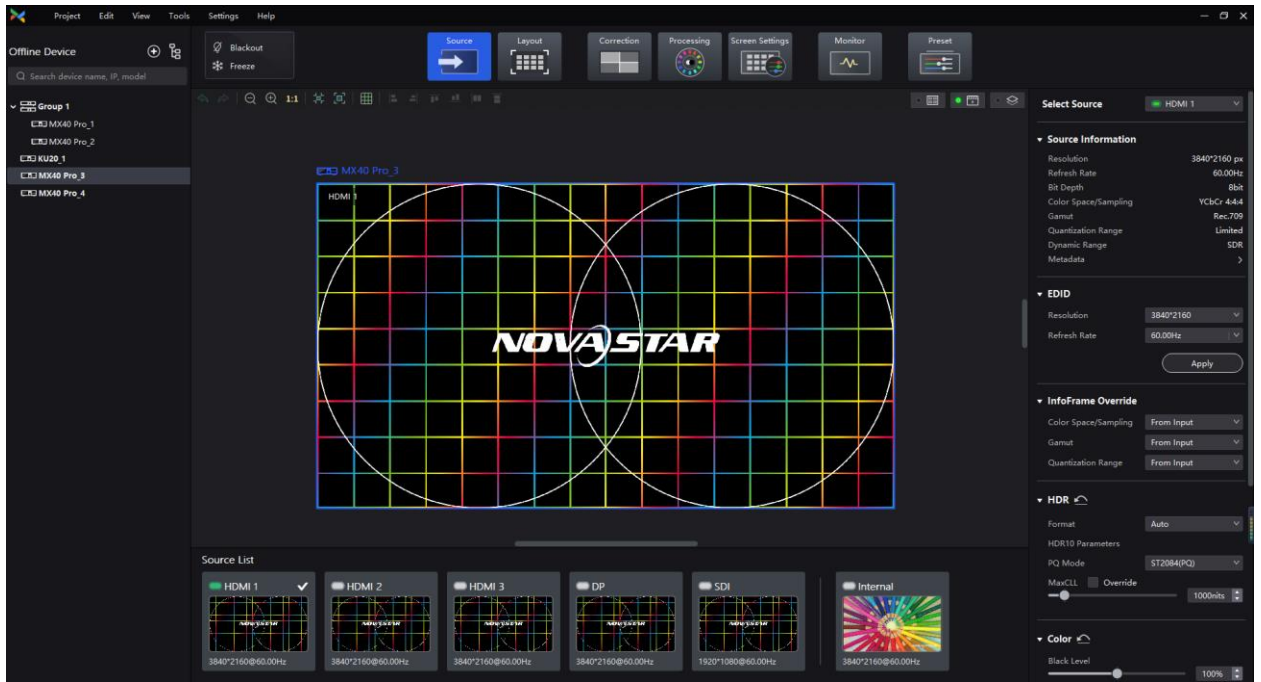
Step 1 Select **Source**.

Step 2 In the device list on the left, select the desired controller.

Step 3 Double-click a source thumbnail in the source list at the bottom of the page, or select an option from the drop-down list next to **Select Source** in the properties area on the right to select a source.

Step 4 Set **Resolution** and **Refresh Rate** and click **Apply**. For an internal source, you can also set the bit depth. For the SDI sources, please skip this step.

Figure 3-8 Setting input source



3.6 Configure Cabinet Topology

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

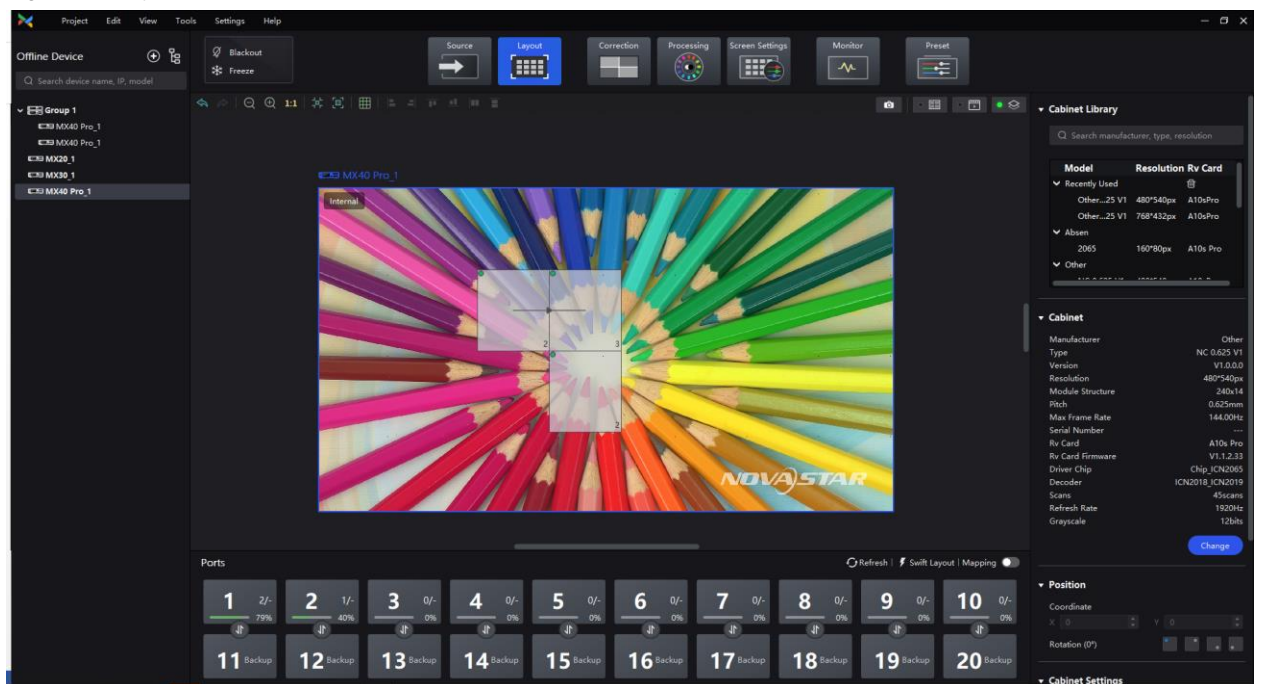
Prerequisites

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

Operating Procedure





- Step 1 Select **Layout**.
- Step 2 In the device list on the left, select the desired controller.

Figure 3-9 Layout



Step 3 From the menu bar, choose **View > Display**, select a view for the topology area, and select the content to be displayed.

You can also select a view by clicking one of the following icons at top right of the topology area. The selected view will have a green spot near it.

-  : 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 the icon to take a snapshot of the video feed. When this is enabled, the image displayed on the VMP interface is frozen at the last frame and this action won't affect the display on the LED screen. Users can configure the cabinet layout according to the frozen image without the need to look at the LED screen. Once completed, click the icon again to disable **Source Snapshot**.

In addition, you can choose to show the cabinet topology, cabinet status, group names, source tags, and overlapping cabinets.

Step 4 In the bottom area of the page, select an Ethernet output port and click the canvas multiple times to add the corresponding number of cabinets.

The cabinets will be automatically connected when you are adding them, as shown in [Figure 3-10](#). The Ethernet port's load capacity information will be displayed, as shown in [Figure 3-11](#). The properties area will display the cabinet information, as shown in [Figure 3-12](#).

Figure 3-10 Cabinets connected automatically

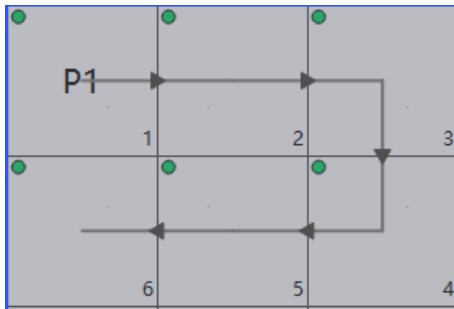
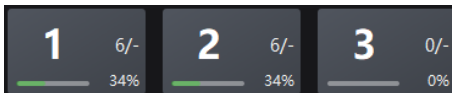


Figure 3-11 Ethernet port capacity



- 6/-: Indicates that 6 cabinets are connected to the controller's Ethernet port 1.
- 34%: Indicates these 6 cabinets have used 34% of the Ethernet port's capacity.

Figure 3-12 Cabinet information

Cabinet	
Manufacturer	Mixed
Type	Mixed
Version	Mixed
Resolution	Mixed
Module Structure	128x64
Pitch	1.000mm
Max Frame Rate	Mixed
Serial Number	---
Rv Card	A10s Pro
Rv Card Firmware	Mixed
Driver Chip	Mixed
Decoder	Mixed
Scans	32scans
Refresh Rate	Mixed
Grayscale	13bits

Notes

If all the cabinets loaded by the Ethernet ports have the same size, you can use the swift layout function to quickly add and connect the cabinets for all the Ethernet ports. The operations are as follows:

At the top right of the Ethernet port list, click **Swift Layout**. 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 5 Select another Ethernet port and continue to add cabinets until all cabinets are connected.

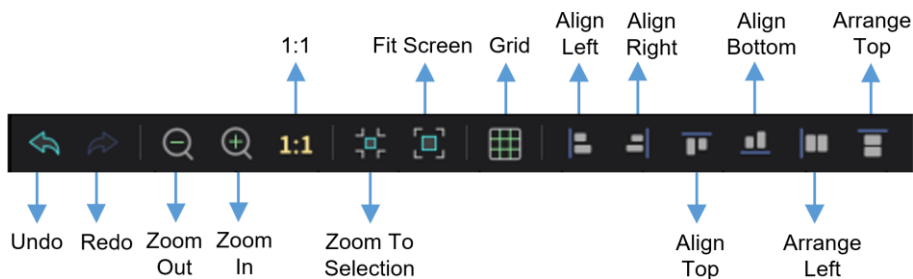
Step 6 For cabinets that have the same size and consecutive serial numbers, if you want to change the cabinet connection topology, select the cabinets and then select a quick topology under **Quick topo** in the properties area, as shown in [Figure 3-13](#). For other cabinets, skip this step.

Figure 3-13 Quick topology




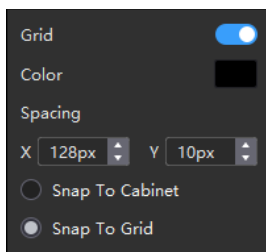
Step 7 Do any of the following to arrange and align the cabinets to let the cabinet positions meet the display requirements.



Use the function buttons



- 1:1: The canvas size equals to 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.

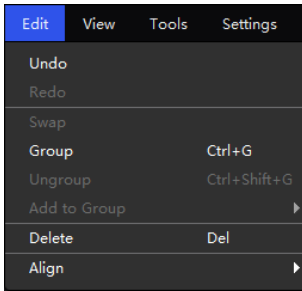
Click  to show its drop-down menu shown below. The menu can be used to set the canvas grid.



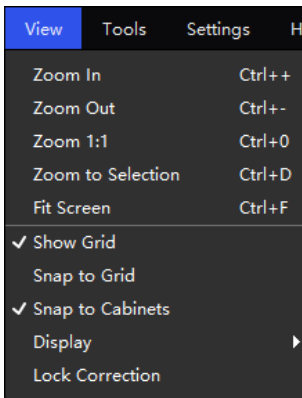
- Grid: When the switch is , a grid is displayed on the canvas. If you do not need to display the grid, set the switch to .
- Color: Set the grid color.
- Spacing: Set the spacing of horizontal and vertical lines of the grid. The spacing is set to the resolution of the first cabinet by default.
- Snap 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

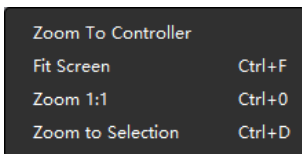


– View menu



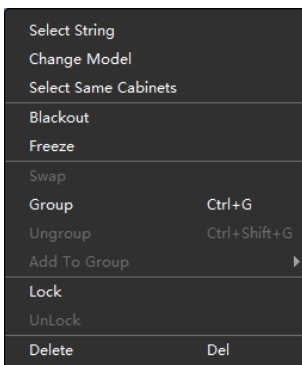
✦ Use the right-click function menus

– 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.

Switch: Switch the display areas of two cabinets.

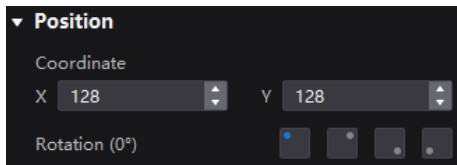
Group: Group the selected cabinets. To set the group name and color, please select the group and set them in the properties area.

Ungroup: Ungroup the cabinets.

Add to Group: Add the selected cabinets to a group.

✦ Set cabinet coordinates and rotation

Select a cabinet and set its coordinates and rotation angle in the properties area. After the cabinet is rotated, the input source will be rotated by the set angle and displayed.



Step 8 After setting, right-click the controller in the device list and select **Save Rv-card config**. For CX series products, no saving operation is required.

Step 9 Click **Save** in the displayed dialog box.

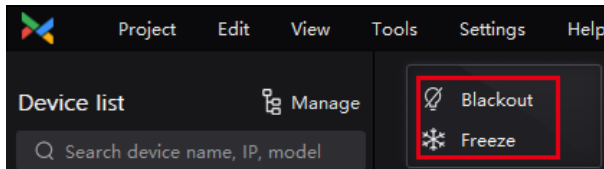
3.7 Control Display Status

Set the display loaded by the controller or cabinets to a black screen or frozen status.

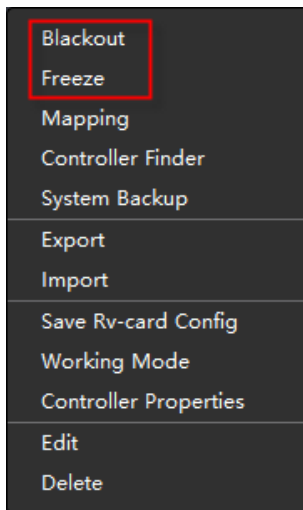
- Blackout: Make the output screen go black. The input source is played normally.
- Freeze: Make the output screen always display the current frame. The input source is played normally.

Set the Status of Display Loaded by the Controller

- At the top left of the page, click **Blackout** or **Freeze**.



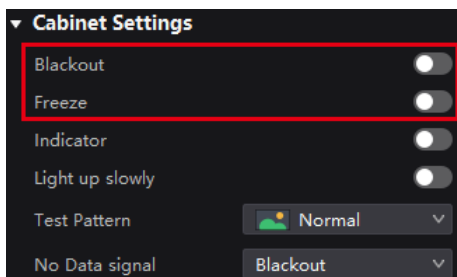
- In the device list on the left, right-click the controller and select **Blackout** or **Freeze** from the pop-up menu.



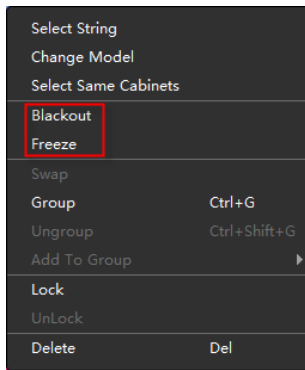
Set the Status of Display Loaded by Cabinets

Select **Layout** and do any of the following:

- Select one or more cabinets, and set the **Blackout** or **Freeze** switch to in the properties area.



- Right-click a cabinet and select **Blackout** or **Freeze** from the pop-up menu.



- Select **Monitor** and set the **Blackout** or **Freeze** switch to in the properties area.

4 Device Management

4.1 Export and Import Project Files

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

Notice

The project file can be imported only to the device that is of the same model as the file device, and the first two digits of the firmware version of the target device must be the same as those of the firmware version of the file device.

For example, the project file of V1.2.0 can be imported to the devices whose firmware version is V1.2.1, but the project file of V1.1.x cannot be imported to devices whose firmware version is V1.2.x.

Export Project Files

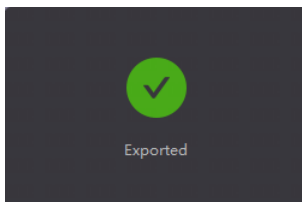
Step 1 From the menu bar, choose **Project > Export** and select a device or device group.

You can also right-click a device or device group in the device list 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 4-1 Successful export



Import Project Files

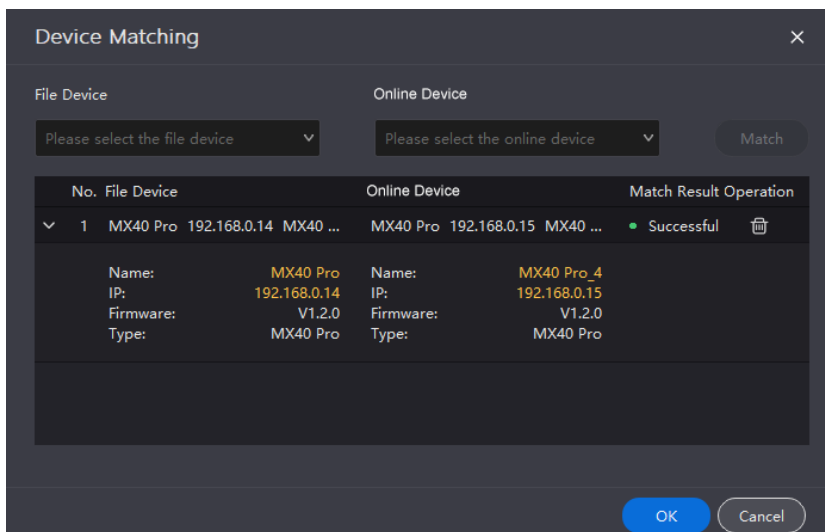
Step 1 From the menu bar, choose **Project > Import to** and select a device or device group.

You can also right-click a device or device group in the device list 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 4-2](#) is displayed.

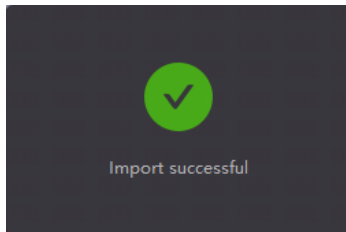
Figure 4-2 Matching devices



Step 3 Click **OK**.

Step 4 After successful import, click **OK** to close the prompt box.

Figure 4-3 Successful import



4.2 Manage Device Groups

Optimize device management by creating device groups, allowing for uniformly management and performing batch operations on multiple devices within the same group.

Notice

Only devices of the same model and same firmware version can be added to the same group. (CX80 Pro devices installed with different input cards can be added to the same group.)

Operating Procedure


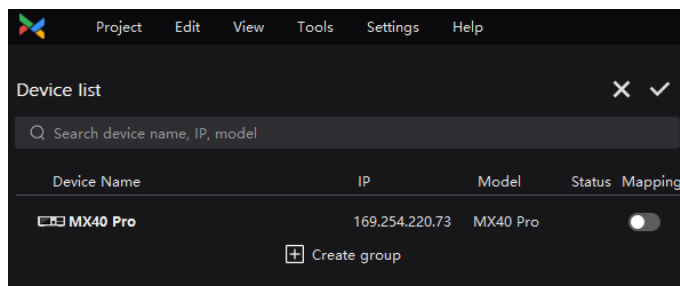

Step 1 In the device list area, click  **Manage** to enter the group management page.

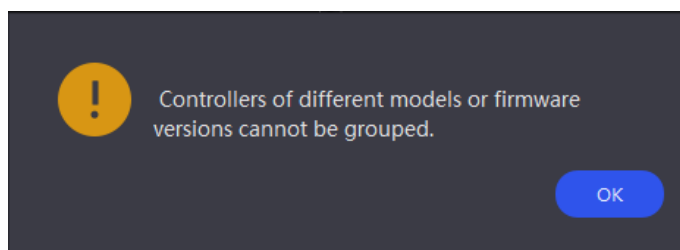
Figure 4-4 Group management




Step 2 Click  to create a group, enter a group name and press **Enter** or click on the other position on the page.

To rename a group, right-click the group, select **Rename** from the pop-up menu and enter a new group name.

Step 3 Drag the target devices to the created group.



Step 4 After the settings, click .

- To delete a device in a group, drag the device out of the group.
- To delete a group, right-click the group, select **Remove group** from the pop-up menu.

Note

You can set the **Mapping** switch to  to enable the mapping function.

4.3 Set Backup Device

Enhance system reliability by establishing a primary controller and backup controller, allowing the backup controller to take over responsibility in case of primary controller failure.

Applicable Products

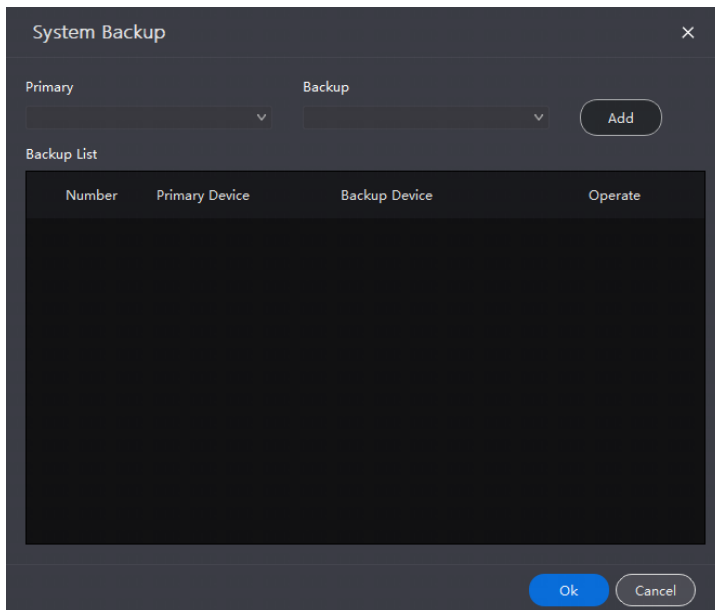
MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Operating Procedure

Step 1 From the menu bar, choose **Tools > System Backup** to open the **System Backup** dialog box.

You can also right-click a device or device group in the device list and select **System backup** from the pop-up menu to open the **System Backup** dialog box.

Figure 4-5 System backup



Step 2 Select a primary controller and a backup controller from the drop-down options respectively, and then click **Add**.


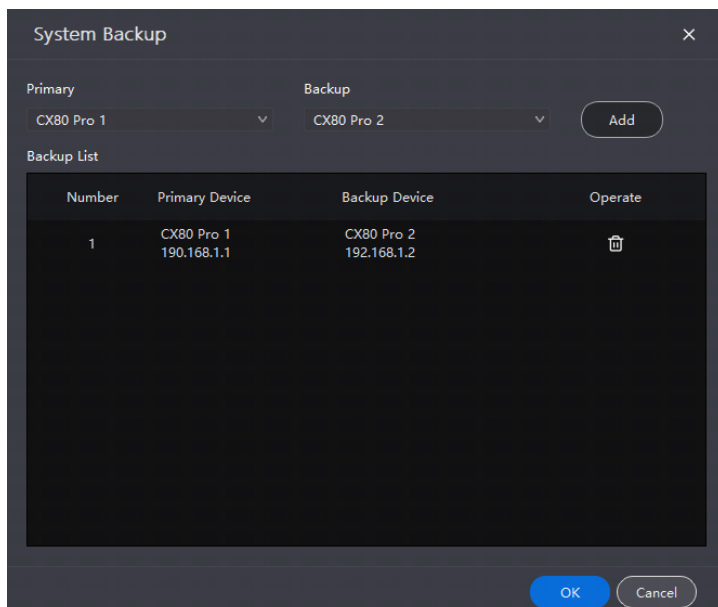
The backup list will display the added backup information. To delete the backup information, click .

Figure 4-6 Backup list



Step 3 After the settings, click **OK**.

4.4 Switch Working Mode

Set the device working mode to Send-Only Controller or All-In-One Controller.

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

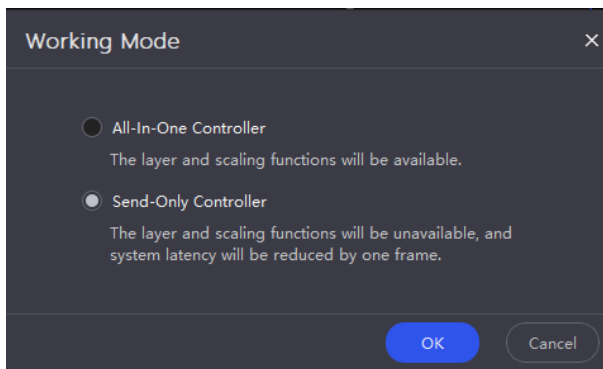
Related Information

The layer and scaling functions are available only in the All-In-One Controller working mode.

Operating Procedure

In the device list on the left, right-click a device and select **Working Mode** from the displayed menu. On the displayed dialog box, select **All-In-One Controller** or **Send-Only Controller** and click **OK**.

Figure 4-7 Working mode



4.5 Art-Net Control

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

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

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.

Control (MX40 Pro_3) ✕

Art-Net

Universe

Configuration ▼

Channel	Property	Minimum	Maximum
1	Brightness	<input type="text" value="0"/>	<input type="text" value="100"/>
2	Color Temperature	<input type="text" value="1700"/>	<input type="text" value="15000"/>
3	Display Mode	<input type="text" value="0"/>	<input type="text" value="2"/>
▼ <input type="text" value="Select Source"/> ▼			
4	Black Level	<input type="text" value="0"/>	<input type="text" value="200"/>
5	Contrast	<input type="text" value="0"/>	<input type="text" value="200"/>
6	Saturation	<input type="text" value="0"/>	<input type="text" value="200"/>
7	Hue	<input type="text" value="-180"/>	<input type="text" value="180"/>
8	Red Shadow	<input type="text" value="0"/>	<input type="text" value="200"/>
9	Green Shadow	<input type="text" value="0"/>	<input type="text" value="200"/>
10	Blue Shadow	<input type="text" value="0"/>	<input type="text" value="200"/>
11	Red HighLight	<input type="text" value="0"/>	<input type="text" value="200"/>
12	Green HighLight	<input type="text" value="0"/>	<input type="text" value="200"/>
13	Blue HighLight	<input type="text" value="0"/>	<input type="text" value="200"/>

5 Input Source Configuration

5.1 Set External Sources

5.1.1 Select a Source

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Related Information

You can check the current status of the source according to the source indicator.

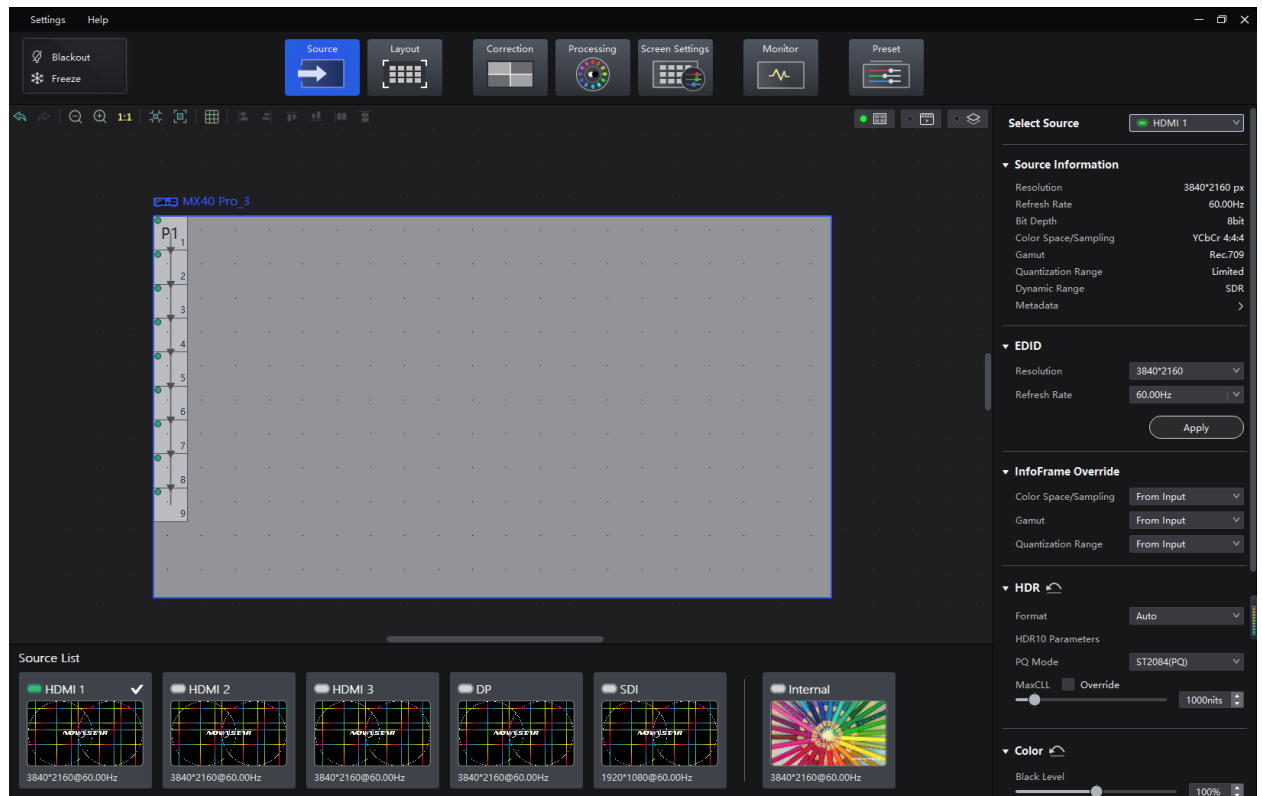
- Green: The source is selected and it has video signal.
- Red: The source is selected, but it does not have video signal.
- Gray: The source has video signal, but it is not selected, or it does not have video signal.
- Orange: The devices in the same device group have different active sources selected.

Operating Procedure

Select **Source** and double-click a source thumbnail in the source list at the bottom of the page, or select an option from the drop-down list next to **Select Source** in the properties area on the right to select a source.

In the **Source Information** area in the properties area on the right, you can view the attribute values of the source.

Figure 5-1 Select source



5.1.2 Set Resolution and Frame Rate

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

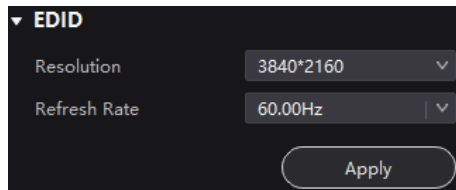
Related Information

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 frame rate helps stabilize the display image.

Operating Procedure

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

Figure 5-2 EDID



5.1.3 Adjust the Color

Applicable Products

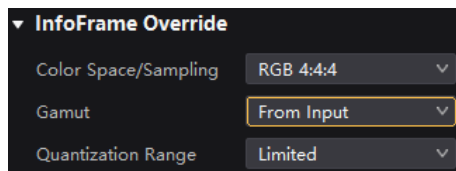
MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

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 5-3 InfoFrame Override



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

Figure 5-4 Color



Table 5-1 Description 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 highlight 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.
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 highlight areas of the image. The principle is the same as that of contrast, but only the RGB components are adjusted.

5.1.4 Set HDR Parameters

Applicable Products

MX40 Pro, MX30, CX80 Pro, CX40 Pro

Notice

To set HDR parameters, the hardware must support HDR and the HDR10 or HLG sources must be prepared.

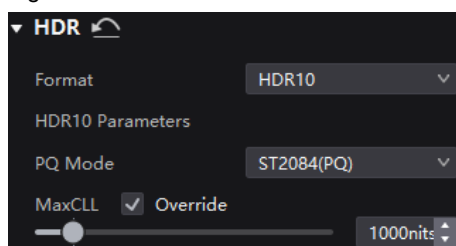
Related Information

Using the HDR function together with the A10s Pro, CA50E, CA50C and XA50 receiving cards reduces the Ethernet port load capacity by less than 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 5-5 HDR



HDR 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 adjust 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.

5.2 Set Internal Sources

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

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro


Operating Procedure

Step 1 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.

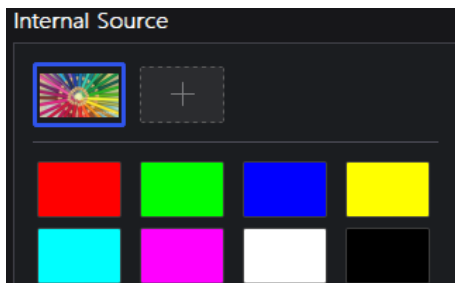
Step 3 Select an image.

- Imported images

These images are imported via .

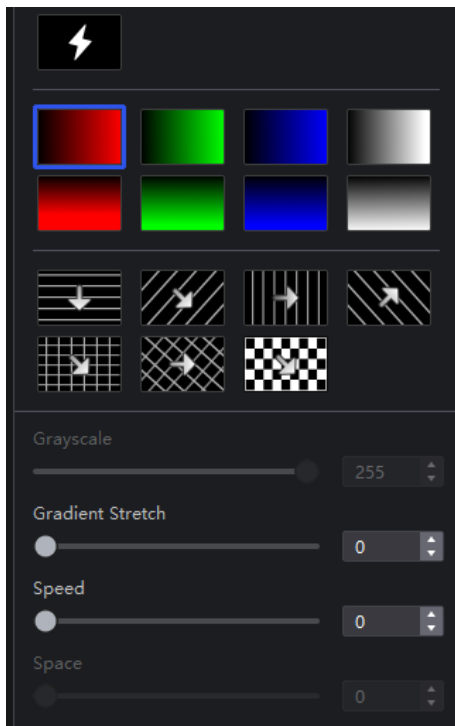
- Static images

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



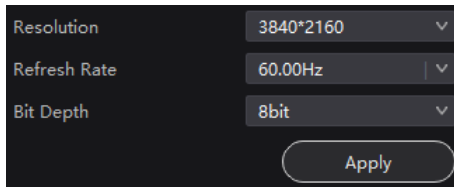
- Dynamic images

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



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

Figure 5-6 Internal source parameters



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

5.3 Set Layers (All-In-One Controller Mode Only)

Add layers and set the layer properties.

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Prerequisites

The device working mode has been switched to All-In-One Controller. For details, see [4.4 Switch Working Mode](#).

Related Information

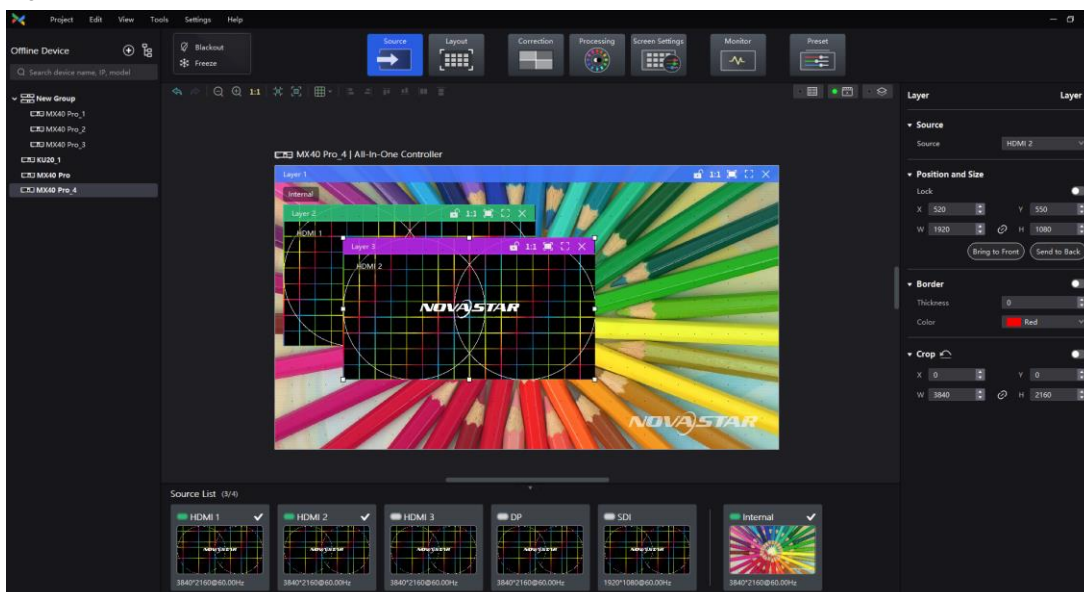
The maximum number of layers that can be added depends on the connected device. When the supported layer quantity is 1, layer position, border, input crop and other operations are not supported.

Device Model	Number of Supported Layers
MX40 Pro	4
MX30	3
MX20	3
KU20	1
CX80 Pro	1
CX40 Pro	3


Operating Procedure

Step 1 Select **Source**.

Figure 5-7 Input source



Step 2 In the properties area, set the canvas size.

Step 3 At the top right of the topology area, select  so that only the input preview image is displayed and the cabinets are not displayed.

Step 4 Double-click a source thumbnail at the bottom to add layers.


Step 5 Make layer adjustments as needed.


Switch source


- Switch source for a single layer: Select a layer and then select another source in the properties area. Or right-click a layer, select **Source** from the displayed menu, and select another source.
- Switch source for all layers:
 - a. Select all layers (**Ctrl+A**) and then select another source in the properties area.
 - b. Or select a device group or a single device from the device list and then select another source in the properties area to switch source for all layers of the device group or device.

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, and lock the layer.
- Right-click a layer and select **Bring to Front**, **Send to Back**, **Bring Forward** or **Send Backward** from the displayed 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 fill 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. After enabling the function, you can set the crop size and position.

6 Screen Configuration

This chapter describes screen configuration with one device selected.

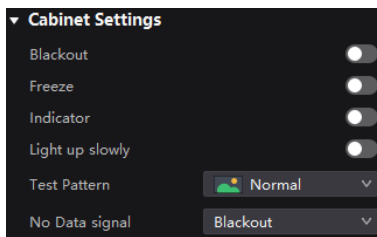
6.1 Configure Screen Topology

For details, see [3.6 Configure Cabinet Topology](#).

6.2 Set the Cabinet

Select **Layout**, select one or more cabinets and do any of the following operations in the properties area.


Figure 6-1 Test pattern




Control Display Status

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

Enable Indicator

Set the **Indicator** switch to  to enable the running status indicator of the cabinet.

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

6.3 Enable Ethernet Port Redundancy

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

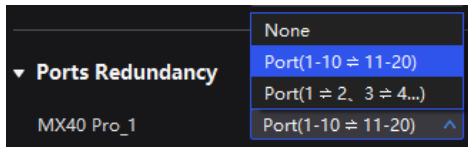
Operating Procedure

Select **Layout** and then select an option from the drop-down list of **Ports Redundancy**.

- **None**: No Ethernet port backup.
- **Port (1~10) ⇒ (11~20)**: Ethernet ports 11 to 20 are the backups to Ethernet ports 1 to 10.

- Port (1 ⇌ 2, 3 ⇌ 4...): Ethernet port 2 is the backup to Ethernet port 1, Ethernet port 4 is the backup to Ethernet port 3, and so on.

Figure 6-2 Ethernet port backup



7 Display Correction

This chapter describes display correction with one device selected.

7.1 Correct Seams

7.1.1 Seam Correction

Adjust brightness of the seams between cabinets or modules to improve the visual experience.

Applicable Products

- LED display controllers: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

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.

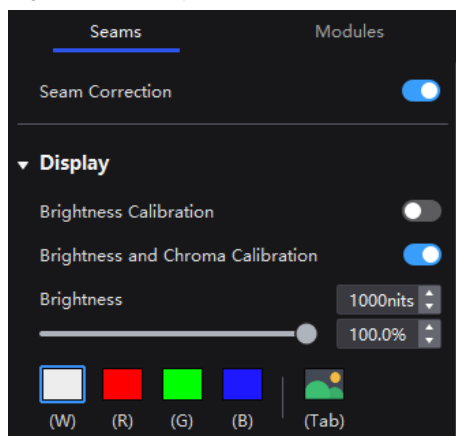
Operating Procedure




Step 1 Select **Correction**.

Step 2 On the **Seams** tab page in the properties area, set the **Seam Correction** switch to .

Step 3 Set the parameters in the **Display** area.

Figure 7-1 Display content (seams)



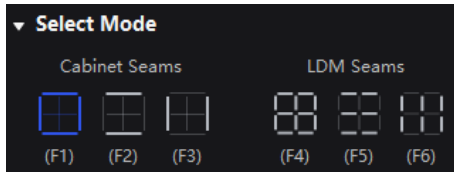
- **Brightness Calibration:** Set the **Brightness Calibration** switch to  to make the screen apply the brightness calibration effect made by the calibration platform.
- **Brightness and Chroma Calibration:** Set the **Brightness and Chroma Calibration** switch to  to make the screen apply the brightness and chroma calibration effect made by the calibration platform. The **Brightness Calibration** and **Brightness and Chroma Calibration** are mutually exclusive and cannot be enabled at the same time.
- **Brightness:** Adjust the display brightness.
- **Image:** Set which image the screen displays. To display the image of current input source, click  and hold it.

Note

Currently for receiving cards other than the A10s Pro, the **Seam Correction** toggle will not be displayed on this interface. You can simply toggle on the **Brightness Calibration** or **Brightness and Chroma Calibration** to apply the seam correction.

Step 4 Select a correction mode.

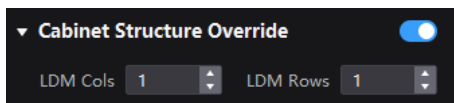
Figure 7-2 Select mode (seams)



- 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, set the **Cabinet Structure Override** switch to . Otherwise, skip this step.

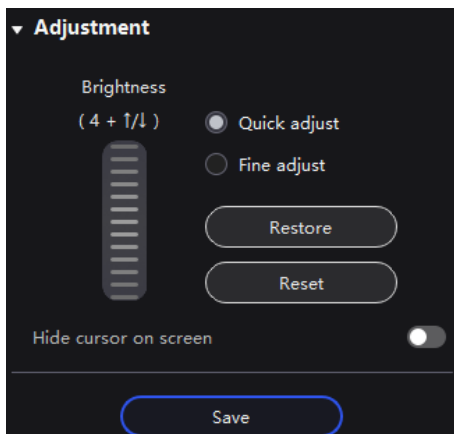
Figure 7-3 Cabinet structure override



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

Step 7 Set the adjustment parameters.

Figure 7-4 Set the parameters.



- Quick adjust: Has a large range of adjustment.
- Fine adjust: Has a small range of adjustment.
- Hide cursor on screen: When the switch is , use the keyboard shortcuts to adjust the seams and the cursor will not be displayed on the screen.

Step 8 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 **4+↑/↓**.

- Restore: Restore the configuration to the last saved.
- Reset: Reset the configuration to the status before adjustment.

Step 9 After the settings, click **Save**.

7.1.2 Erase Seam Correction

Applicable Products

- LED display controllers: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

Related Information

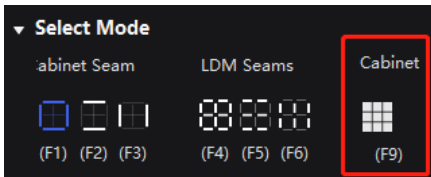
If there are any changes made to the cabinets, such as moving a receiving card from one cabinet to another or replacing the cabinet module, it may cause bright or dark lines that had been previously adjusted to appear in the middle of the cabinet or module. In such cases, users have the option to remove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

Operating Procedure

Step 1 Select **Correction**.

Step 2 Select the **Cabinet** mode.

Figure 7-5 Select mode (Cabinet)



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

Figure 7-6 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: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

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.

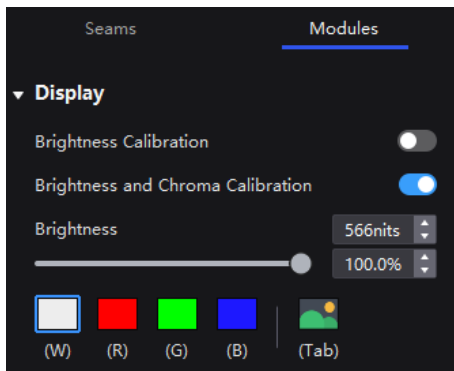
Operating Procedure

Step 1 Select **Correction**.

Step 2 Select the **Modules** tab in the properties area.

Step 3 Set the display content.

Figure 7-7 Display content (multiple-batch)



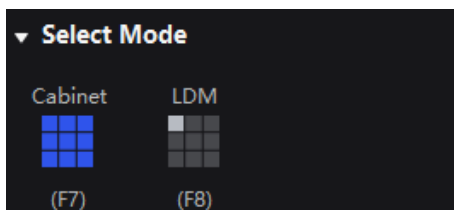
- **Brightness Calibration:** Set the **Brightness Calibration** switch to to make the screen apply the brightness calibration effect made by the calibration platform.
- **Brightness and Chroma Calibration:** Set the **Brightness and Chroma Calibration** switch to to make the screen apply the brightness and chroma calibration effect made by the calibration platform. The **Brightness Calibration** and **Brightness and Chroma Calibration** are mutually exclusive and cannot be enabled at the same time.
- **Brightness:** Adjust the display brightness.
- **Image:** Set which image the screen displays. To display the image of current input source, click and hold it.

Note

Please toggle on the **Brightness and Chroma Calibration** to apply the adjustments to cabinets or modules from multiple batches. The adjustments will NOT be effective when the **Brightness Calibration** is toggled on.

Step 4 Select a correction mode.

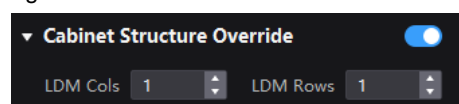
Figure 7-8 Selecting mode



- **Cabinet:** Correct the multi-batch cabinets.
- **LDM:** Correct the multi-batch modules.

Step 5 When correcting the multi-batch modules, if you need to overwrite the numbers of module columns and rows, set the **Cabinet Structure Override** switch to . Otherwise, skip this step.

Figure 7-9 Cabinet structure override




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

Step 7 Drag the slider to adjust chroma.

Figure 7-10 Adjustment



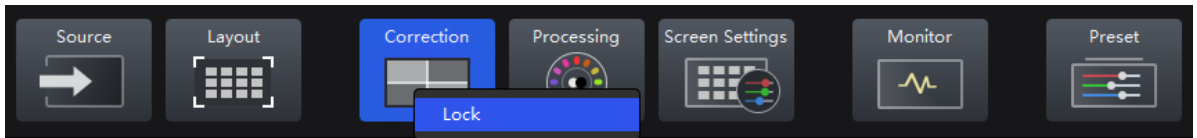
- **Restore:** Restore the configuration to the last saved.
- **Hide cursor on screen:** When the switch is , use the keyboard shortcuts to adjust chroma and the cursor will not be displayed on the screen.

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

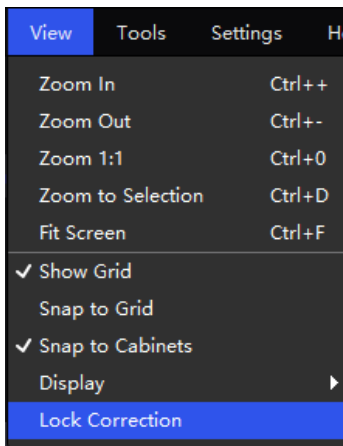
7.3 Lock and Unlock Correction Page

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

After the **Correction** page is locked and you have entered another page, if you want to go back to the **Correction** page, you must manually unlock the page first.

8 Color Processing

This chapter describes screen correction with one device selected.

8.1 Color Replacement

Replace a color with another color according to the settings.

Applicable Products

MX40 Pro, CX80 Pro, CX40 Pro

Notice

Replacement of highly saturated colors is recommended for better effect.

Operating Procedure

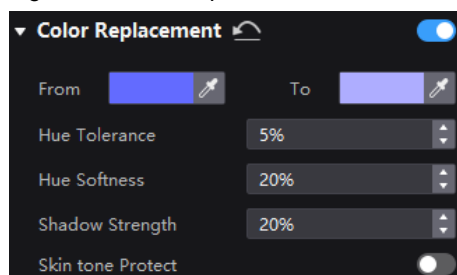
Step 1 Select **Processing**.

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

Applicable Products

MX40 Pro, MX30, MX20, CX80 Pro, CX40 Pro

Operating Procedure



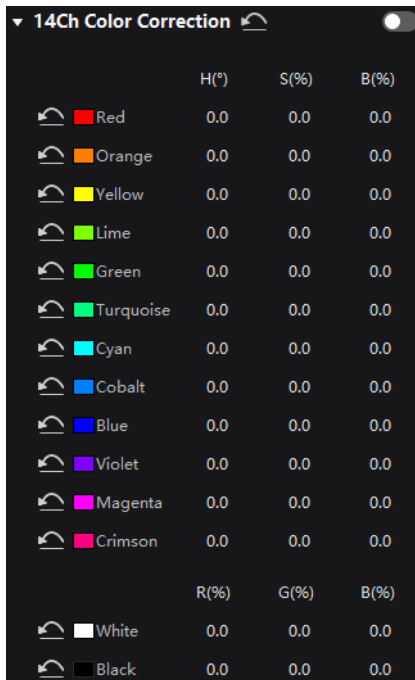
Select **Processing** and set the **14Ch Color Correction** switch to . Click a value of a color to enable the editing status and change the value, , for example.

Figure 8-2 14Ch Color Correction



8.3 Set Curves

Adjust the curves.

Applicable Products

MX40 Pro, CX80 Pro, CX40 Pro

Operating Procedure

Step 1 Select **Processing**.

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

Figure 8-3 Curves





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

Step 4 Drag the slider under the curve diagram to set the curve adjustment range.

Step 5 Click on any position of 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 set of mapping relationships are defined in the 3D LUT file (.cube) to adjust the colors of the video source.

Applicable Products

MX40 Pro, CX80 Pro, CX40 Pro

Prerequisites

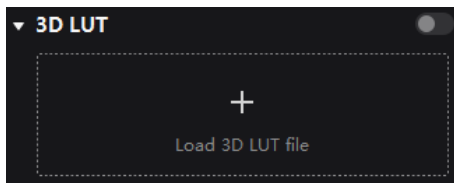
A 17×17×17 3D LUT file must be prepared in advance.

Operating Procedure

Step 1 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




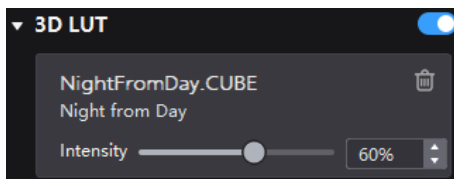

Step 3 Set the **3D LUT** switch to  and drag the slider to adjust the level of applying the 3D LUT.

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 controllers: MX40 Pro, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, CA50E, CA50C, XA50

Prerequisites

Before the operation, brightness correction by using the CA410-VP427, CA410-P427 or EYE2-400 color analyzer must be done. Otherwise, the Dynamic Booster switch is grayed out and the function is unavailable.

Operating Procedure


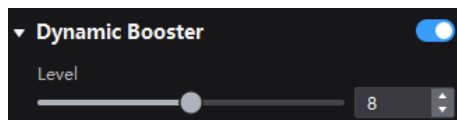
- Step 1 Select **Processing** and set the **Dynamic Booster** switch to .
- Step 2 Drag the slider to adjust the intensity of applying the Dynamic Booster.

Figure 8-6 Dynamic Booster



9 Screen Settings

9.1 Adjust Image Quality

9.1.1 Adjust Mode

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

Notice

Currently, the function of switching display mode supports the MX40 Pro V1.2.1 and A10s Pro V1.2.1.0 only.

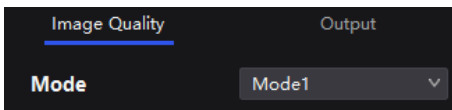
Prerequisites

The NCP file is uploaded, and the NCP files of the receiving card and the controller must match. For details, see [14.2 Manage Cabinet Library](#).

Operating Procedure

Select **Screen Settings**. On the **Image Quality** tab page, 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

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: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

Notice

Currently, the brightness overdrive function supports the MX40 Pro V1.2.1 and A10s Pro V1.2.1.0 only.

Related Information

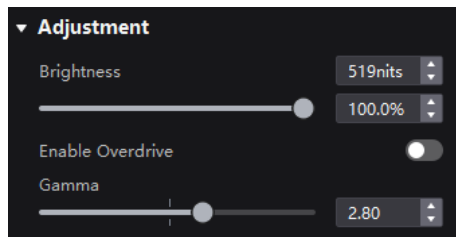
If brightness correction has been done for the screen, the screen brightness can be adjusted in nits. Otherwise, it can be adjusted only in percentage.

Operating Procedure

Select **Screen Settings**. On the **Image Quality** tab page, set the brightness and gamma value, and turn on or off the **Enable Overdrive** switch as needed.

When the **Enable Overdrive** switch is turn on, the screen brightness adjustment range can be extended to the range before calibration.

Figure 9-2 Adjusting brightness



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: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

Prerequisites


Before the operation, color gamut and brightness correction by using the CA410-VP427, CA410-P427 or EYE2-400 color analyzer must be done.

Operating Procedure

Step 1 Select the **Image Quality** tab on the **Screen Settings** page.

Step 2 In the **LED Image Booster** area on the right, select an output color gamut from the **Gamut** drop-down list,

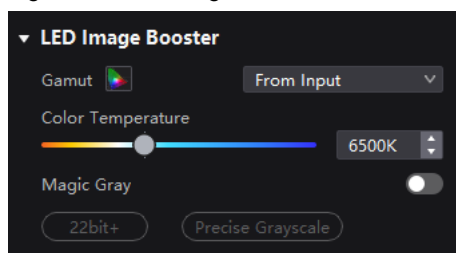
The output gamut options include standard gamuts, custom gamuts, the original screen gamut and the input gamut (**From input**).

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 intensity of applying the thermal coefficients.

Applicable Products

- LED display controllers: MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

Prerequisites

Before operation, thermal calibration must be done and thermal coefficients must be uploaded.

Operating Procedure


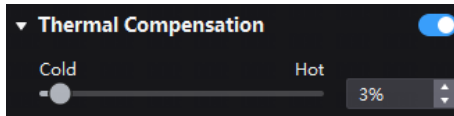
Select **Screen Settings**. On the **Image Quality** tab page, set the **Thermal Compensation** switch to  and drag the slider to adjust the intensity of applying the thermal coefficients.

Figure 9-4 Thermal compensation



9.1.5 Adjust EOTF

Applicable Products

- LED display controllers: MX40 Pro, MX30, CX80 Pro, CX40 Pro, KU20
- Receiving cards: A10s Pro, A8s, A8s-N, CA50E, CA50C, XA50

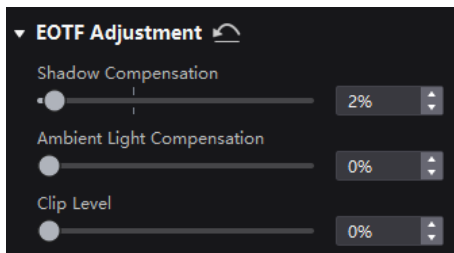
Related Information

The supported adjustment parameters depend on the HDR settings in section [5.1 Set External Sources](#).

Operating Procedure

Select **Screen Settings**. On the **Image Quality** tab page, 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 Output Bit Depth

Set the output bit depth of the product.

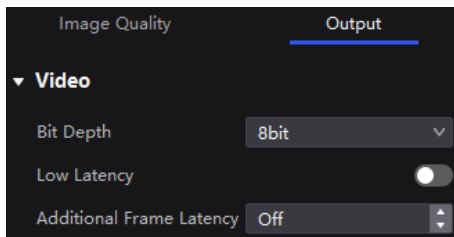
Applicable Products

MX40 Pro, MX30, MX20, KU20 (fixed at 8bit), CX80 Pro, CX40 Pro

Operating Procedure

Select **Screen Settings** and then select the **Output** tab. Under **Video**, 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



9.2.2 Set Low Latency

Set the low latency switch and additional frame latency parameters.

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

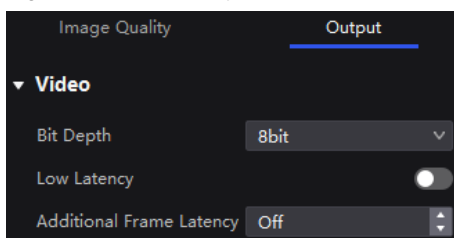
Notice

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

Operating Procedure

Select **Screen Settings** and then select the **Output** tab. Under **Video**, do any of the following operations as needed.

Figure 9-7 Low latency



- Enable low latency
Set the **Low Latency** switch to to enable the low latency function.
- Set additional frame latency
When the controller works with high-latency devices, the latency needs to be increased. You can set the **Low Latency** switch to and set a value for **Additional Frame Latency**.

9.2.3 Set Sync Parameters

Set the sync source and phase offset.

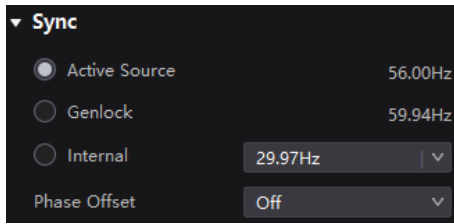
Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Operating Procedure

Select **Screen Settings** and then select the **Output** tab. Under **Sync**, select a synchronization signal for the display frame rate and set the phase offset.

Figure 9-8 Sync



- Active 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.

9.2.4 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

MX40 Pro, CX80 Pro, CX40 Pro

Related Information

- When the A10s Pro, CA50E, CA50C, or XA50 receiving card is used, the supported frames rate is up to 240 Hz.
- For other Armor series receiving cards, the supported frame rate is up to 120 Hz.

Operating Procedure


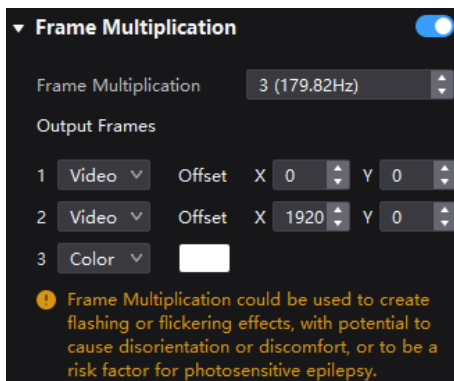
Select **Screen Settings** and then select the **Output** tab. Near **Frame Multiplication**, set its switch to  and set the number of frames and the display mode of each frame.

Figure 9-9 Frame multiplication



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.

9.2.5 Set Shutter Fit

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

Applicable Products

MX40 Pro, CX80 Pro, CX40 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


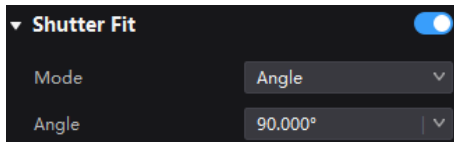
Select **Screen Settings** and then select the **Output** tab. Near **Shutter Fit**, set its switch to  and set the related parameters.

Figure 9-10 Shutter fit



9.2.6 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

Notice

- The 3D function and the low latency or frame multiplication function cannot be enabled at the same time.
- Only the main layer supports 3D effect.

Related Information

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

Operating Procedure


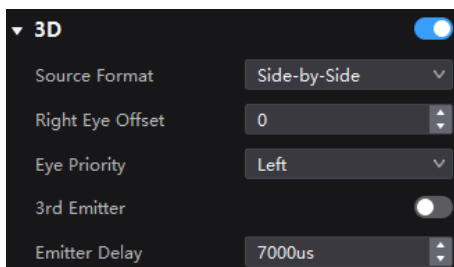

Select **Screen Settings** and then select the **Output** tab. Near **3D**, set its switch to  and set the related parameters.

Figure 9-11 3D



- **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.

9.2.7 Check the Load

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

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Operating Procedure


Select **Screen Settings** and then select the **Output** tab. Under **Port Load**, click  next to the device information to check the usage of the controller's load capacity.

Figure 9-12 Port load



10 Screen Monitoring

10.1 Check Device Status

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

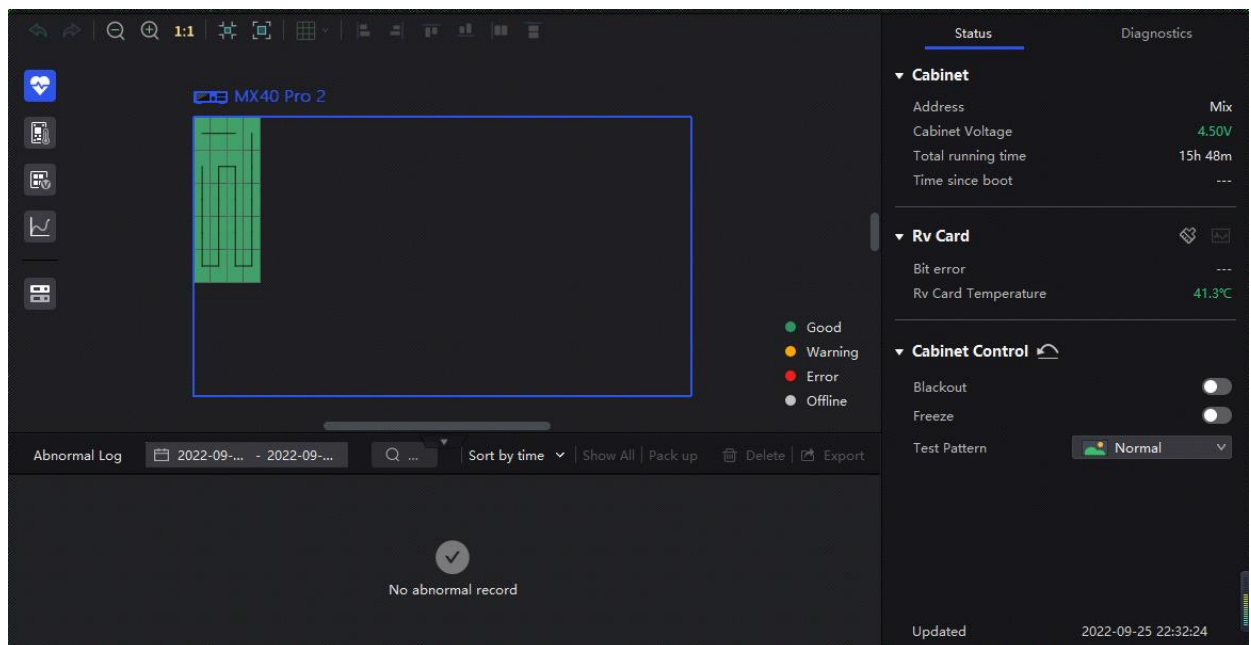
Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Operating Procedure

Choose **Monitor** > **Status** and click the function icons on the left to check the related information.

Figure 10-1 Status



Note

When you select the first four of the following function icons:

- The topologies in different colors have different meanings. Please see the explanation at the bottom right.
- In the **Cabinet Settings** area, you can set the cabinet display image to blackout, freeze or a test pattern.









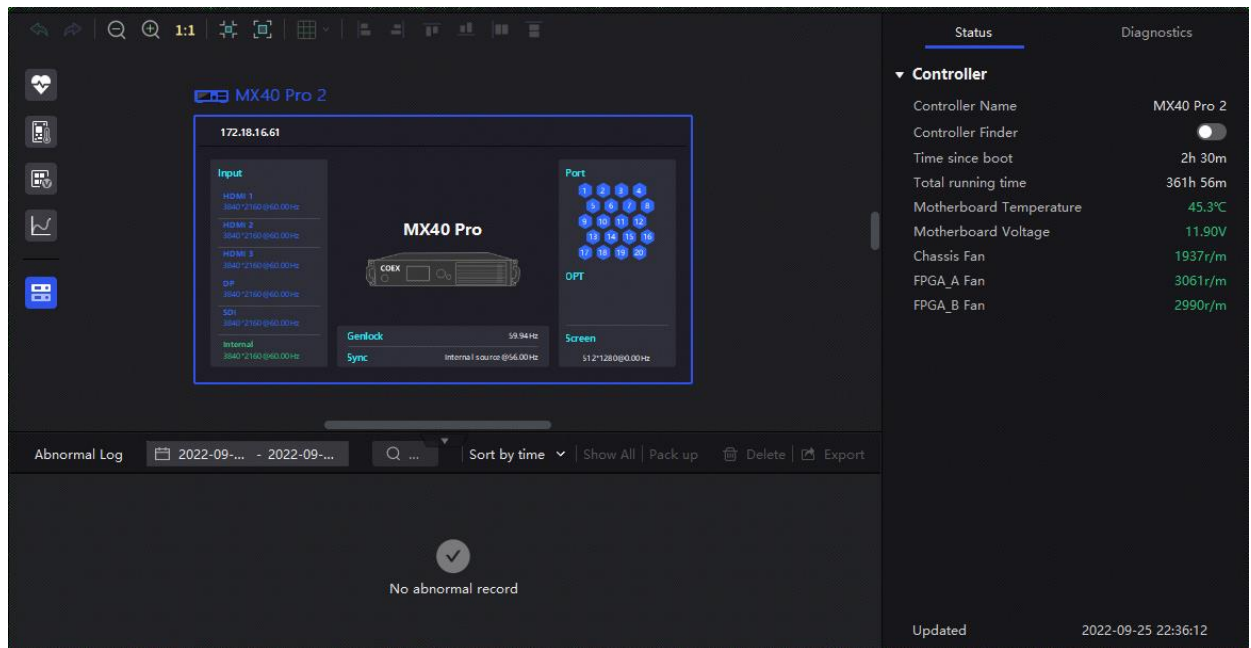
- : The overall status.
- : The receiving card temperature.
- : The cabinet voltage. In the properties area, you can check the detailed voltage value.
- : The total bit errors. In the properties area, you can check the detailed total errors, click  to clear the errors and let errors accumulate from zero, and click  to check the error information in a specified time range.
- : The controller. In the topology area and properties area, check the controller related information, as shown in Figure 10-2. If you set the **Controller Finder** switch to , you can enable the controller finder function.

Figure 10-2 Controller information



10.2 Check Monitoring Records

Check the exception records of the system.

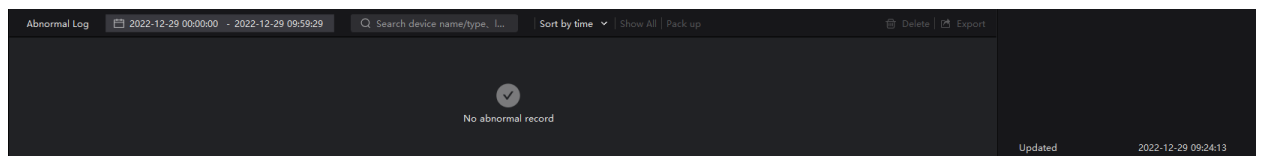
Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Operating Procedure

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

Figure 10-3 Monitoring records



+ 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 **Sort by time**, **Order by controller**, **Order by type**, and **Order by level**. If the latter three are selected, the records can be expanded or collapsed.

+ Clear records

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

+ Export records

Click **Export**, select a location and click **Save**.

10.3 Run System Diagnostics

Check whether the screen has damaged modules or pixels and locate the damaged items.

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Prerequisites

Before performing LED error detection, make sure the following requirements are met:

- The cabinet driver chip must be XM11202G.
- The receiving card firmware program must support LED error detection.
- The LED error function is enabled in the Cabinet Tool software.

Notice

The Cabinet Finder and Module Finder functions can be used only when the CX80 Pro LED display controller is used and works with the CA50E, CA50C, or XA50 receiving card.

Operating Procedure

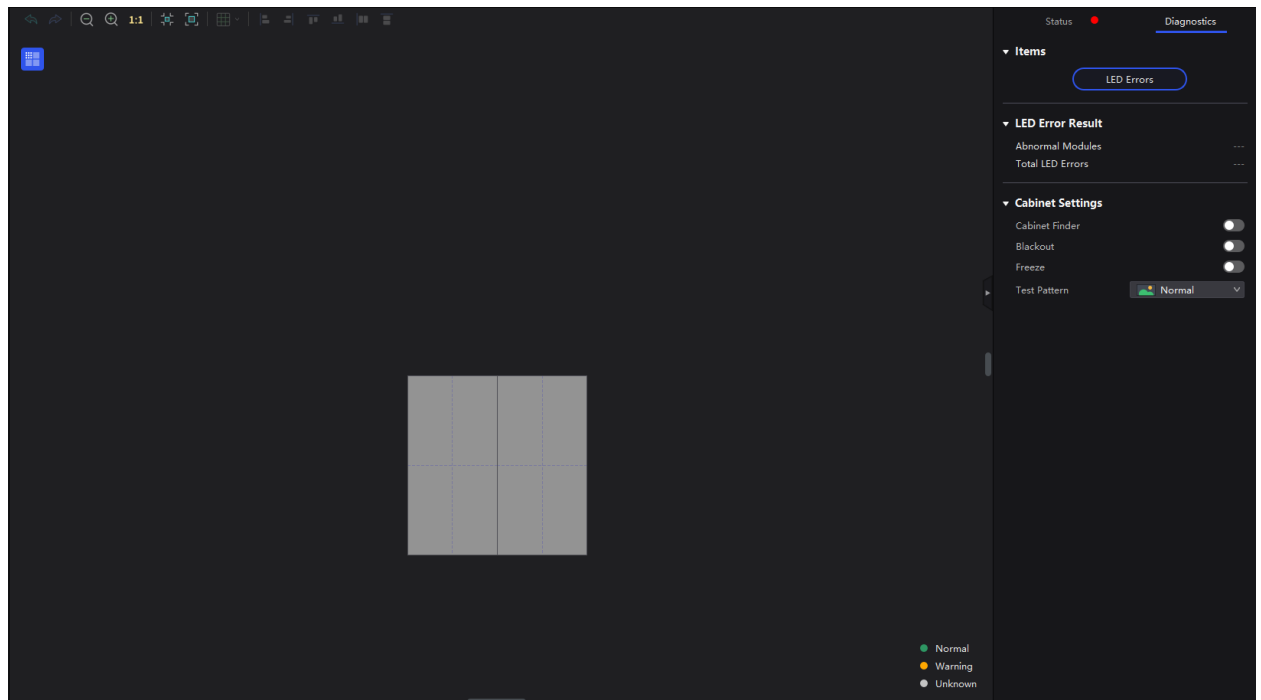
Step 1 Choose **Monitor > Diagnostics**.

Step 2 Click the **LED Errors** button to run system diagnostics.

LED errors include abnormal modules and total LED errors.

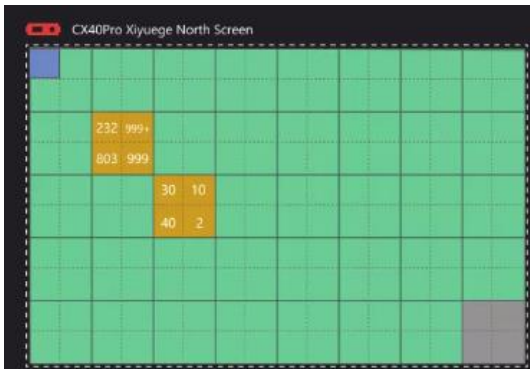
- If a cabinet is selected in the topology, LED error detection will be done on the selected cabinet.
- If no cabinet is selected, LED error detection will be done on all the cabinets.

Figure 10-4 Diagnostics



After diagnostics, the abnormal modules will be highlighted in yellow in the topology and the number of LED errors will be shown, as illustrated in [Figure 10-5](#).

Figure 10-5 Diagnostic result



Step 3 Click on the abnormal module in the topology and enable **Cabinet Finder** or **Module Finder** function in the **Cabinet Settings** area to quickly find the cabinet or module where the LED errors or abnormal LEDs are located.

11 Preset Management

11.1 Save Presets

After completing the display effect adjustment, you can save the data on the **Source**, **Layout**, **Processing** and **Screen Settings** pages as presets so that these data can be directly applied in the future.

Applicable Products

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Related Information

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

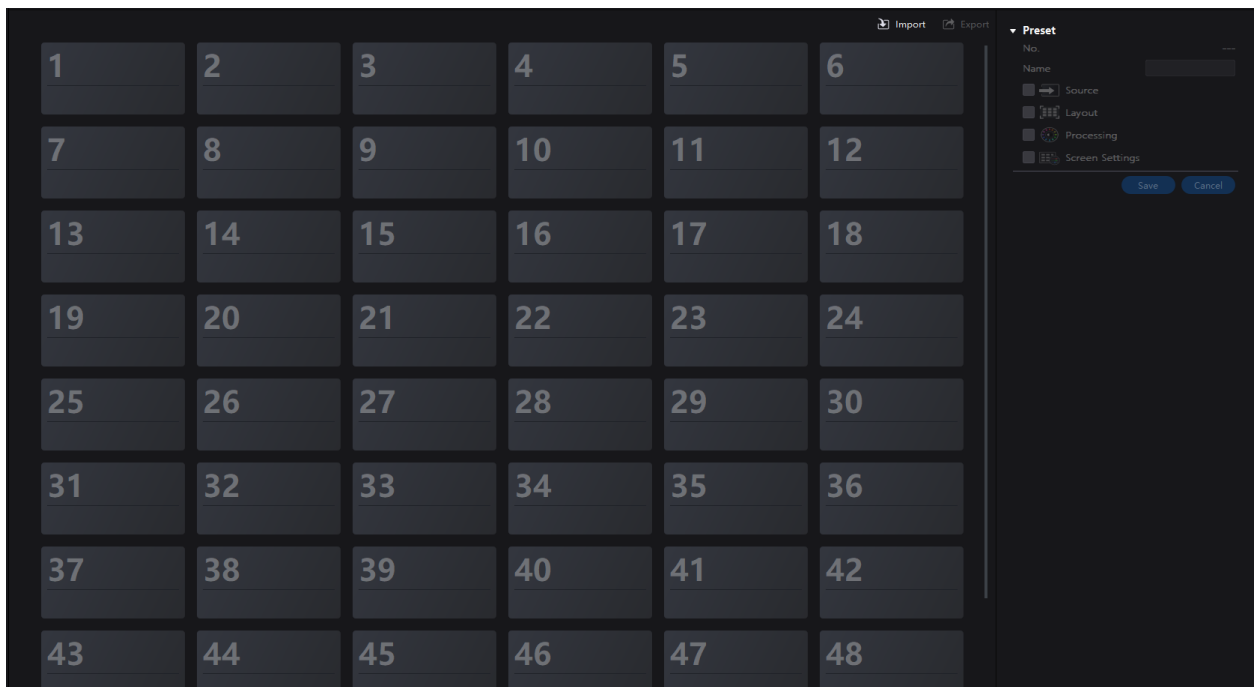
Operating Procedure

Step 1 Choose **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. In the properties area, set a name for the preset and select the data you need to save.

If the preset you selected is not a blank one, the original data will be overwritten.

Step 4 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

MX40 Pro, MX30, MX20, KU20, CX80 Pro, CX40 Pro

Related Information

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

Operating Procedure

Step 1 Choose **Preset**.

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

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

Figure 11-2 Applying 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

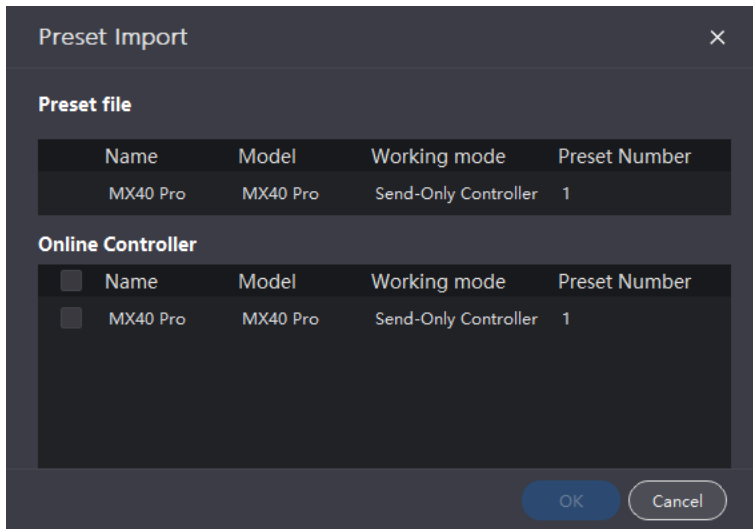
Right-click a preset and select **Delete All** from the pop-up menu.

11.4 Import and Export Presets

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

Import Presets

Click **Import**, select a preset file (.nprt) and click **Open**. In the displayed dialog box, select the device to which you want to import the file and click **OK**.

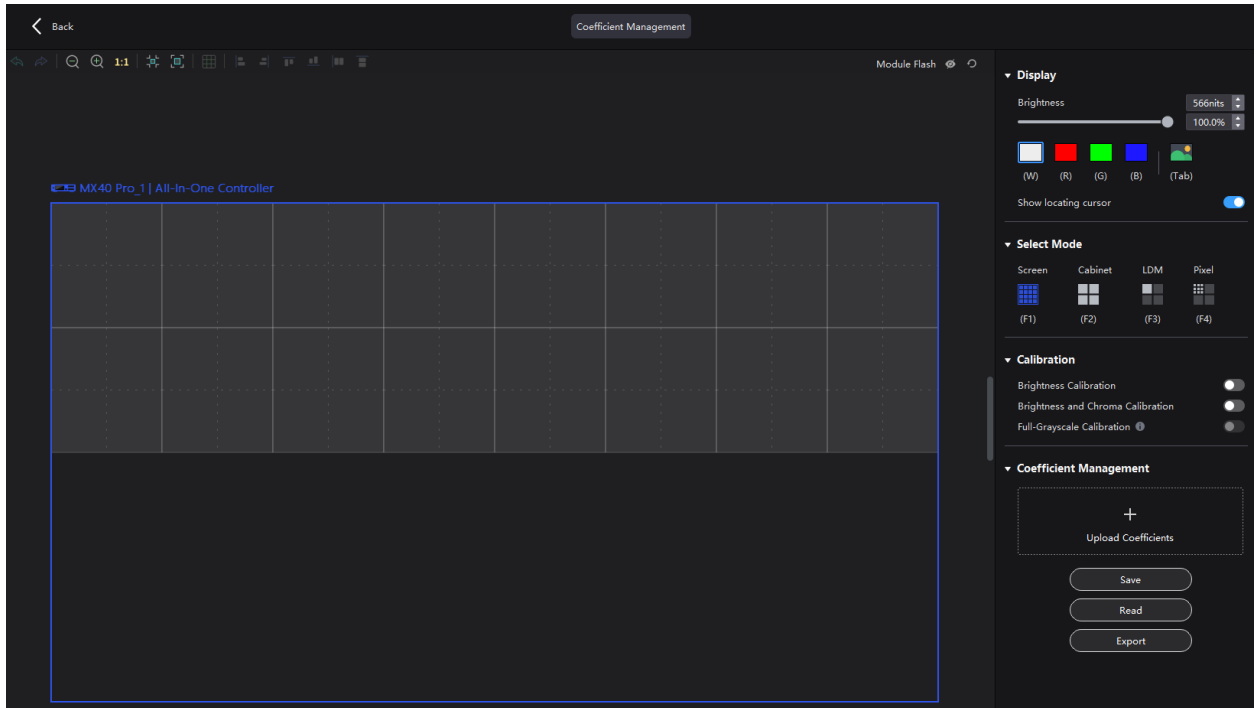


Export Presets

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

12 Calibration Coefficient Management

From the menu bar, choose **Tools > Coefficient Management** and do operations such as uploading, saving, adjusting and reading the coefficients.



12.1 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

MX40 Pro, MX30, MX20, KU20

Prerequisites

- 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.
- To upload cabinet coefficients, make sure the target cabinets must have cabinet IDs.

Notice

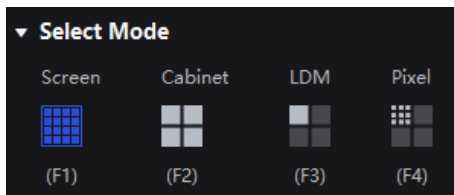
During coefficient uploading, if the controller and/or receiving cards go offline, the uploading will fail. After coefficient uploading fails, the coefficients will not be saved automatically. You can manually save them as needed.


Operating Procedure

Step 1 From the menu bar, choose **Tools > Coefficient Management**.

Step 2 In the **Select Mode** area, select the uploading range. The options include **Screen**, **Cabinet** and **LDM**.

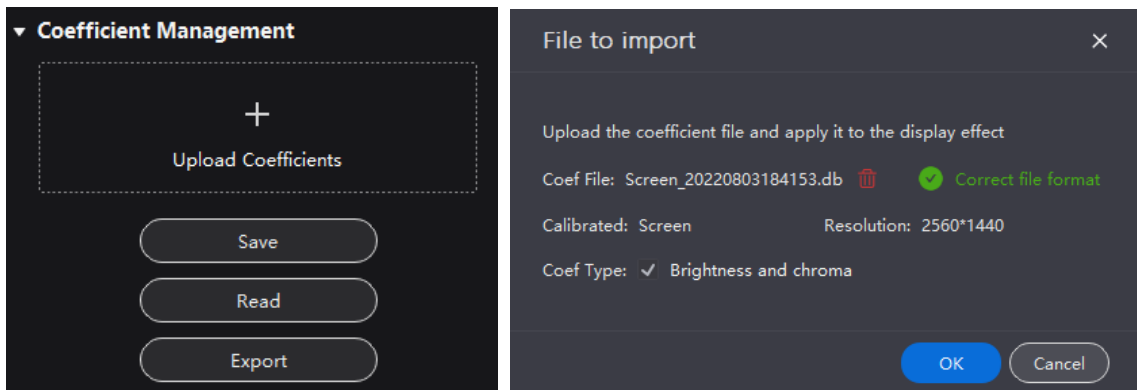
Figure 12-1 Select mode



Step 3 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 12-2 Upload calibration coefficients



Step 4 Click **OK** to upload the coefficients to the receiving card.

12.2 Edit Calibration Coefficients

Applicable Products

MX40 Pro, MX30, MX20, KU20

Prerequisites

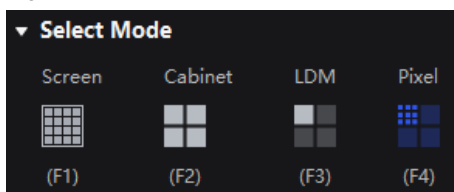
- Calibration coefficients are available.
- Cabinet configuration is done and the cabinets stay online.

Operating Procedure

Step 1 From the menu bar, choose **Tools > Coefficient Management**.

Step 2 In the **Select Mode** area, select **Pixel**.

Figure 12-3 Select mode



Step 3 In the topology, click to select a cabinet.

Step 4 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 12-4 Pixel calibration coefficients

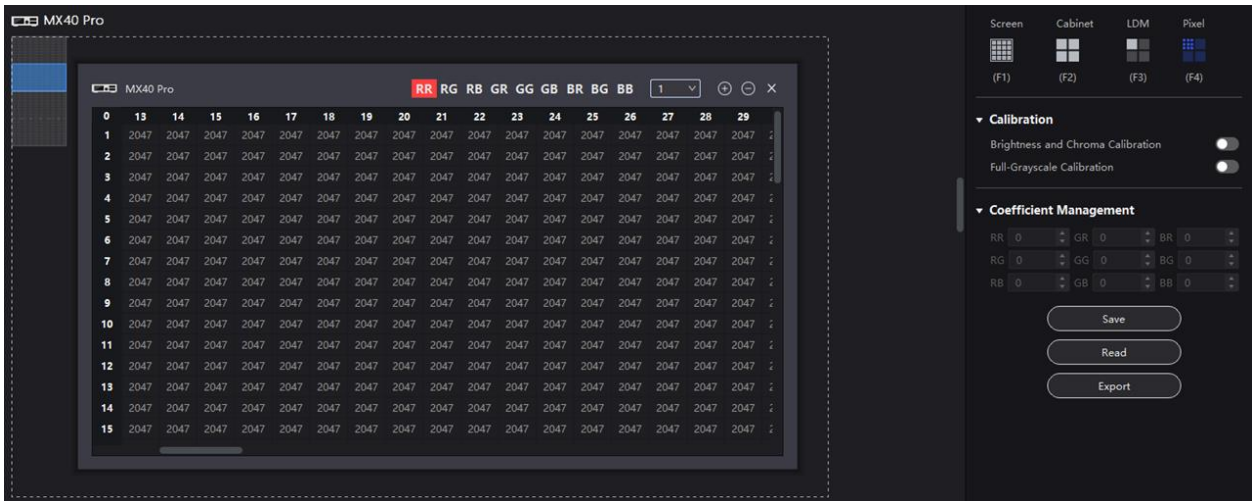


Table 12-1 Parameter relationship and value range

/	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 12-2 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.

12.3 View Calibration Effect

Applicable Products

MX40 Pro, MX30, MX20, KU20

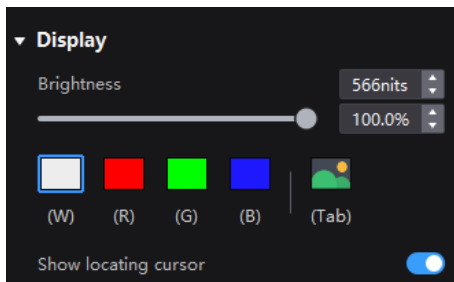
Related Information



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 12-5 Set display content



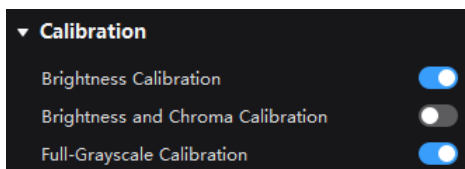
- **Brightness:** Adjust the screen brightness.
- **Display image:** Set the image displayed on the screen. To display the current source image, click and hold .
- **Show locating cursor:** When the switch is set to , the selected area on the screen will display blue borders. This helps you quickly locate 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 sub-calibration switches and then view the display effects before and after the calibration.

The sub-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 12-6 Sub calibration switches



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

12.4 Save and Read Back Calibration Coefficients

Applicable Products

MX40 Pro, MX30, MX20, KU20

Related Information

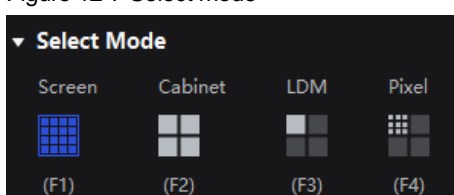
During coefficient saving or readback, if the receiving cards go offline, the uploading or readback will fail.

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

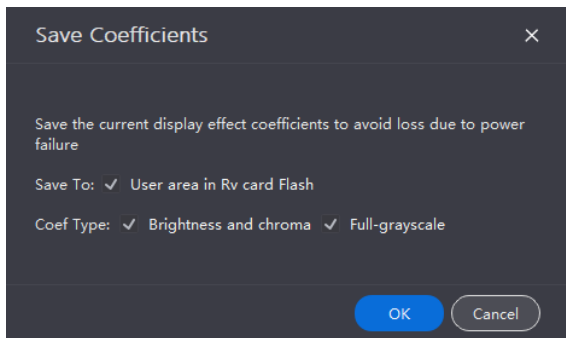
Figure 12-7 Select mode



- Step 3 In the **Coefficient Management** area, click **Save** to save the current display effect coefficients to the receiving card.

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

Figure 12-8 Save coefficients



Step 4 Click **OK**.

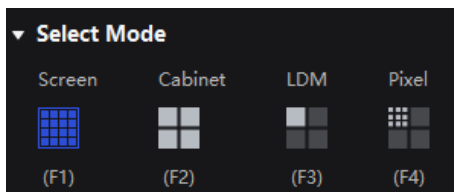
Read Back Calibration Coefficients

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

Step 1 From the menu bar, choose **Tools > Coefficient Management**.

Step 2 In the **Select Mode** area, select the reading range as needed, including **Screen**, **Cabinet**, **LDM** and **Pixel**.

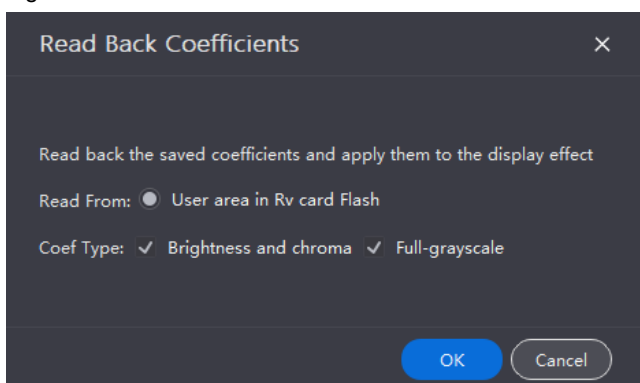
Figure 12-9 Select mode



Step 3 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. You can select the range of coefficient types as needed.

Figure 12-10 Read back coefficients






Step 4 Click **OK**.

Check Module Flash Status

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

Step 1 From the menu bar, choose **Tools > Coefficient Management**.

Step 2 On the canvas, click  to display the module flash status. Click  again to hide the module status. Click  to refresh the module status.



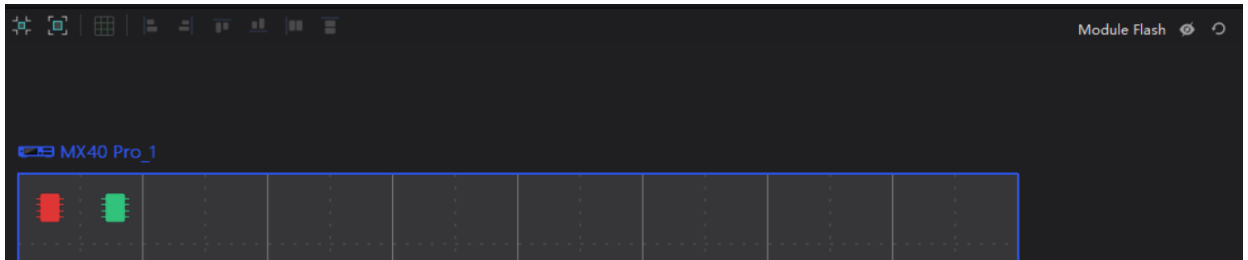
- : Module flash is abnormal.
- : Module flash is normal.

Figure 12-11 Check module flash status.



12.5 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

MX40 Pro, MX30, MX20, KU20

Prerequisites

- 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

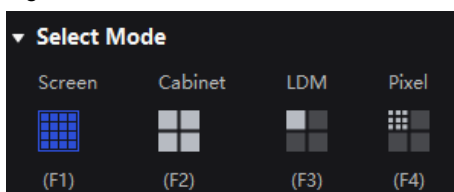
During coefficient exporting, if the controller and/or receiving cards go offline, the exporting will fail.

Operating Procedure

Step 1 From the menu bar, choose **Tools > Coefficient Management**.

Step 2 In the **Select Mode** area, select the export range as needed, including **Screen**, **Cabinet**, **LDM** and **Pixel**.

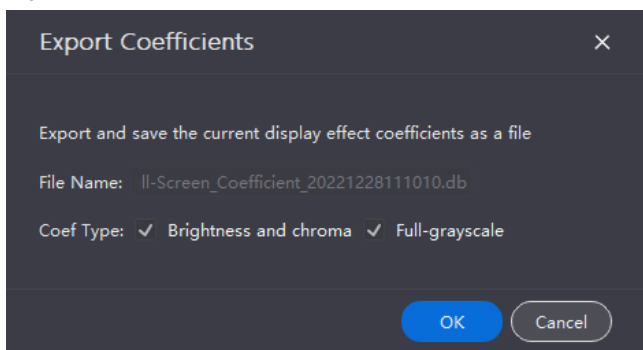
Figure 12-12 Select mode



Step 3 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 12-13 Export coefficients



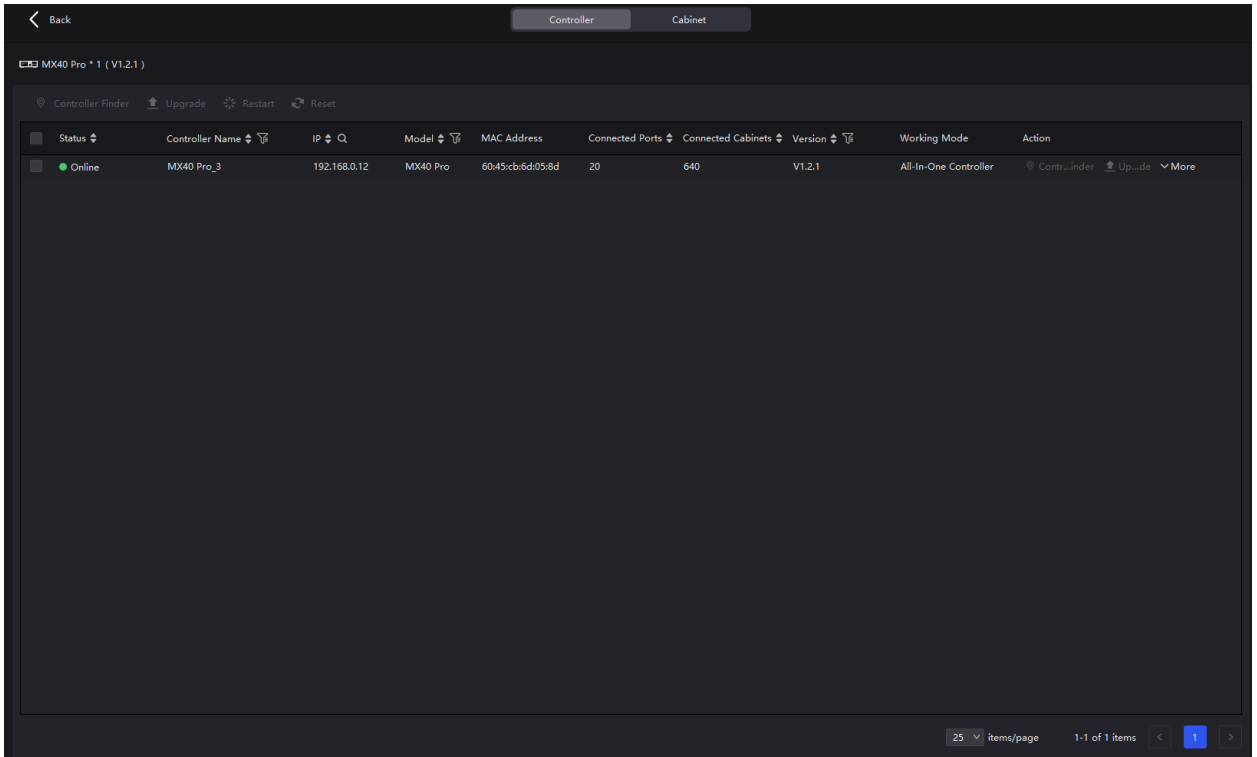
Step 4 Click **OK**.

13 Screen Maintenance

13.1 Maintain Controllers

From the menu bar, choose **Tools > Maintain** and do the following operations as needed.

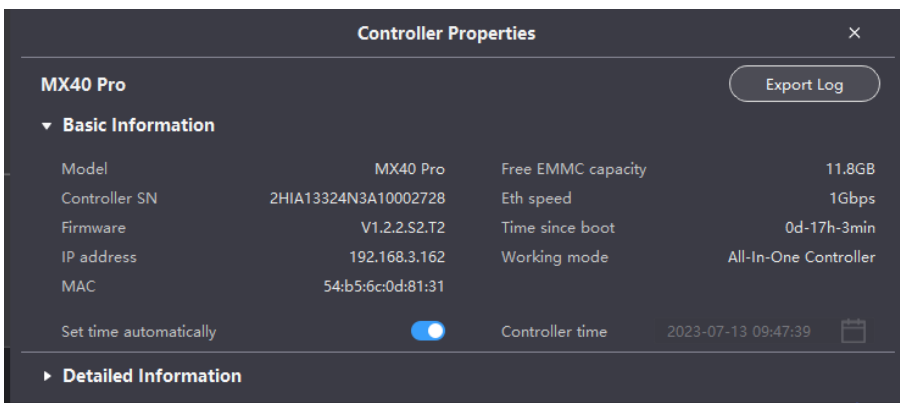
Figure 13-1 Controller maintenance



Operations in Device List

In the device list, right-click a controller. In the pop-up menu, select **Controller Properties** to open its dialog box.

Figure 13-2 Controller properties




✦ 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.

✦ 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. When this is enabled, the time **Controller time** widget will be grayed out and cannot be modified manually.

✦ 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 location, set the file name, and click **Save**.

After you right-click a controller in the device list, you can also do the following operations.

✦ Rename the controller

In the pop-up menu, select **Rename** and rename the controller.

✦ Enable Mapping

In the pop-up menu, select **Mapping** and the Mapping function is enabled. It allows users to easily obtain the locations and connection topology of receiving cards.

Operations on Controller Maintenance Tab Page

In the device list on the left, select a controller or a group. On the **Controller** tab page, select the target controllers and then do the operations.

✦ Find the controller

This function marks the area loaded by the controller on the LED screen and the LCD screen of the controller becomes green, which helps you find the controller quickly.

Click **Controller Finder**.

✦ Upgrade the firmware program

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.

✦ Restart the controller

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

✦ Reset settings (operate with caution)

Click **Reset** and click **OK**.

13.2 Maintain Cabinets

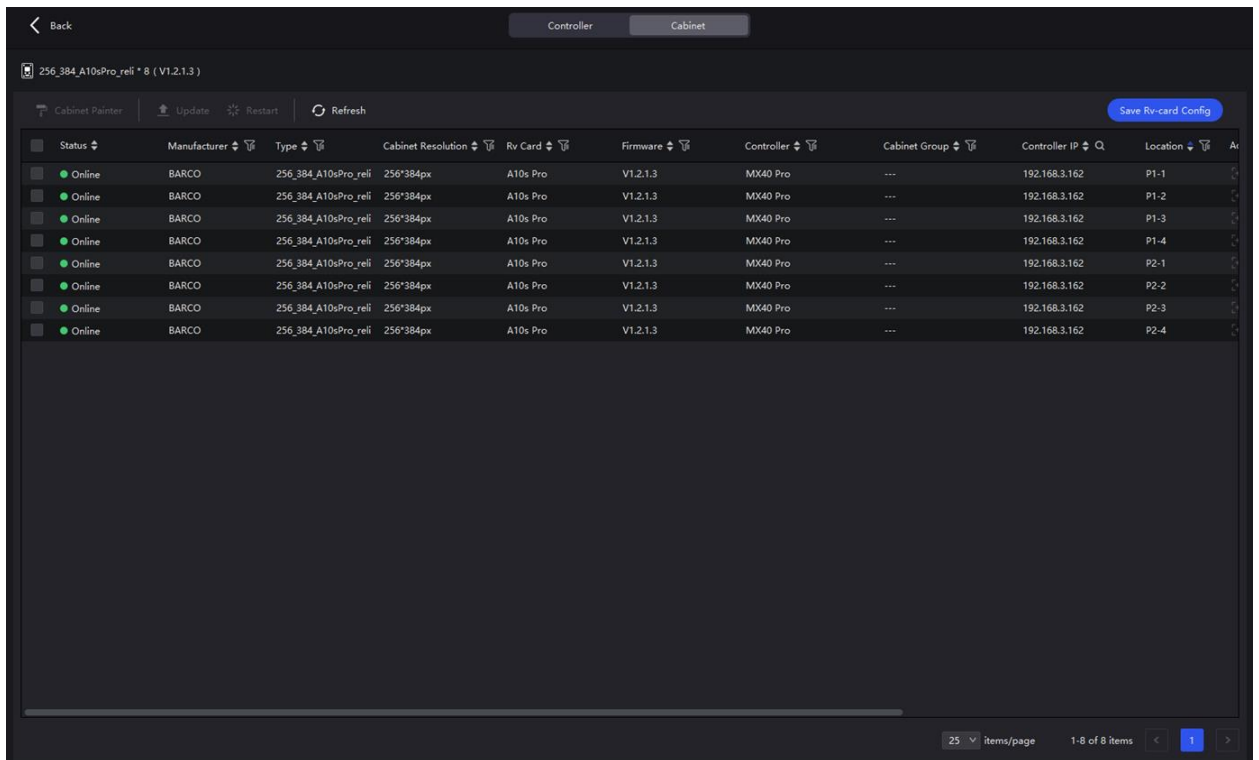
Related Information

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

Operating Procedure

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

Figure 13-3 Cabinet maintenance



Select the target cabinets and then do the operations.

✦ **Check the cabinet information**

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

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

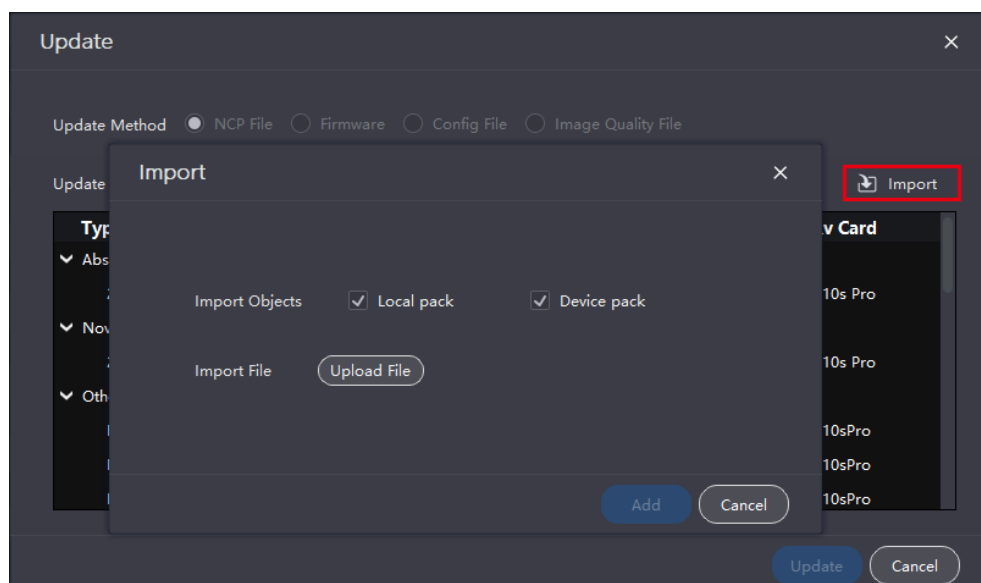
Click **Cabinet Painter** and select one or multiple cabinets so that other cabinets can have the same firmware program and configuration file as the current cabinet.

✦ **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, click **Update**, and select an update method.



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

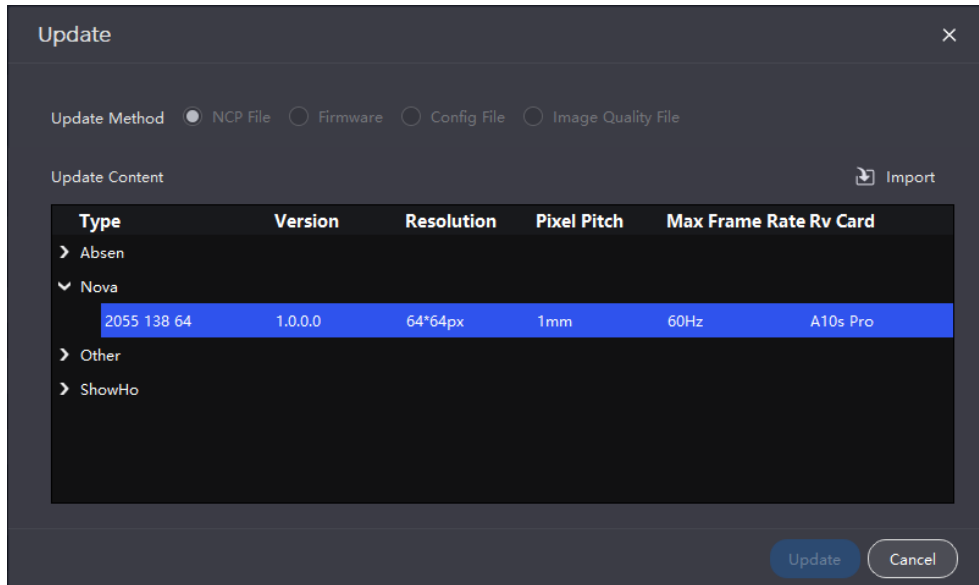
To upload NCP file, select **NCP File**.

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**.



After the file is uploaded, click **Save Rv-card config**. For CX series products, this operation is not required.

Note:

It is recommended to perform the update using a wired network.

+ **Refresh information**

Click **Refresh**.

+ **Find the cabinet**

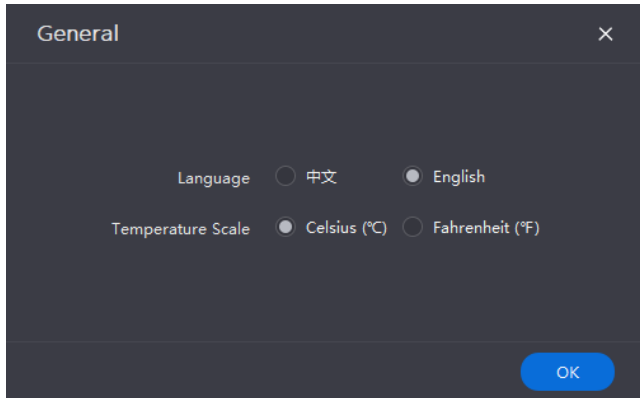
Click **Cabinet Finder** in the **Action** column. This function helps you find the cabinet on the screen quickly.

14 Software Settings

14.1 Change Language and Temperature Scale

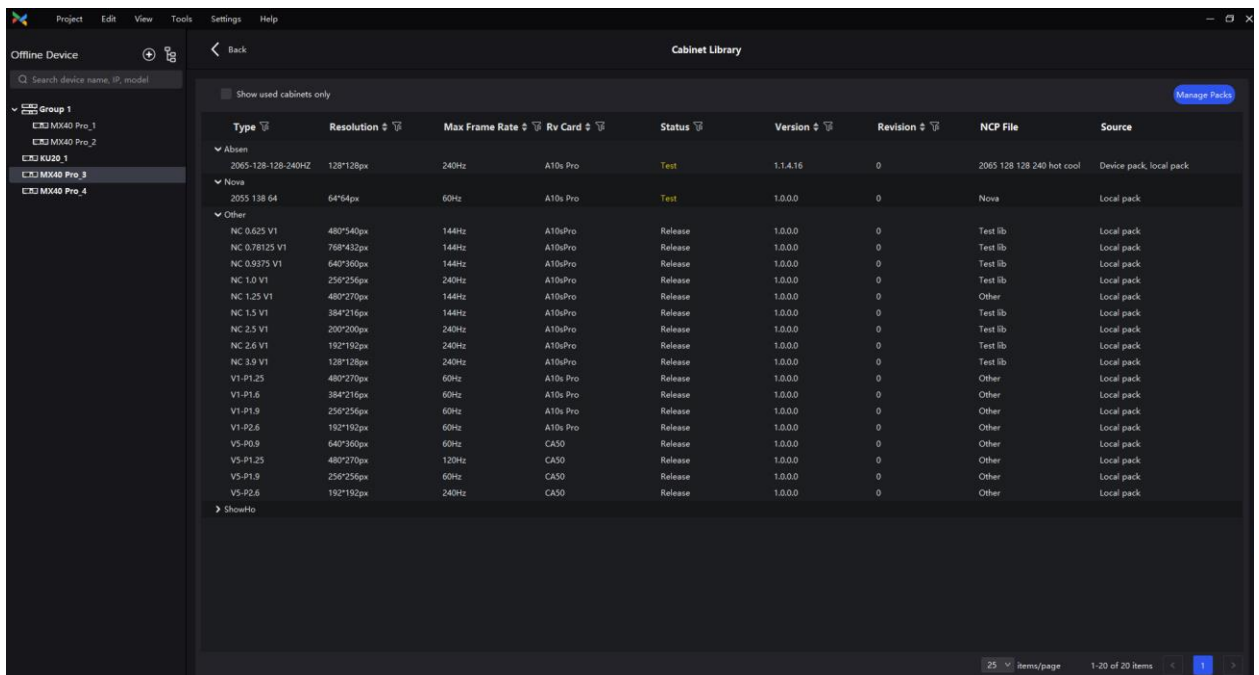
From the menu bar, choose **Settings > General**, select the target language and temperature scale, and click **OK**.

Figure 14-1 Changing the display language



14.2 Manage Cabinet Library

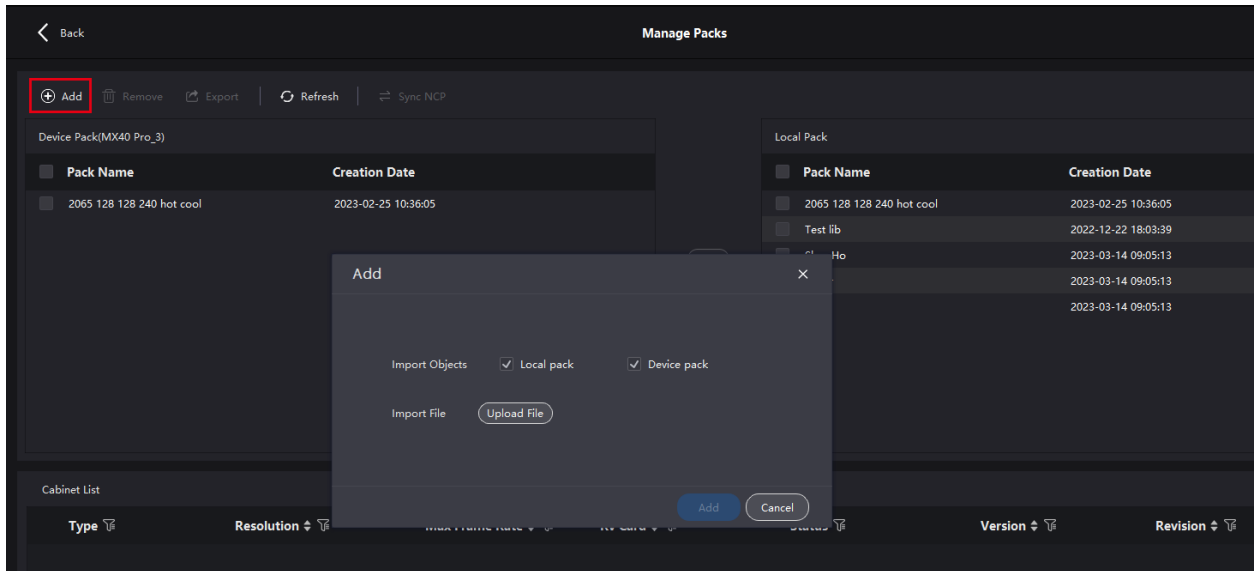
From the menu bar, choose **Settings > Cabinet Library**. Click **Manage Packs** and do the following operations as needed to manage the cabinet library files.



Upload NCP File

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

Figure 14-2 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.
Currently, only the MX40 Pro V1.2.1 or later supports device pack management.

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.

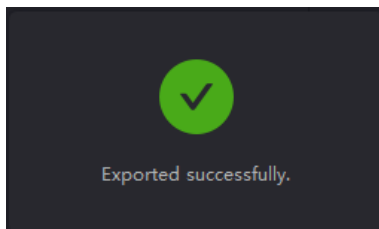
Export NCP File

Step 1 Select the files to be exported from the cabinet library (multiple files can be selected), and 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 14-3 Successful export

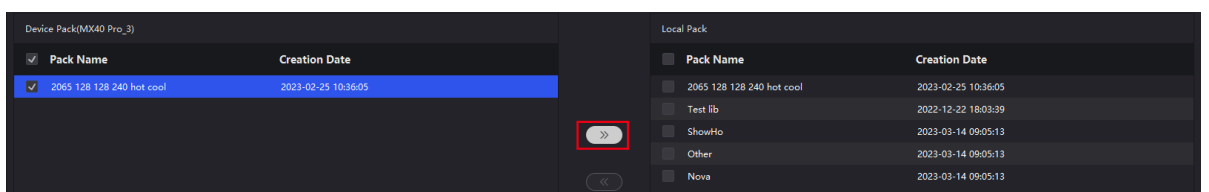


Sync NCP File

- Sync NCP files between the device and local computer

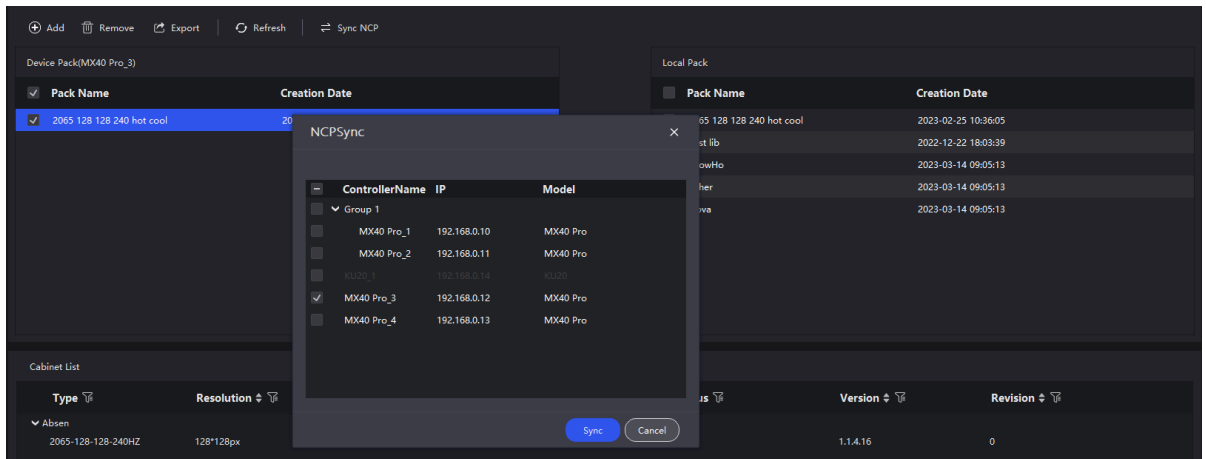
Select the files to be synced (multiple files can be selected), and click .

Currently, only the MX40 Pro V1.2.1 or later supports this function.



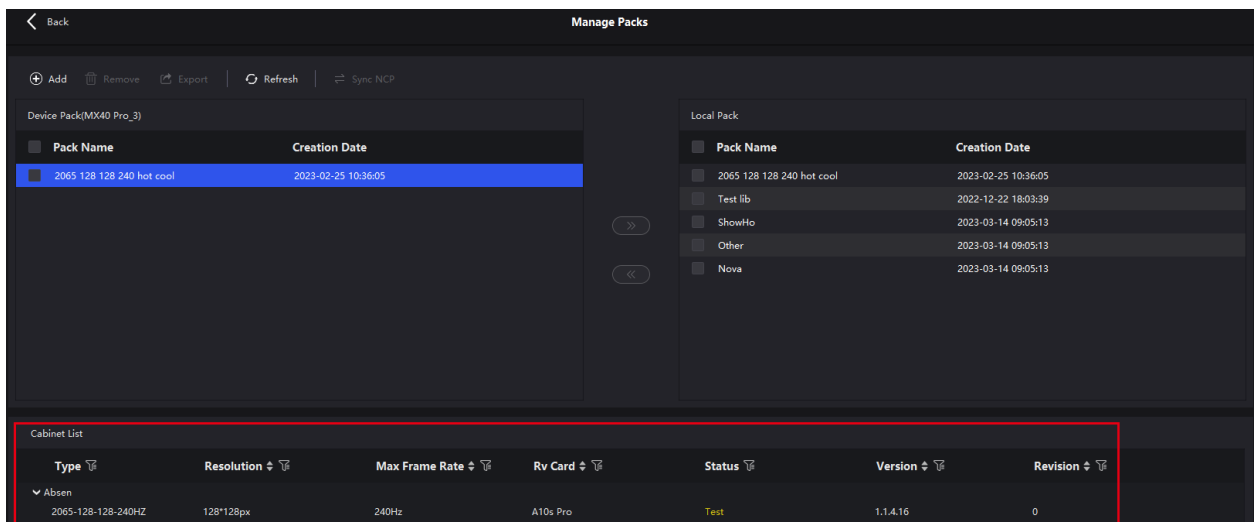
- Sync NCP files between devices

- 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 cabinet type, resolution, maximum frame rate, receiving card type, release status, version and revision.



14.3 Check User Manual

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

14.4 Check Software Information

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

14.5 Check Keyboard Shortcuts

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

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