

# SmartLCT

## Screen Configuration Software

### User Manual

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Product Version: V3.2.0

Document Number: NS110100363

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## Change History

Version	Release Date	Description
V3.2.0	2017-11-30	Third release New features: <ol style="list-style-type: none"><li>1. Double seam brightness correction is added in <b>Seam Brightness Adjustment</b>.</li><li>2. Monitoring service and platform</li><li>3. Cabinets can rotate in 90° increments.</li><li>4. Beacon.</li><li>5. Receiving card program and configuration information readback</li></ol>
V3.1.0	2017-05-25	Second release New features: <ol style="list-style-type: none"><li>1. <b>Test Tool</b> is added in the <b>Tools</b> menu.</li><li>2. When the MCTRL R5 is selected, a rotating bar appears on each of the cabinets after you add cabinets and connect them.</li><li>3. The <b>Batch Add</b> button is added in the tool bar.</li><li>4. The <b>Alignment</b> button is added in the tool bar.</li><li>5. <b>Simple Mode</b> is added to the <b>Hot Backup</b> function.</li><li>6. The <b>Factory Reset</b> sub-menu is added in the <b>Settings</b> menu of V-Sender.</li><li>7. Operating wizard is added to the <b>Simple Mode</b> of hot backup.</li></ol>
V3.0.0	2017-01-20	First release

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# 1 Introduction

## Overview

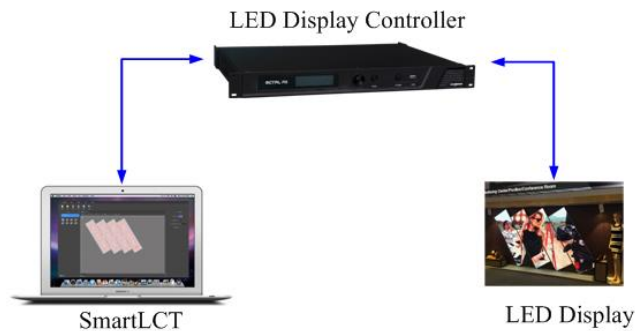
SmartLCT is the new generation of screen configuration software from NovaStar. Working with LED display controllers, it allows smart configuration of various complex LED displays, including building-block screen configuration, offline (online) design, seam brightness adjustment, cabinet rotation, etc. SmartLCT makes screen configuration much easier and further enhances user experience.

### Key features:

- Angles of rotation supports the multiples of 90° (working with the Armor series receiving cards).
- Supports 360° free rotation (working with the MCTRL R5).
- Supports 18bit+.
- Supports ClearView.
- Supports receiving card program and configuration information readback.
- Supports the monitoring service and platform.
- Screen configuration like building blocks.
- Supports seam brightness adjustment.
- The functions of video controllers can be set on V-Sender.
- Supports hot backup.
- The canvas can be exported as an image.

**Operating environment:** OS X, Windows 7 or later.

## 1.1 System Architecture





## 1.2 Configuration List

Name	Version/Model	Function	Remarks
SmartLCT	V3.2.0	Operating Platform	Standard
Supported LED display controllers	3D HD, NovaPro HD VX2/VX4/VX4S/K4/K4S/VX2U/VX4U/ K2U/K4U/Thunderview_S1 V700/V800/V900/V900S MCTRL300/MCTRL500/MCTRL R5/ MCTRL600/MCTRL660/MCTRL4K	LED display controllers and video processing units	Optional
Supported receiving cards	MRV200/MRV210/MRV220 MRV300/MRV320/MRV330/MRV340/ MRV350/MRV360/MRV365 A8s	LED display driver modules	Optional

## 1.3 Software Installation

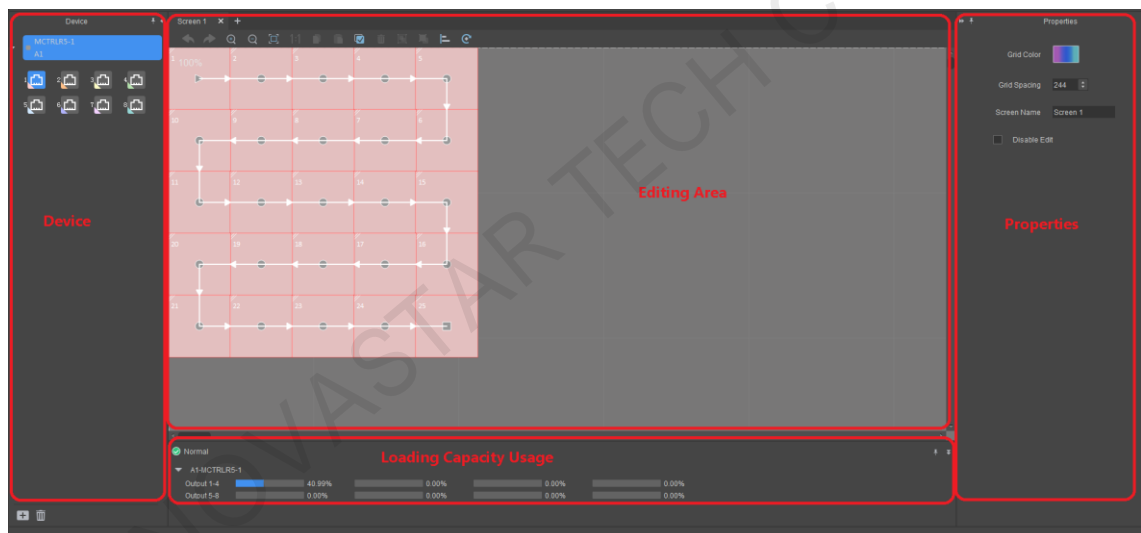
Just like the installation of other common software, install SmartLCT V3.2.0 by following the setup wizard.

	In case that antivirus software or firewall prompts pop up during the installation, please permit them because the serial driver may need to be installed.
	The installation program will update the serial driver on the customers' computer to the version of the driver in the installation package automatically if there is no serial driver or its version is too early.

## 2 User Interface

Run SmartLCT to enter its start page.

On the start page, you can create an online or offline project, or open an existing project to enter the screen configuration page.



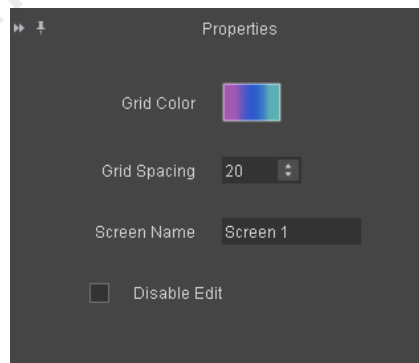
Tool Bar		Description
Project	New/Open/Save/Save As/Export/Language	Allows you to create, save, export a project and set the system language.
Device	Hot Backup	Backup between devices and backup between the Ethernet ports of a device
	Reconnect Device	Allows you to search for and reconnect a device, update hardware information and save it to the current file.
	Refresh Device	Reads the hardware information again.
	Seam Brightness	Adjusts the seam brightness of the LED display.
	Beacon	Allows you to quickly find the target cabinet.
	Mapping	Displays the receiving card No. and Ethernet port information on the cabinets.
	Test Pattern	Verifies the display effect of cabinets.
	Factory Reset	Resets the parameters to factory defaults.

Edit	Cabinet Management	Allows you to add cabinets and set cabinet size.
	Cabinet Connection	Allows you to choose the cabinet connection type.
	Advanced	Allows you to set cabinet display status in the editing area and the snapping mode.
	View	Includes front view and rear view.
	Delete Connection	Removes the lines between cabinets.
	Send	Sends the display configuration file to hardware devices.
	Save to Hardware(online operation)	Sends and saves the screen configuration file to hardware devices.
Monitor	Real-Time Monitoring	Monitors cabinet status in real time.
	BER Detection	Detects data packet loss during the communication between receiving cards.
	Version Information	Displays the Ethernet port information and program version information of the controllers and receiving cards.
	Monitoring Configuration	Allows you to configure the parameters to be monitored.
Tools	Calculator	Launches the Windows calculator.
	Test Tool	A LED display test tool developed by NovaStar can be used for editing and testing the display window. It allows you to open the preview window on the desktop and view the result of the test.
Help	User Manual	User manual of SmartLCT
	About	Software information

## Canvas Properties

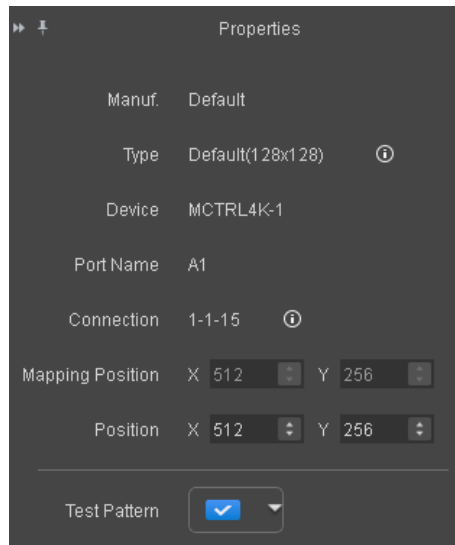
Click on the blank in the editing area. The properties of the canvas are displayed in the **Properties** section.

- **Grid Color:** Color of the grid in the editing area
- **Grid Spacing:** Spacing between the grid lines (ranging from 1 to 512.)
- **Disable Edit:** Disables all the actions in the editing area.



## Device Properties

Click to select a cabinet. The properties of the device is displayed in the **Properties** section. In the following description, the MCTRL 4K is taken as an example.



- **Connection 1-2-3:** Denotes that the sending card No. is 1, Ethernet port No. is 2, and the receiving card No. is 3.
- **Mapping Position:** Position of the cabinet on the LED display
- **Position:** Position of the cabinet on the canvas
- **Test Pattern:** Test patterns are used for verifying the display effect of the screen.

When the connected device supports rotation function (Currently, only the MCTRL R5 supports rotation function), the center and angle of rotation can be set in the properties of the device to achieve free rotation of the LED display.

## Loading Capacity Usage

The **Loading Capacity Usage** section displays the usage of the loading capacity of Ethernet ports.

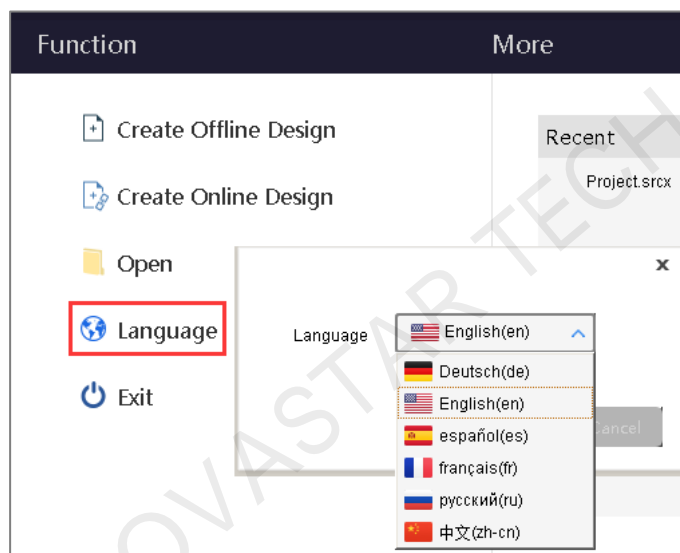
- **Blue:** Denotes the loading capacity is normal. The length of the blue bar indicates the used capacity of the Ethernet port.
- **Red:** Beyond the loading capacity.

# 3 Language

SmartLCT is available in German, French, Russian, Spanish, Chinese and English.  
You can change the language through any of the following methods.

## Method I

In the **Function** section of the start page, click **Language** and select the language you prefer from the option box that appears.



## Method II

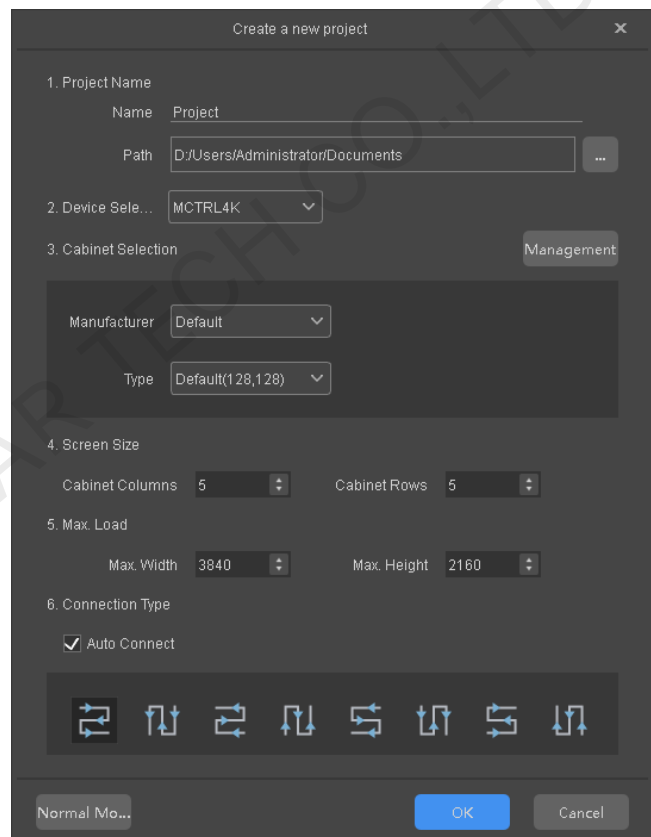
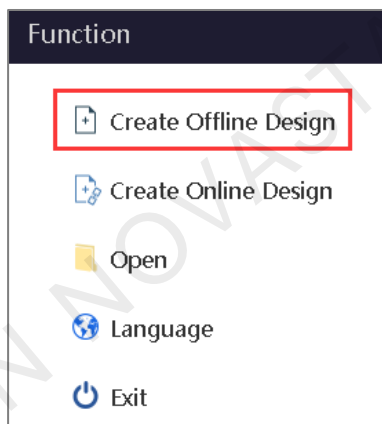
Step 1 In the tool bar of the screen configuration page, choose **Project > Language**.

Step 2 Select the language you prefer from the drop-down menu.

# 4 Offline Operation

## 4.1 New Projects

Run SmartLCT. In the **Function** section of the start page, click **Create Offline Design** to enter the **Create a new project** page.

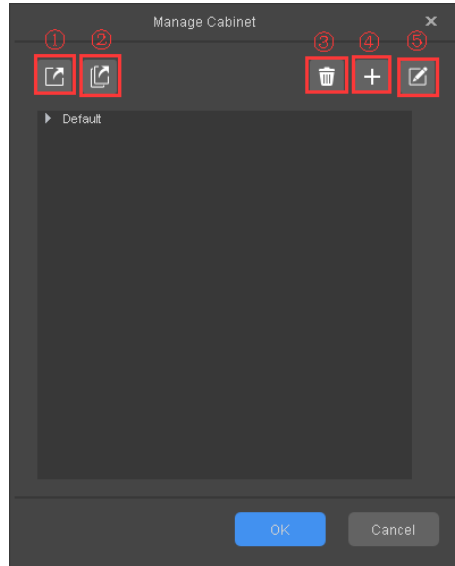


- **Project Name:** Name the project and choose a save path for the project.
- **Device Selection:** Select a video controller. Here the VX4S is taken as an example.
- **Cabinet Selection:** Select the manufacturer and type of the cabinets.
- **Screen Size:** Set the columns and rows of the cabinets.
- **Max. Load:** The maximum screen width and height that can be loaded by the device.
- **Connection Type:** Select the connection type of the cabinets. You can select **Auto Connect**.

## Cabinet Management

- ① Export the selected cabinets: Export the cabinet file.

- ② Export all: Export all the cabinet files.
- ③ Delete: Delete cabinet files.
- ④ Add: Add and import cabinet files.
- ⑤ Edit: Edit cabinet files.



## Creating Modes

You can choose **Normal Mode** or **Smart Mode** when creating a new project.

- **Normal Mode:** You only need to edit the project name, choose the save path, and select the cabinet.
- **Smart Mode:** For details, see [4.1 New Project](#).



## 4.2 Screen Configuration

After an offline project is created, you will enter the screen configuration page.

### 4.2.1 Adding Cabinets

Step 1 Select device type and Ethernet port type.

Step 2 Choose **Edit > Cabinet Management**. Click the following icons to select the cabinet type.

- : Clicking this icon allows you to add cabinets in batches.
- : Clicking this icon allows you to add a single cabinet.

Step 3 Move the mouse to the editing area and click to add cabinets.

## 4.2.2 Cabinet Connection

### Connecting Cabinets

After cabinets are added, you need to connect the cabinets with lines. SmartLCT offers two methods for you to connect the cabinets.

#### Method I: Auto connect

- Step 1 When you create a new project, select **Auto Connect** in smart mode.
- Step 2 Click **OK** to enter the screen configuration page. The cabinets are added in the editing area and connected with lines automatically.


Note: When you add new cabinets to the editing area, lines between cabinets appear automatically. You can stop adding cabinets with a right click or by pressing **Esc** on the keyboard.

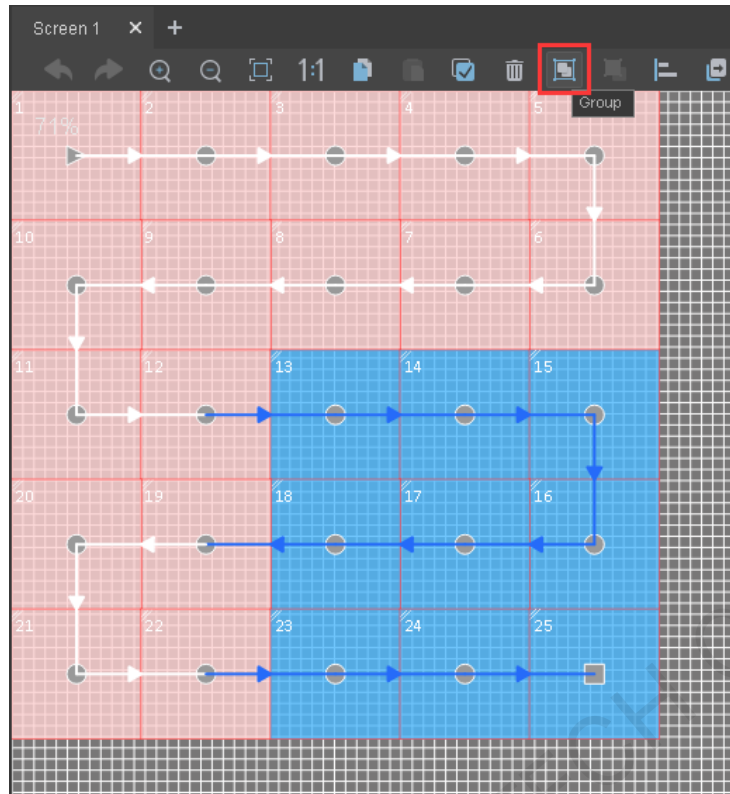
#### II: Manually connect

- Step 1 On the screen configuration page, add cabinets and select any of the following methods to connect the cabinets manually.
- Select the target cabinets. In the **Cabinet Connection** section of the tool bar, select a connection type.
  - Click to select the center of the first target cabinet and then point to the center of the second cabinet. A line appears between these two centers. You can now move on to the third cabinet and so forth.


Note: Choose **Edit > Advanced** to select the method to connect cabinets.

### Grouping Cabinets

- Step 1 Select the target cabinets and click  (or right click to choose **Group**).
- Step 2 In the **Properties** section, set the name and color of the group of cabinets.
- The grouped cabinets will be edited as a whole.




## Deleting Cabinet Connection

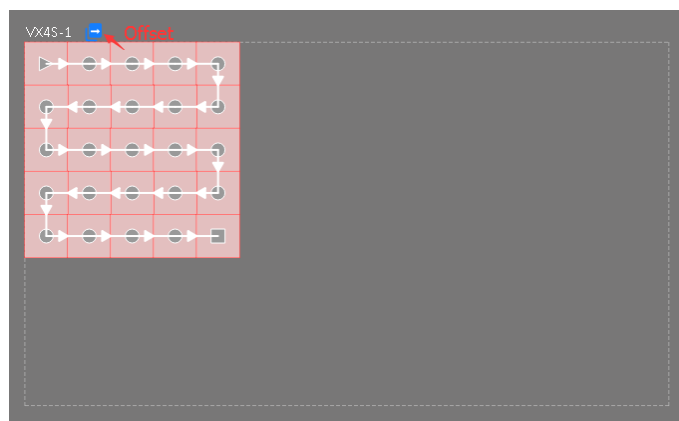
Select the target cabinets and click  in the tool bar (or right click to choose **Delete Connection**) to remove the connection between the cabinets.

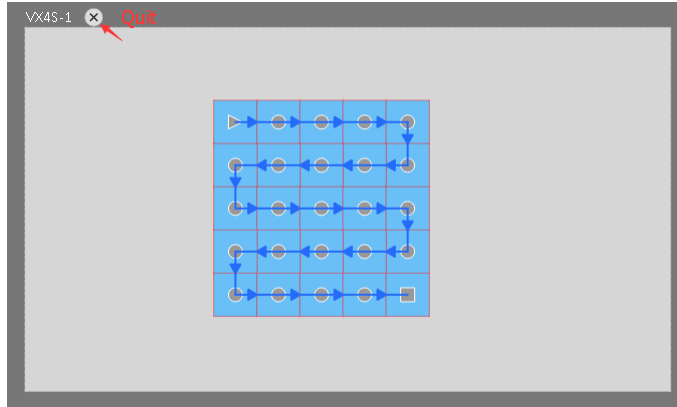
## Setting Cabinet Offset

After cabinets are added, a fixed coordinate system will be generated in the editing area.

Step 1 Click , and you can drag a cabinet to change its position relative to the dashed box.



Step 2 Click  to quit the edit.

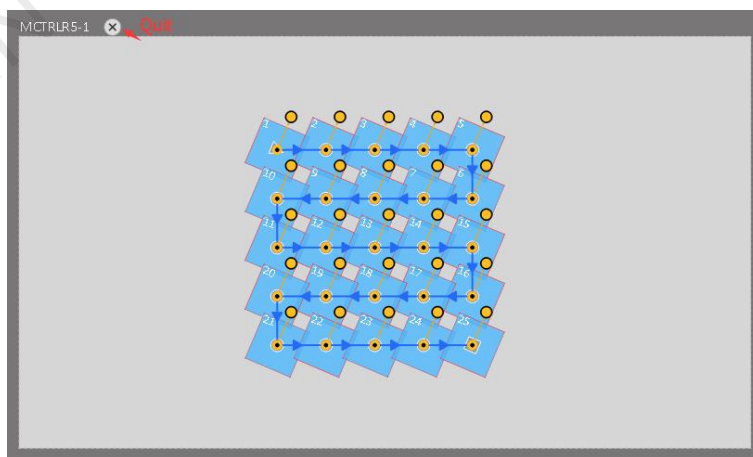
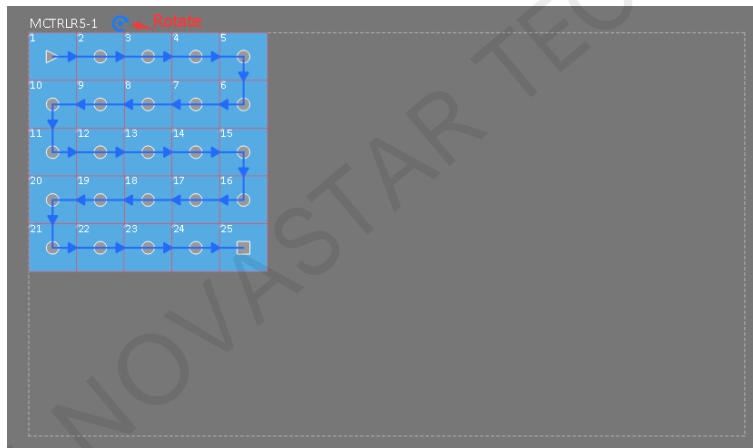





## Rotating Cabinets

When the added device supports rotation function, rotate the cabinets according to the following steps.

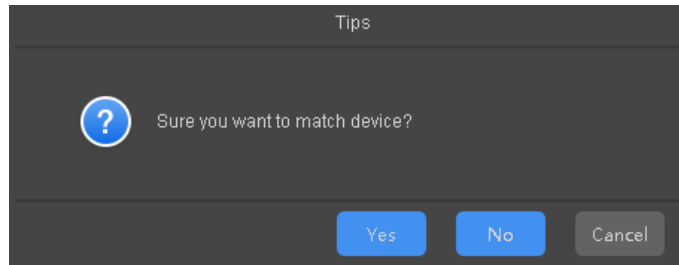
- Step 1 Click . Click and rotate the rotation bar (or set the angle of rotation) to rotate the cabinets to the target position.
- Step 2 Click  to quit the edit.



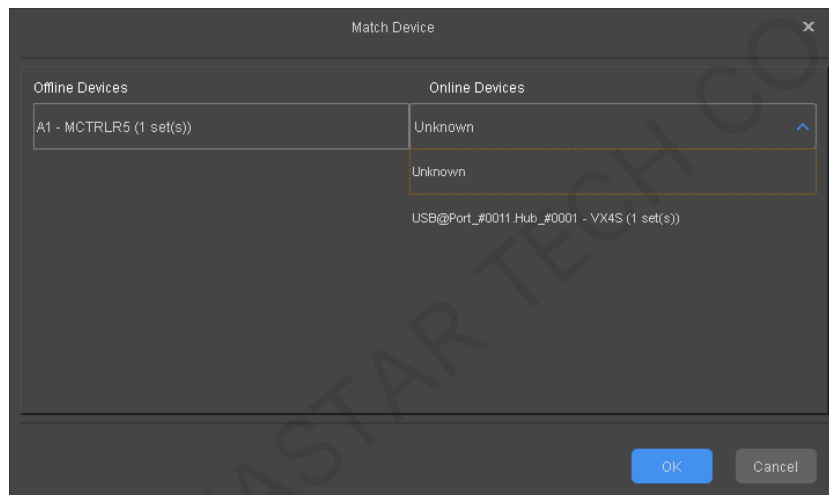
## 4.3 Sending Configuration Information

Step 1 In the tool bar, click .

Step 2 Click **Yes** in the prompt box that appears.




Step 3 In the **Match Device** dialog box that appears, select the matched online device.



Step 4 Click **OK**.

## 4.4 Other Operations

### 4.4.1 Adding Devices

Step 1 At the bottom left of the **Device** section, click . The **Add Devices** dialog box appears.

Step 2 Select device type, enter the number of the devices to be cascaded, and then click **Add**.

Step 3 Click **OK**.

Note: Multiple devices can be added for a screen and multiple Ethernet ports can be added for a device.

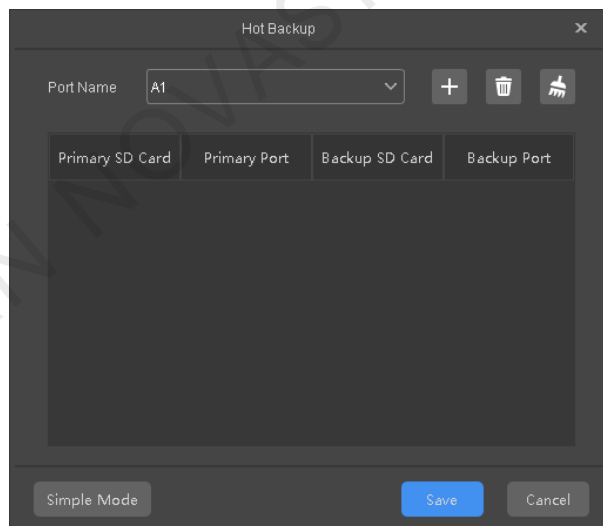
### 4.4.2 Hot Backup

Choose **Device > Hot Backup**. The **Hot Backup** page appears. For detailed operation, see the page navigation.

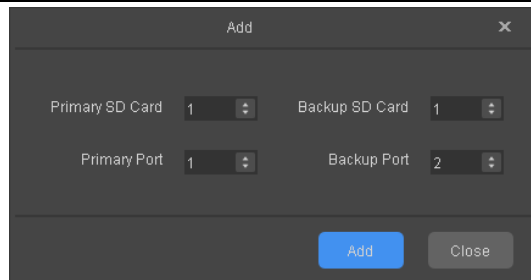
The hot backup includes Ethernet port backup and device backup.

- Hot backup is only available for the devices with the same communication ports.
- After device backup is set, the Ethernet ports of the backup device will be the backup of the corresponding ports of the master device. The backup relations cannot be crossed and removed.

## Advanced Mode



Step 1 The **Add** page appears.



Step 2 Set the serial numbers of the device and Ethernet port to be backed up.

Step 3 Click **Add**.


Step 4 Click **Save**.

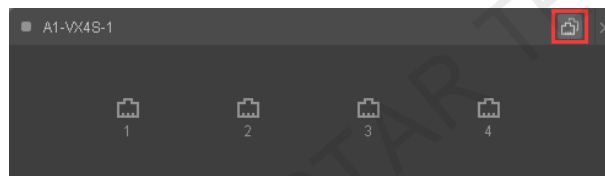
## Simple Mode

In simple mode, users are not allowed to self-define the corresponding backup Ethernet ports during Ethernet port backup and device backup.




### Ethernet port backup

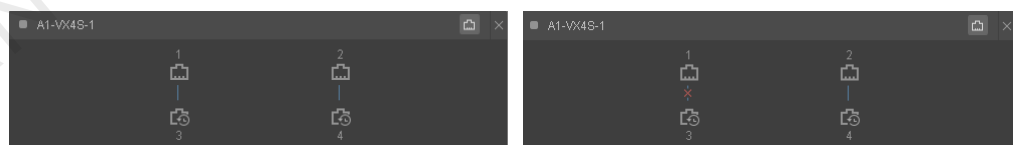
Step 1 Add a device to the editing area.

Step 2 Click , as shown in the figure below.



Note:

- When the Ethernet ports are backed up, click  at the top right of the device to remove the backup.
- Click  between two Ethernet ports to delete the line.
- Click  at the top right of the device to delete the device.





### Device backup

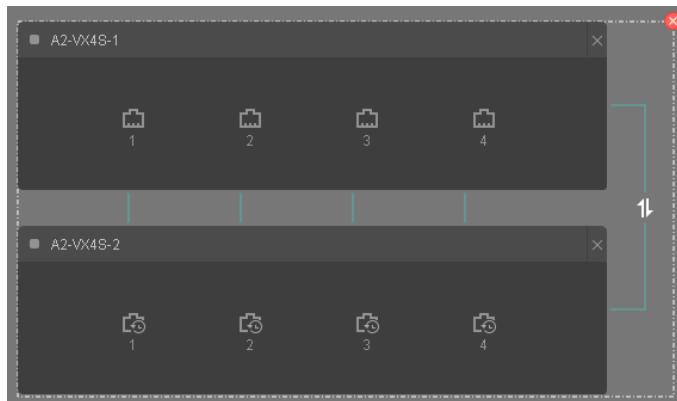
Step 1 Add devices that requires backup to the editing area.

Step 2 Drag a device onto another device, and the backup can be done automatically. Or click the small triangle in the right side of the device, drag to the small triangle of the other device and click to complete the backup.

Note:

- When the backup is done, the  icon appears on the line between the two devices. Click this icon to switch between master and backup.

- Click  at the top right of a device to delete the device.
- Click  at the top right of the dashed box to remove the backup.



### Master/Backup device switching

Before backup, click the toggle button on the right of a device to set it as the master device or backup device.

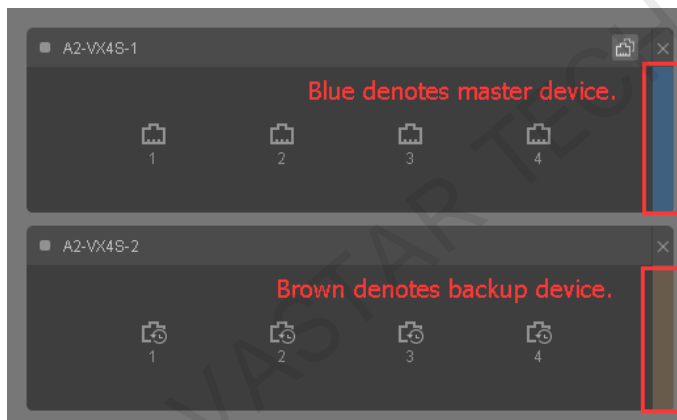










Table 4-1 Ethernet port description

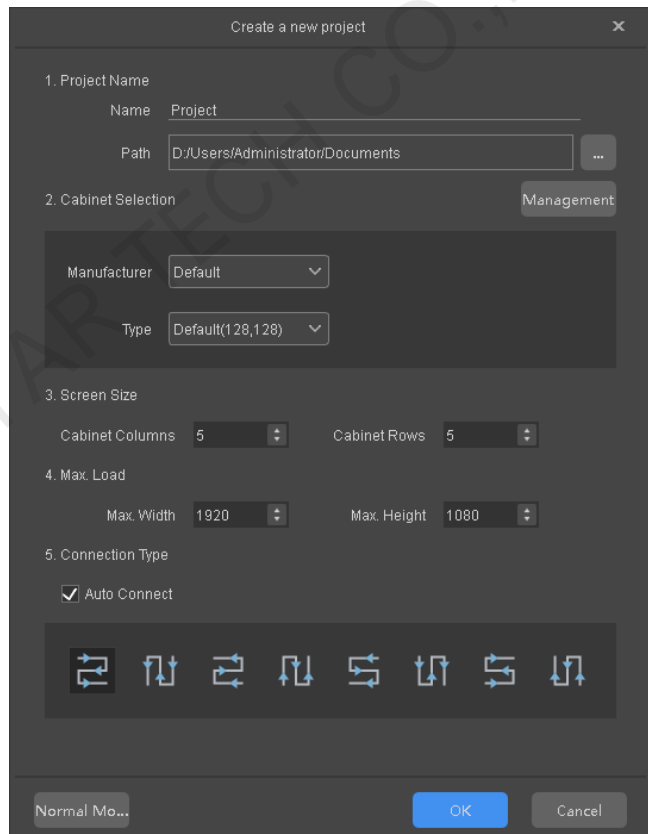
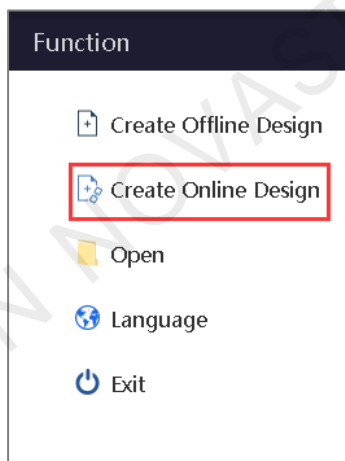
Icon	Description	Icon	Description
	Connection of the primary port is not available.		Connection of the primary port is available.
	The backup port is enabled.		The port is not backed up.
	The backup port is not enabled.		The port is backed up.
	Backup device		Master device

Note: Devices that can be set as the maser device or backup device independently include VX2, VX2U, VX4, VX4S, VX4U, V700, V800, V900, NovaPro HD, MCTRL R5, MCTRL4K, K4U, K4S, K4, K2U, 3D HD.

# 5 Online Operation

## 5.1 New Projects

- Step 1 Run SmartLCT. On the start page, click  next to **Device List** to refresh the device list and screen list.
- Step 2 In the **Function** section, click **Create Online Design** to enter the **Create a new project** page.



- **Project Name:** Name the project and choose a save path for the project.
- **Cabinet Selection:** Select the manufacturer and type of the cabinets.
- **Screen Size:** Set the columns and rows of the cabinets.
- **Max. Load:** The maximum screen width and height that can be loaded by the device.
- **Connection Type:** Select the connection type of the cabinets.



## 5.2 Screen Configuration

After an online design is created, the screen configuration page will be displayed.

### 5.2.1 Adding Cabinets

Step 1 Select an Ethernet port type.

Step 2 Choose **Edit > Cabinet Management** and click the following icons to select the cabinet type.

- : Clicking this icon allows you to add cabinets in batches.
- : Clicking this icon allows you to add a single cabinet.

Step 3 Move the mouse to the editing area and click to add cabinets.

### 5.2.2 Cabinet Connection

For detailed operation of cabinet configuration, see [4.2.2 Cabinet Connection](#).

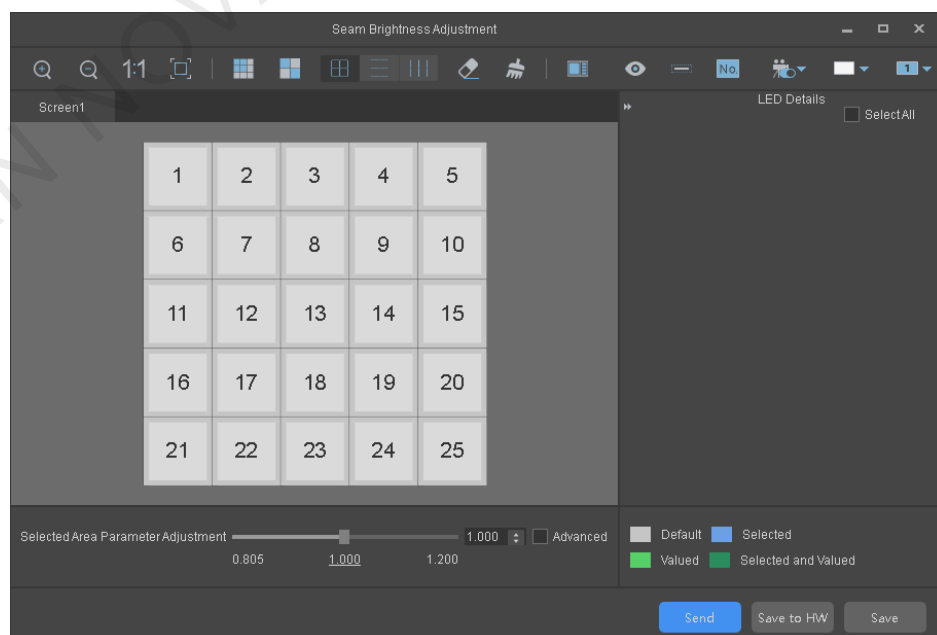
## 5.3 Seam Brightness Adjustment

Before you begin: Configure the LED display (that is, add cabinets and connect them).

Step 1 Choose **Device > Seam Brightness > Seam Brightness Adjustment** to enter the seam brightness adjustment page.

Step 2 Select the border of the target cabinet.

Step 3 Adjust the seam brightness parameters.



**Send:** Clicking this button will send the seam brightness adjustment information to the sending card.

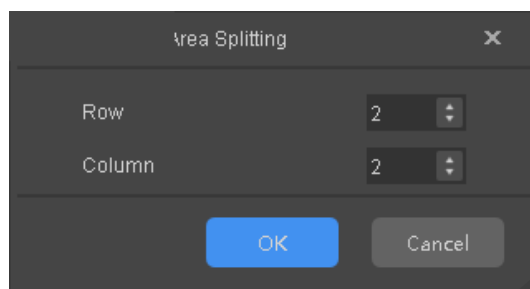
**Save to HW:** Clicking this button will save the seam brightness adjustment parameters to hardware.

**Save:** Clicking this button will save the current seam brightness adjustment information.

### 5.3.1 Module Mode

Step 1 In the tool bar, click . The **Area Splitting** page appears.

Step 2 Set the number of rows and columns (as shown in the figure below, a cabinet is split into 2 rows and 2 columns). Click **OK**.





### 5.3.2 Cabinet Mode


In the tool bar, click  to recover the split cabinet.

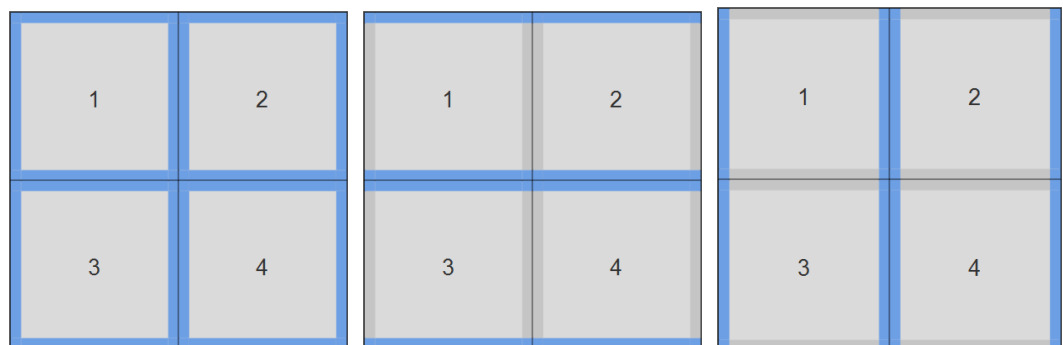
### 5.3.3 Border Selection

Selection methods include **Select row and column**, **Column selection** and **Row selection**.

In the tool bar, clicking  allows you to select all the borders of the cabinets, as shown in the first figure below.

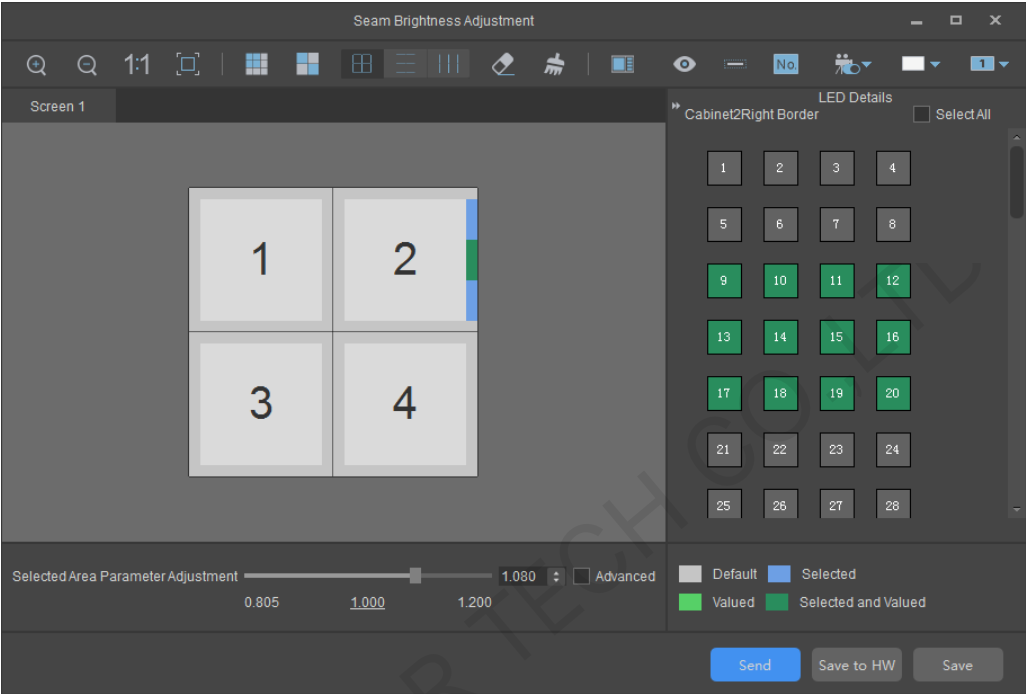
In the tool bar, clicking  allows you to select the horizontal borders of the cabinets, as shown in the second figure below.

In the tool bar, clicking  allows you to select the vertical borders of the cabinets, as shown in the third figure below.



5.3.4 Seam Brightness Parameter Adjustment

After the borders of cabinets are selected, details of the LEDs in the selected cabinet borders will be displayed on the right of the editing area. LED details of the right border of the cabinet 4 are shown in the figure below.





Select some of the LEDs, drag the slider next to **Selected Area Parameter Adjustment** to adjust the parameter (which defaults to 1.000). The adjustment result is displayed on the border of the cabinet.


Table 5-1 Meanings of the colors of the LEDs


Gray	Indicates the LED is not selected and the parameter is not adjusted.	Blue	Indicates the LED is selected and the parameter is not adjusted.
Light green	Indicates the LED is not selected and the parameter is already adjusted.	Dark green	Indicates the LED is selected and the parameter is already adjusted.

5.3.5 Display Window Modes


In the tool bar, click  to switch the display window mode (between main display and extended display).

In the tool bar, click  to show the dashed box of the LEDs on the border of the selected cabinet on the display window.

In the tool bar, click  to show or hide the display window.

In the tool bar, click  to show or hide the selection area (which is the editing area of the seam brightness adjustment page).


## Showing/Hiding Cabinet Numbers

In the tool bar, click  to show or hide cabinet numbers on the display window.


The keyboard shortcuts for operation is displayed at the top left of the display window. See the following description for details.


- SHIFT+F1: Show/Hide prompts.
- SHIFT+E: Main/Extended display
- SHIFT+H: Show/Hide the display window.

## Display Window Background

In the tool bar, clicking  allows you to select the background color of the display window.

### 5.3.6 Deleting Information

In the tool bar, clicking  will deselect the borders of the cabinets.

In the tool bar, clicking  will clear the settings and restore the cabinets to the original state.

## 5.4 Seam Brightness Restoration

Step 1 Choose **Device > Seam Brightness > Restore Seam Brightness**. The **Restore Seam Brightness** window appears.

Step 2 Click  on the right of **Seam Brightness Adjustment File** to select a save path for the file.

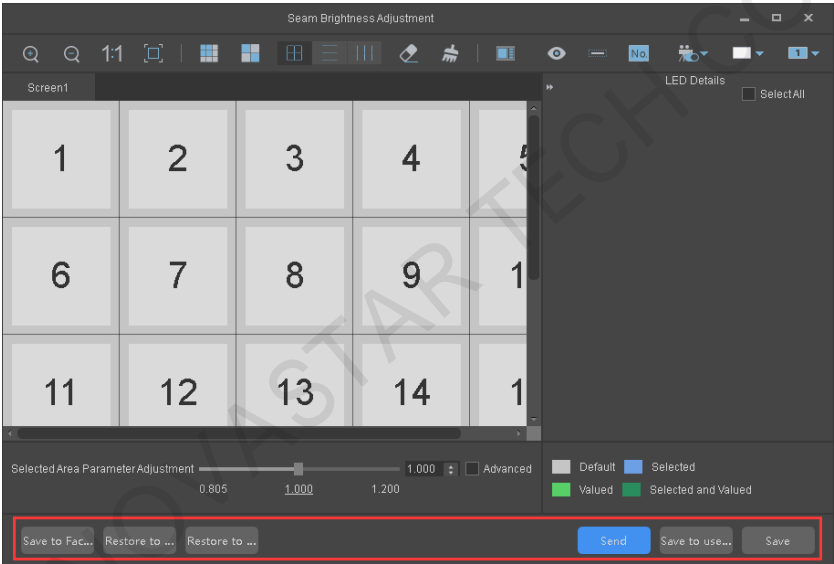
Step 3 Select the screen to be restored.

Step 4 Click **Restore**.



Double Seam Brightness Correction

Before you begin: Connect the device to receiving cards.  
Type "admin" with your keyboard. The page below appears.



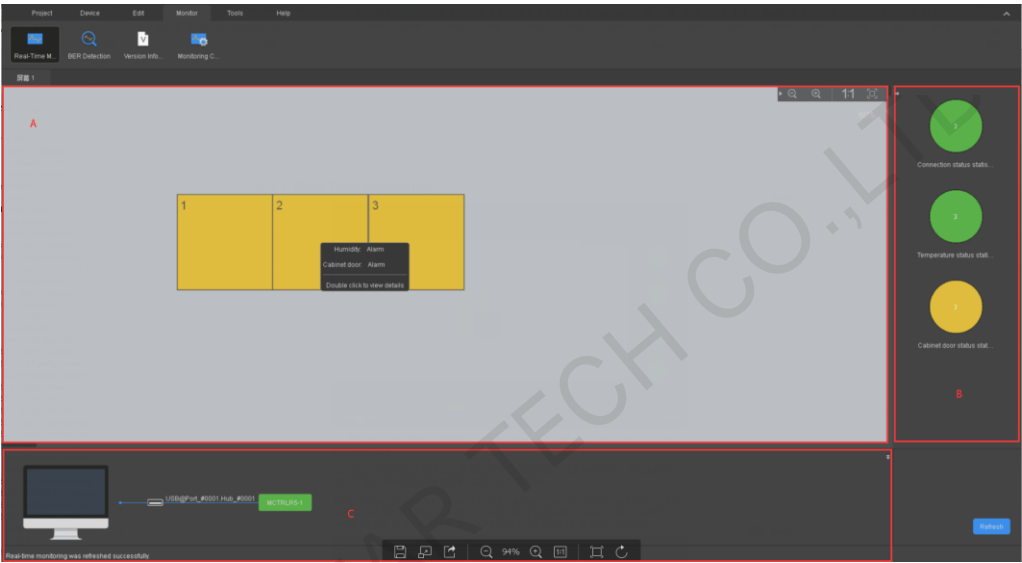
- **Save to Factory Area:** Saves seam brightness adjustment parameters to the factory area of the receiving card. These parameters will be used for maintenance after the cabinet is returned to factory.
- **Restore to Factory Area:** Restores seam brightness adjustment parameters to the parameters last saved in the factory area.
- **Restore to User Area:** Restores seam brightness adjustment parameters to the parameters last saved in the user area.
- **Save to User Area:** Saves seam brightness adjustment parameters to the user area of the receiving cards. These parameters will be used for on-site screen adjustment.

5.5 Monitoring

Real-Time Monitoring	Monitors the real-time status of the hardware devices such as receiving cards, multifunction cards.
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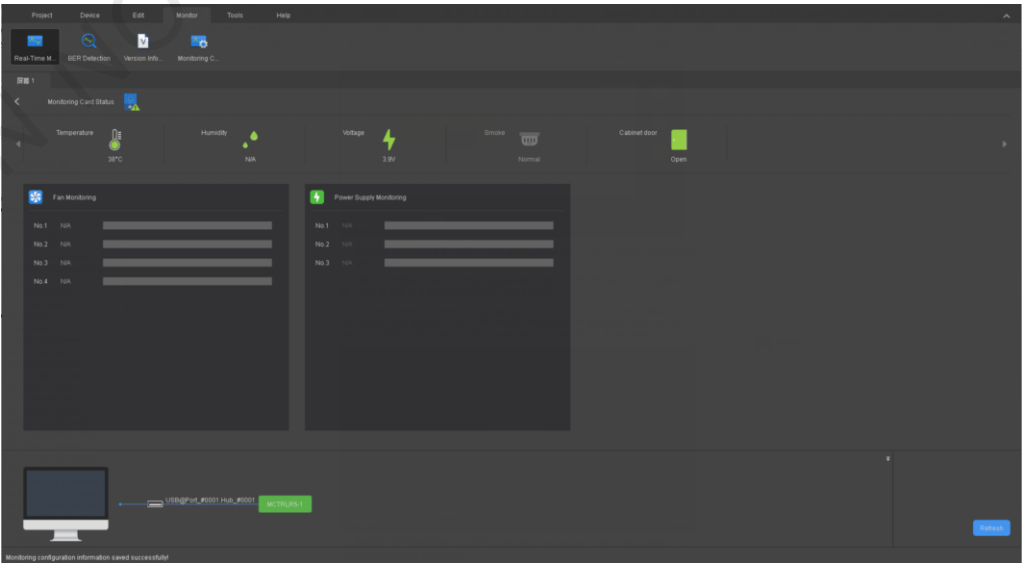
BER Detection	Detects data packet loss during the communication between receiving cards.
Version Information	Displays the device type, communication port status major version and other versions of the controllers and receiving cards.
Monitoring Configuration	Allows you to configure the information to be monitored.

5.5.1 Real-Time Monitoring



A: Editing area, where the real-time statuses of cabinets are displayed.

In the editing area, move the mouse and point to a cabinet. The current status of the cabinet will be displayed. Double clicking the target cabinet allows you to view the real-time status of the device and parameters, as shown in the figure below.



B: Monitoring area, where the status statistics of the parameters are displayed.

C: Device area, where the real-time connection status of the device being monitored is displayed.


In the device area, move the mouse and point to the device icon. The working status of the device is displayed. Clicking the device icon allows you to view the hot backup status of the device and Ethernet ports and the working status of the signal sources.


## 5.5.2 BER Detection

The statistics of data packet loss during communication between receiving cards is called Bit Error Rate (BER), which is shown by a line chart in the editing area.

Clicking **Refresh** will refresh the BER of current period so that users can observe the stability of network communication.

## 5.5.3 Version Information

Clicking  on the right of **Controller** or **Receiving Card** will refresh the version information.

Clicking  will refresh the version information of the **Controller** and **Receiving Card** simultaneously.

## 5.5.4 Monitoring Configuration

### Basic Information

You can configure the refresh rules for the real-time monitoring.

Select **Auto refresh**, and the monitoring information will be automatically refreshed based on the **Refresh cycle** and the times of **Retry** you set.

When the **Auto refresh** is not selected, you need to refresh the monitoring information manually.

### Device Configuration

Device configuration allows you to configure the **Hot backup status** and **Signal source status** of the device for real-time monitoring.

- If **Hot backup status** is selected, the hot backup status of the device will be monitored in real time.
- If **Signal source status** is selected, clicking **Configuration** allows you to select the signal source to be monitored.

### Screen Configuration

Step 1 Select the target devices (monitoring card, smart module and HUB).

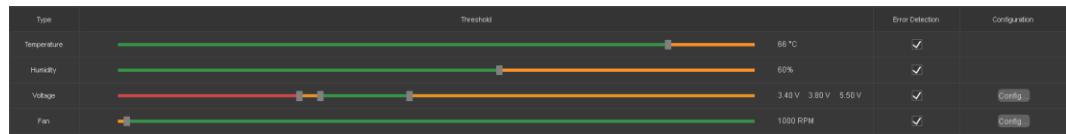
Step 2 Click **Configuration** to configure the corresponding parameter.

Step 3 Adjust monitoring parameters.

- In the **Threshold** column, drag the slider to adjust the threshold.

- In the **Error Detection** column, selected parameters are added to **Real-Time Monitoring**.

Step 4 Click **Save**.



Threshold description: Green denotes normal, yellow denotes alarm, and red denotes error.

Type	Threshold Description
Temperature	When the temperature is higher than 66°C, you will see a temperature alarm in the real-time monitoring.
Humidity	When the temperature is higher than 60%, you will see a humidity alarm in the real-time monitoring.
Voltage	When the voltage is lower than 3.40 V, you will see a voltage error in the real-time monitoring. When the voltage is higher than 3.40 V and lower than 3.80 V, or higher than 5.50 V, you will see a voltage alarm in the real-time monitoring.
Fan	When the fan speed is lower than 1000 r/m, you will see a fan alarm in the real-time monitoring.

Note: The figure above only shows some of the monitoring types. The meanings of the thresholds of other types are similar.

## 5.6 Sending Configuration Information

Step 1 In the tool bar, click .

Step 2 In the prompt box that appears, click **OK**.

## 5.7 V-Sender

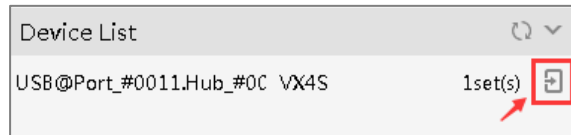
V-Sender allows you to set the status of the current device and operate the device on PC.

Supported devices include MCTRL300 (MSD300), MCTRL660, VX4S, Pro HD, 3D HD, MCTRL4K.


### 5.7.1 Accessing V-Sender

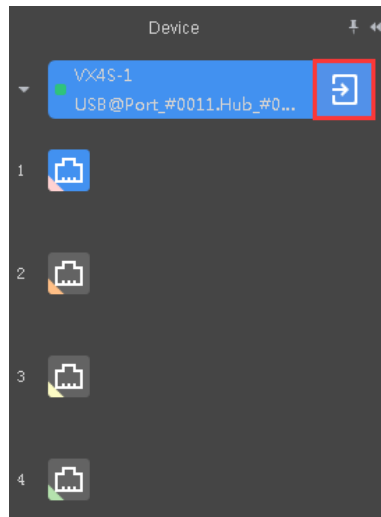
#### Method I

On the start page, click  in the **Device List** section to access V-Sender, as shown in the figure below.




## Method II

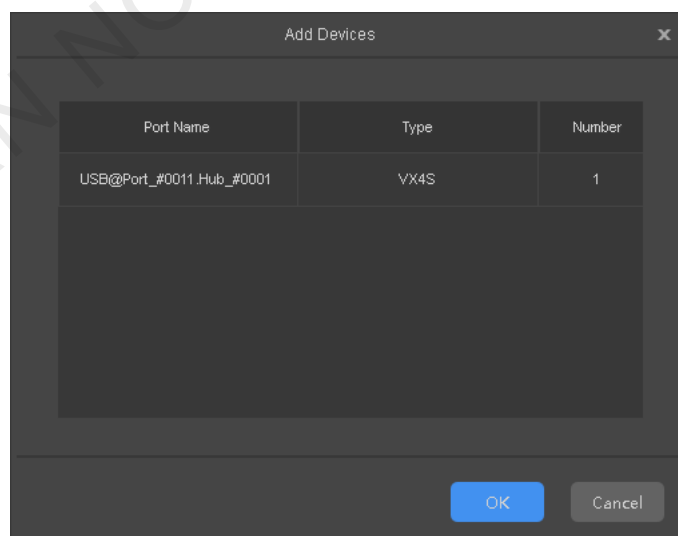
In the **Device** section of the editing page, click  to access V-Sender, as shown in the figure below.



### 5.7.2 Adding Devices

Step 1 At the bottom of the device list, click . The **Add Devices** page appears.

Step 2 Select the devices you want to add and click **OK**.



## Device Information



## Ethernet Port Status

The **Information** tab at the bottom of the editing area displays the status of Ethernet ports.

Port Status	Icon	Description
Backed up but not connected		This Ethernet port serves as the primary port and is not connected to the receiving card.
Not backed up and not connected		This Ethernet port serves as the primary port and is not connected to the receiving card.
Backed up and connected		This Ethernet port serves as the backup port and is connected to the receiving card.
Not backed up but connected		This Ethernet port serves as the backup port and is not connected to the receiving card.
Backup takes effect.		This Ethernet port serves as the backup port which takes effect (indicating the Ethernet cable is disconnected).

### 5.7.3 Screen Control


At the bottom of editing area, the **Control** tab displays the input sources of the main screen and minor screen, and the methods of screen control. (The figure below takes the K4S as an example.)

Meanings of the options of **Screen Control**:



- **Black Out:** The LED display goes black.
- **Freeze:** The current content being displayed pauses.
- **Normal:** The current content is displayed normally.
- **Test Pattern:** Allows you to verify the display effect of the screen with different test patterns.



## 5.7.4 Template Settings

Select a template on the **Template** tab below the editing area and click  to save current configuration parameters as a template. You can save up to 10 templates by default.



- Clicking  will save current configuration parameters to any of the templates.
- Clicking  will delete the selected template.

## 5.7.5 Device Properties

After you set the **Input**, **Color** and **Output**, clicking **Apply** will complete the settings.

Option	Description
Properties	Displays the device's type, name, communication port, program version, etc.
Input	Used for switching input source, setting the number of sources, displaying current resolution, setting the configuration information of the input source (resolution and refresh rate)
Color	Used for adjusting the screen color
Output	<b>Mosaic:</b> If the number of the pixels of the LED display exceeds the loading capacity of the device, the mosaic function is required. For detailed operation, see <a href="#">5.7.7 Mosaic</a> . Note: When <b>Mosaic</b> is selected, the <b>Disable Zoom</b> , <b>Auo Fit</b> , <b>Video Source Synchronization</b> options under <b>Main Screen</b> are hidden.
	<b>Main Screen:</b> Used for setting the parameters of the main screen, such as capture, output size, output position
	<b>Minor Screen:</b> Used for setting the parameters of the minor screen, such as capture, output size, output position, transparency
	<b>Video Source Synchronization:</b> Syncs the parameters of input and output video sources.

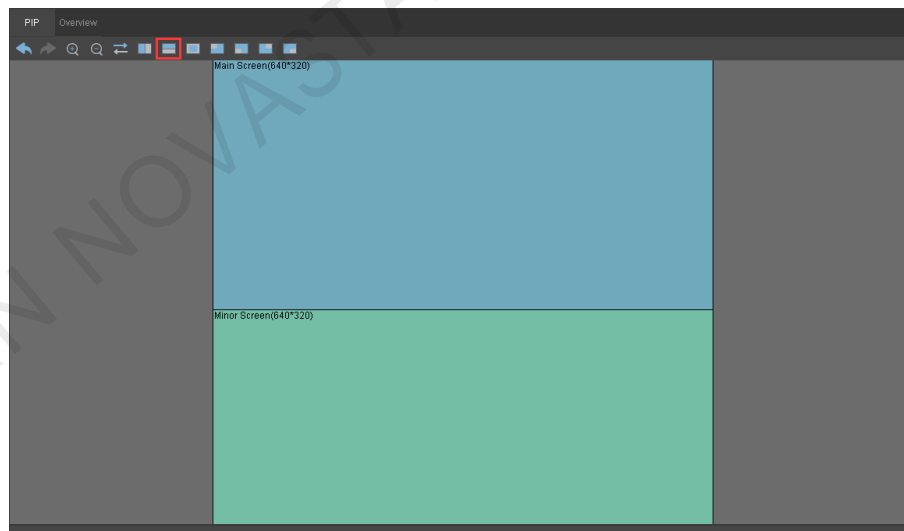
System	<p>Used for system parameter settings</p> <p>Meanings of the parameters:</p> <ul style="list-style-type: none"> <li>• <b>LCD Lock:</b> Locks the operation screen of the device. After the operation screen is locked, buttons on the device are disabled.</li> <li>• <b>Smart Gray Scale:</b> Adjusts the grayscale of the LED display.</li> <li>• <b>Deinterlace:</b> Restores the interlaced video signal to progressive signal.</li> <li>• <b>VGA Auto Adjusting:</b> Adjusts the sampling parameters of VGA input signal automatically.</li> <li>• <b>ADC Auto Calibration:</b> Adjusts color cast, dimming and other display problems.</li> </ul>
Audio	<p>Used for enabling and disabling audio output and adjusting audio output parameters</p> <p>Audio types:</p> <ul style="list-style-type: none"> <li>• <b>Following Mode:</b> Uses the audio source of HDMI.</li> <li>• <b>Constant Mode:</b> Uses the external audio source.</li> </ul>

## 5.7.6 Picture in Picture (PIP)










Access V-Sender and select the PIP tab in the editing area.

Click the different icons in the tool bar to adjust the layout of the main screen and minor screen, as shown in the figure below.

Note: Move the mouse to the editing area. When the mouse pointer changes into a double arrow, click and drag to change the size of the main screen or minor screen.



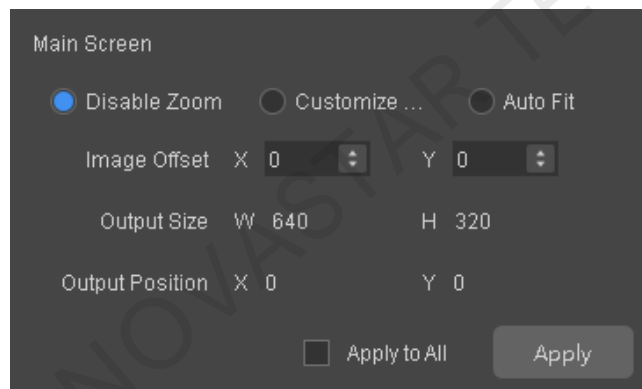
Tool Bar	Icon	Description
Cancel		Cancels the results of a previous action.
Revert		Restores the results of a previous action that was canceled.
Zoom in		Zooms in view.

Zoom out		Zooms out view.
Main and Minor Screens Switching		Switches between main and minor screens.
Horizontal Layout		N/C
Vertical Layout		N/C
In the Middle		N/C
Upper Left Layout		N/C
Lower Left Layout		N/C
Upper Right Layout		N/C
Lower Right Layout		N/C

## Main Screen Settings

You can set the zoom status of the main screen. Three options are provided: **Disable Zoom**, **Customize Zoom** and **Auto Fit**.

- **Disable Zoom:** The size of input image is the same as the size of the output image and only the image offset position is settable.



- **Customize Zoom:** Allows you to set the start position and size for **Capture**. The captured content will be displayed on the LED display. **Output Size** is the size of the main screen in the editing area. **Output Position** is the start position of the current main screen in the editing area.

Main Screen

☐ Disable Zoom ☒ Customize ... ☐ Auto Fit

Capture W 640 H 240

X 0 Y 0

Output Size W 640 H 320

Output Position X 0 Y 0

☐ Apply to All

- **Auto Fit:** The input image is zoomed to fit the main screen automatically. This mode is suitable for full screen display.

Main Screen

☐ Disable Zoom ☐ Customize ... ☒ Auto Fit

Output Size W 640 H 640

Output Position X 0 Y 0

☐ Apply to All

- Selecting **Apply to All** will apply the settings to all the input sources.

After the settings are done, clicking **Apply** will send the current configuration information to the input source.

## Minor Screen Settings

The size and position of the minor screen are editable. Selecting **Capture** allows you to set the size and start position of the content to be captured. The captured content will be displayed on the LED display.

☒ Minor Screen

☐ Capture

Size W 640 H 320

Position X 0 Y 320

Trans... 0

☒ Minor Screen

☒ Capture

W 64 H 48

X 0 Y 0

Size W 640 H 320

Position X 0 Y 320

Trans... 0

After the settings are done, clicking **Apply** will send the current configuration information to the signal source.

## Video Source Synchronization

Video source synchronization allows you to sync the input video source with the output video source.

### 5.7.7 Mosaic

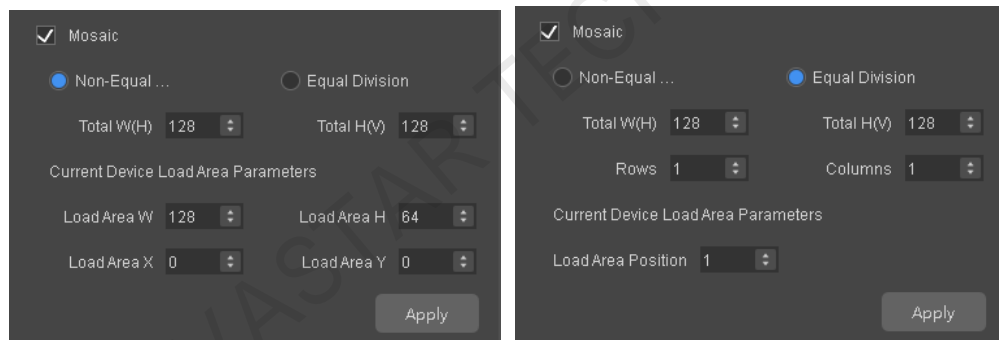
Prerequisites: When the pixels of the output image exceeds the loading capacity of a single device, the mosaic function will be required.

Step 1 Access V-Sender. On the **Output** tab, select **Mosaic**.

Step 2 Set parameters through any of the following methods.

- **Non-Equal Division:** When the loading capacities of each of the VX4S units are different, set the total number of pixels of the LED display, the loading area of current device and the start position.
- **Equal Division:** When the loading capacities of each of the VX4S units are the same, set the total number of pixels of the LED display, the number of mosaic rows and columns, and the start position of the loading area of the current device.

Step 3 After the parameter settings are done, click **Apply** to send the settings to hardware.




## 5.8 Other Operations

### 5.8.1 Hot Backup

For the detailed operation of hot backup, see [4.4.2 Hot Backup](#).

### 5.8.2 Beacon

In the editing area, select the target cabinet and click . The corresponding cabinet on the LED display flashes. This function allows you to quickly find the target cabinet.



### 5.8.3 Mapping

SmartLCT supports the Mapping function.

Choose **Device > Mapping**. The receiving card numbers and Ethernet port information are displayed on the cabinets of the screen.

# 6 Features

## 6.1 Building Screens like Building Blocks

- Step 1 In the **Device** section, select a device and Ethernet port.
- Step 2 In the tool bar, choose **Edit > Cabinet Management** >  or .
- Step 3 Move the mouse to the editing area and click to add cabinets.
- Step 4 Select one or multiple cabinets and move the mouse to change the position of the cabinet(s). Build different shapes of screens as required.

## 6.2 Rotating in 90° Increments


Before you begin: Connect the receiving cards or controllers that support rotation to SmartLCT, for example, A8s.

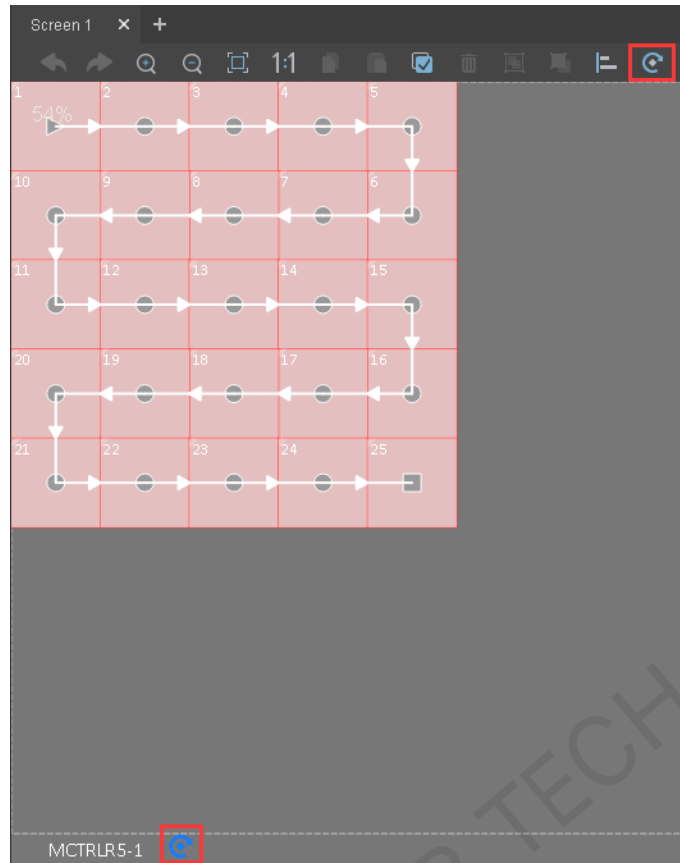
- Step 1 In the editing area, select the target cabinet.
- Step 2 In the property area, click **Reorient** to select the angle of cabinet rotation (0°, 90°, 180°, 270°).

## 6.3 360° Free Rotation


Before you begin: Connect the controller MCTRL R5 to SmartLCT, and the rotation function can be enabled.

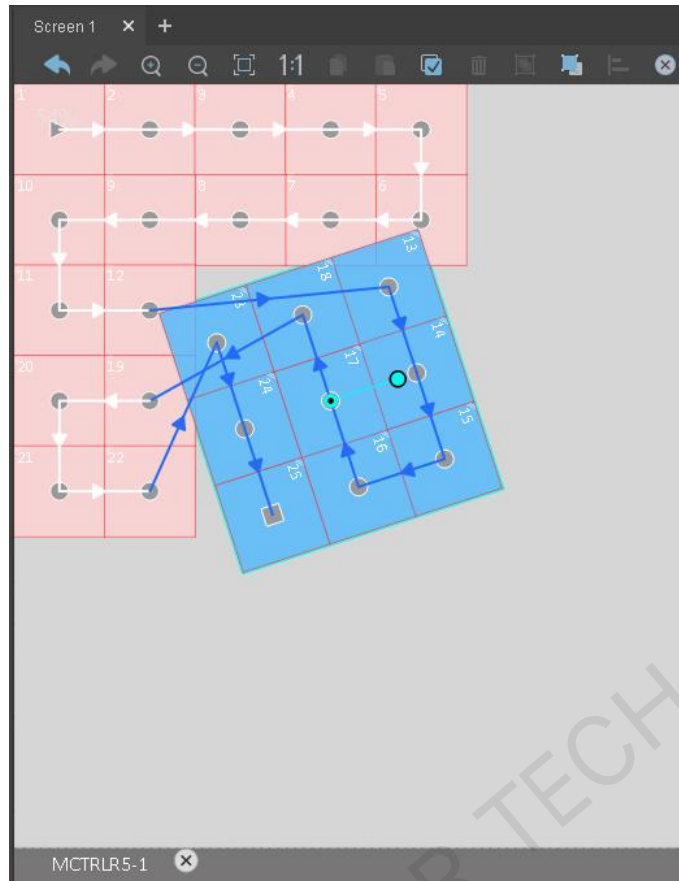
### Rotation of a Single Cabinet

- Step 1 Click  and select the cabinets. A rotating bar appears on each of the cabinets.
- Step 2 Select any of the rotating bars and drag the mouse. The cabinet rotates around its rotation center.
- Step 3 (Optional) Set the rotation center and angles of rotation in the property section on the right.



## Rotation of Grouped Cabinets

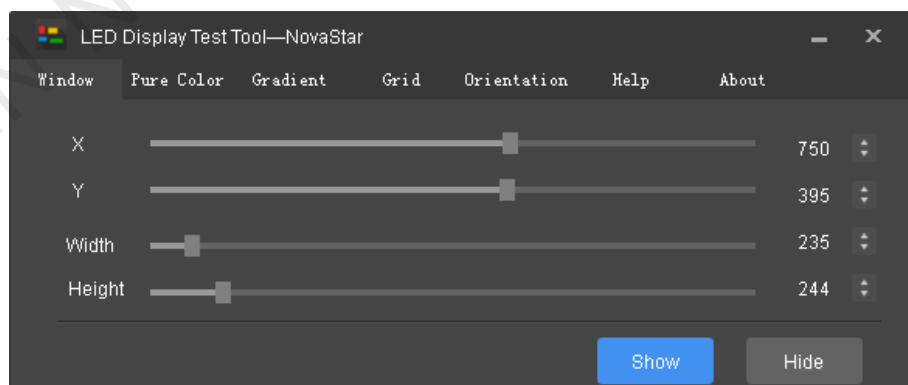
- Step 1 Click  and select the target cabinets.
- Step 2 Right click the cabinets and choose **Group**.
- Step 3 Click to select the grouped cabinets. A rotation bar appears on the rotation center of the grouped cabinets.
- Step 4 Click the rotation bar and drag the cabinets. The group of cabinets rotates around the rotation center.
- Step 5 (Optional) Set the rotation center and angles of rotation in the property section on the right.



## 6.4 LED Display Test

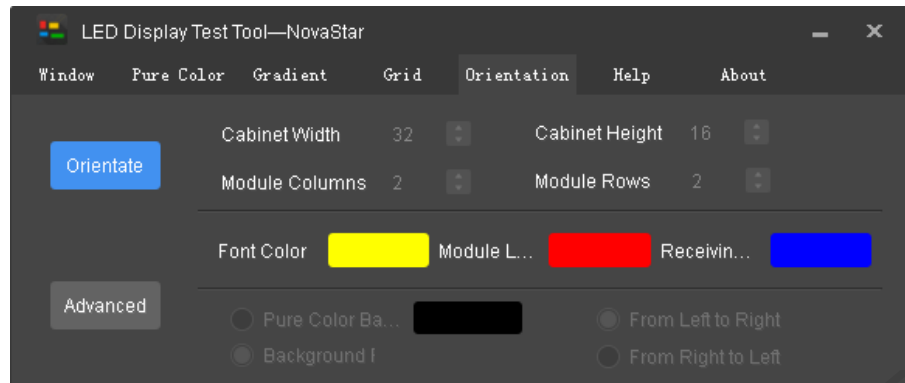
Choose **Tools > Test Tool** to enter the display test tool page (that is, receiving card test page).

Note: Display test is only available for Windows.



- **Window:** Allows you to set window position and size, or hide the window.
- **Pure Color:** Allows you to set window color (pure color), grayscale and refresh rate.
- **Gradient:** Allows you to set the gradient color and levels of the window.
- **Grid:** Allows you to set grid and color and other parameters of the window.

- **Orientation:** Allows you to set module size and the number of modules loaded by the scanning board. Detailed settings are shown in the figure below.



- **Help:** Displays the keyboard shortcut for quick operations.
- **About:** Lists the LED display solutions. See details in the figure below.

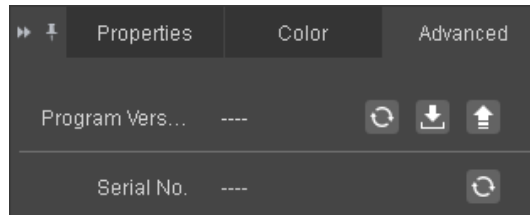


## 6.5 Receiving Card Program and Configuration Parameter Readback

This feature can save receiving card program and configuration parameters to the local PC.

Step 1 In the editing area, select the target cabinet(s).

Step 2 In the property area, select the **Advanced** tab. Click  to read back the local receiving card program and configuration parameters.

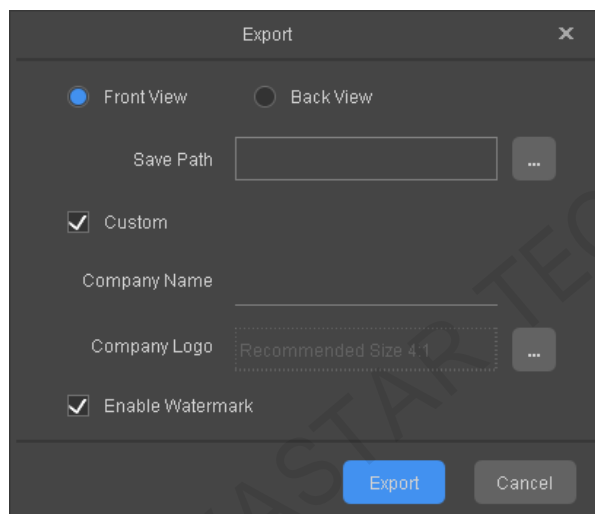


## 6.6 Exporting Screen Configuration Information as Image

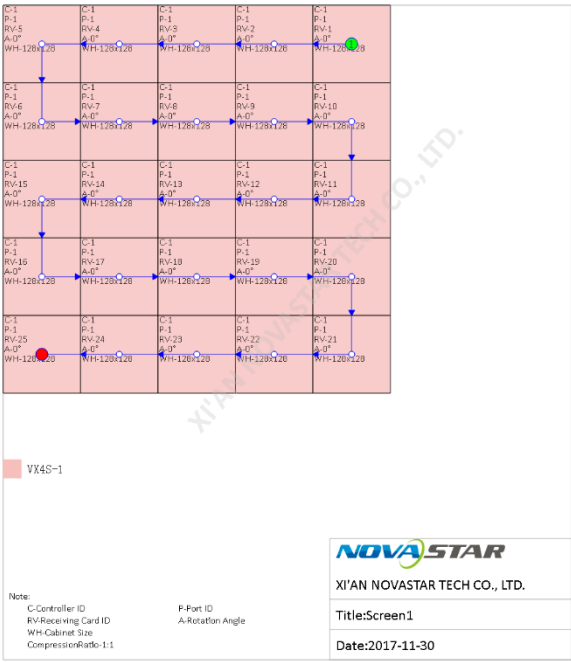
The screen configuration information can be exported as an image,

Step 1 Choose **Project > Export**. The **Export** page appears.

Step 2 Set export parameters and information.



Step 3 Click **Export** to export the image to the local PC.



Device Connection and Color Identifier Table				
Port	No.	Device Name	Color	
USB@Port_#0011.Hub_#0001	1	VX45		

Device redundancy relation table						
Port	Device Name	No.	Port1	Port2	Port3	Port4
USB@Port_#0011.Hub_#0001	VX45	1				

NOVA STAR  
XI'AN NOVASTAR TECH CO., LTD.  
Title:Device  
Date:2017-11-30