

SmartLCT

LED Display Configuration Software



User Manual

Rev: V3.1.0
Doc number: NS110000297

Change History

Release	Date	Description
V3.1.0	2017-05-25	<p>Release for the second time.</p> <p>New features:</p> <ol style="list-style-type: none">1. "Test Tool" is added in the "Tool" menu.2. A rotating bar appears after choosing MCTRL R5, adding cabinets and connecting them.3. "Batch Add" button is added in the tool bar.4. "Alignment" button is added in the tool bar.5. "Simple mode" is added in "Hot backup".6. "Restore Factory Settings" is added in the "Settings" menu of V-Sender.7. Enter the "Simple mode" of hot backup and add operation wizard.
V3.0.0	2017-01-20	First release

Table Of Contents

Change History	ii
1 Overview.....	1
1.1 System Structure	2
1.2 Configuration List.....	2
1.3 Software Installation	2
2 User Interface Introduction.....	4
2.1 Editing Page	4
2.2 Menu Bar	4
2.3 Tool Bar	6
3 Language Setting.....	7
4 Offline Operation	8
4.1 Creating Projects	8
4.1.1 Cabinet Management	8
4.1.2 View Switching.....	9
4.2 LED Display Configuration	9
4.2.1 Adding Devices.....	9
4.2.2 Canvas Properties	10
4.2.3 Cabinet Configuration	11
4.2.4 Loads of Ethernet Ports.....	15
4.3 Hot Backup	15
4.4 Sending Information.....	19
5 Online Operation	21
5.1 Creating Projects	21
5.1.1 Cabinet Management (See Cabinet Management in offline state)	22
5.1.2 View Switching (See View Switching in offline state)	22
5.2 LED Display Configuration	22
5.2.1 Device List	22
5.2.2 Cabinet Configuration (See Cabinet Configuration in Offline State)	25
5.2.3 Screen Properties (See Screen Properties in Offline State)	25
5.3 Seam Brightness Adjustment	25
5.3.1 Area Splitting	26

5.3.2 Cabinet Restoring	26
5.3.3 Selection	26
5.3.4 LED Details	27
5.3.5 Display Window Modes	28
5.3.6 Deleting	29
5.4 Restoring Seam Data	30
5.5 Hot Backup (See Hot Backup in offline state)	30
5.6 Sending Information	30
6 V-Sender	32
6.1 How to Access V-Sender?	32
6.2 Menu Bar/Tool Bar	32
6.3 Adding Devices	33
6.4 Device Information	33
6.5 Device Attributes	35
6.5.1 Attributes	35
6.5.2 Input Signal Settings	36
6.5.3 Output Signal Settings	37
6.5.4 Display Color Settings	37
6.5.5 System Settings	38
6.5.6 Audio Settings	38
7 Features	40
7.1 Screen Settings Like Building Blocks	40
7.2 Full 360° Rotation	40
7.3 Receiving Card Debugging	43
7.4 PIP	44
7.5 Self-Test	46
7.6 Display Control	46
7.7 Montage	47
7.8 Template Settings	48
7.9 Image Exporting	48

1 Overview

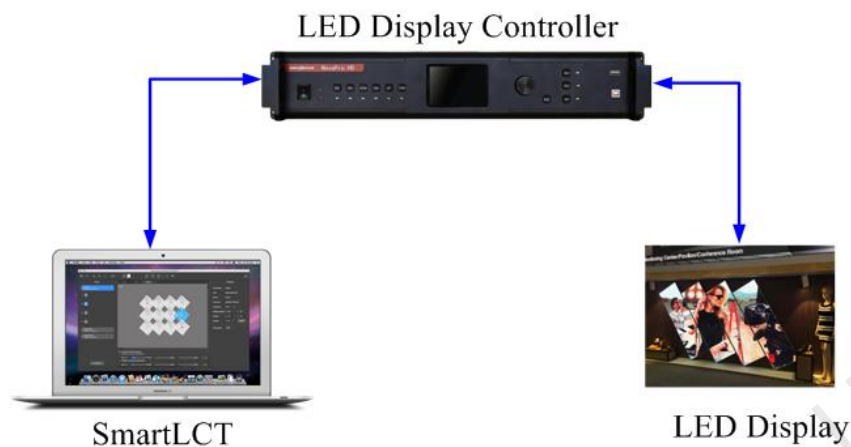
SmartLCT is a new generation of LED display configuration software from NovaStar, working with LED display controllers for smart configuration of various complex LED displays including building-block configuration, offline (online) design, seam brightness adjustment, cabinet rotation, etc., to provide an easy access for users to operate LED displays and always present you a perfect display.

Features:

- Building-block screen configuration: In offline or online operation mode, add cabinets, set the position and connection type of the cabinets, etc. Screen configuration can be done very, which is easy to operate and flexible to configure.
- Seam brightness adjustment: Effectively solved the issue of non-uniform brightness of seams between the splicing cabinets or modules by adjusting the brightness of the LEDs at the edge of cabinets to present you a perfect display.
- Canvas exporting: Users can export the edited physical connection of cabinets and data related to devices in image format, making it easier for technicians and customers to view and use.
- Hot backup: Backup devices and Ethernet ports can replace primary devices and Ethernet ports immediately once there is something wrong with the primary devices and Ethernet ports, making sure the LED display always operates normally.
- Video controller settings: I/O source settings, PIP setting, montage setting, etc.

Operating systems: OS X, Windows 7 or above.

1.1 System Structure



1.2 Configuration List

Name	Version/Model	Function	Notes
SmartLCT	V3.1.0	Operating Platform	Standard
Supported Types of LED Display Controllers	3D HD, NovaPro HD K4/K4S VX2/VX4/VX4SVX2U/VX4U/K2U/K4U V700/V800/V900 MCTRL300/MCTRL500/MCTRLR5/ MCTRL600/MCTRL660/MCTRL4K	LED display controllers and video processing units	Optional
Supported Types of 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 SmartLCT3.1 by following the setup wizard.




In case of antivirus or firewall popups during installation, please permit them because serial driver may need to be installed during program installation.

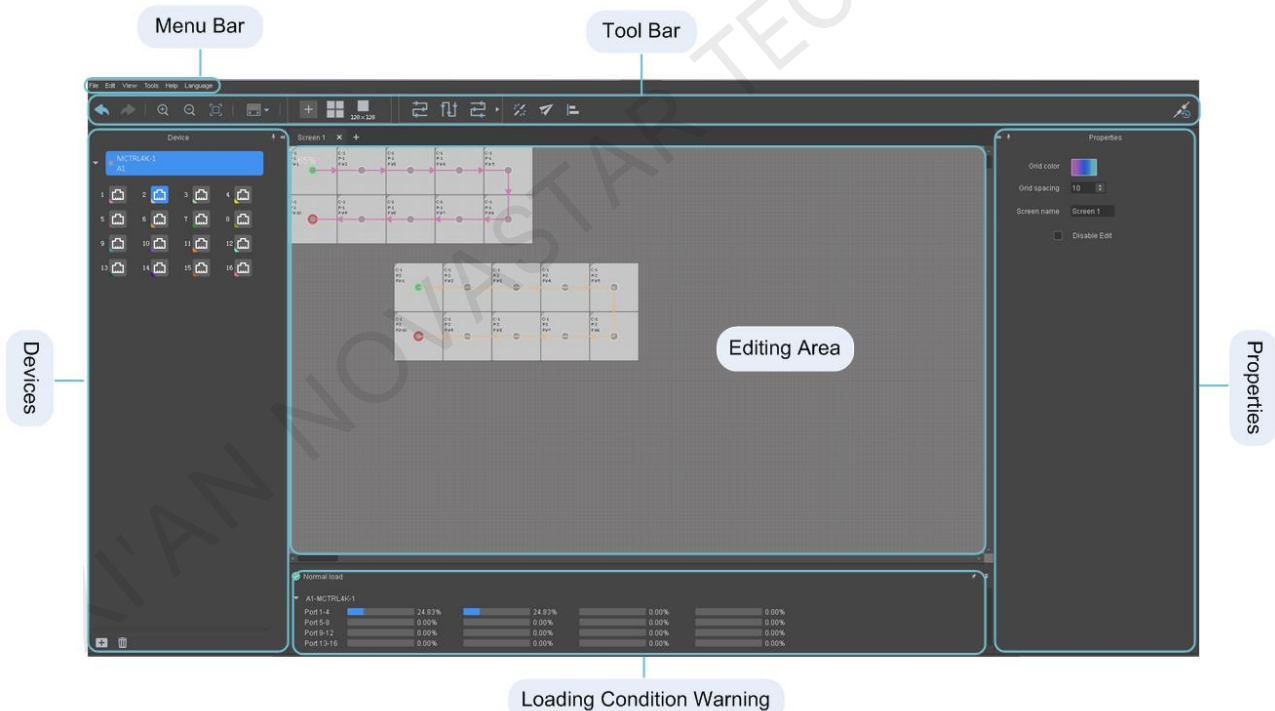


The installation program will update the serial driver on customers' computer to the version of the driver in the installation package automatically if there is no serial driver or its version is too low.

2 User Interface Introduction

2.1 Editing Page













After SmartLCT is installed successfully, click the  icon to enter the start page. Create a new online or offline project, or open an existing project to enter the page of LED display configuration.



2.2 Menu Bar

Only some of the options in the menu bar are listed in the table below

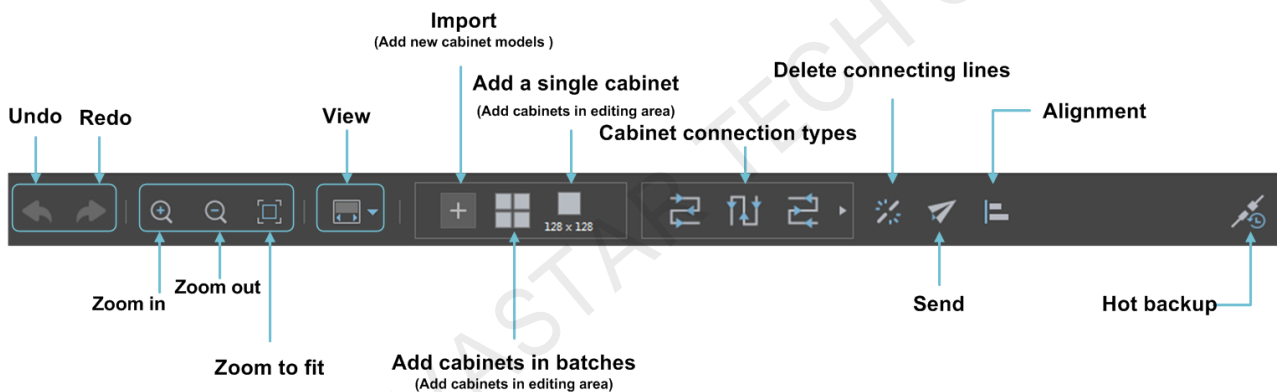
Menu Bar	Corresponding Icon	Function
----------	--------------------	----------

Edit	Undo (Ctrl+Z)		Reverse last action
	Redo (Ctrl+Y)		Do last action again
	Group	/	All the grouped cabinets will be edited or moved together.
	Ungroup	/	Recover the grouped cabinets to single cabinets.
View	Zoom in		/
	Zoom out		/
	1:1	/	Display the cabinets with a scale of 1:1.
	Zoom to fit		Adjust the cabinets in the editing area to the preset size and start position.
	Online status	/	Select this option to show the status of the receiving cards connected to the Ethernet ports of the device. (Green denotes online while gray offline.)
	Cabinet info	/	Including "Sending card info", "Port No." and "Receiving card info". The information of the options you selected will be shown on the cabinets.
	Auto connect	/	Select this option and the added cabinets will be connected automatically.
	Show grid	/	Select this option and the grid will be visible in the background of the editing area.
	Snap	/	Including "Snap to grid" and "Snap to cabinet edge". Select it, and when you moving a cabinet, the cabinet will snap to the border of its nearest grid or cabinet edge automatically.
	View		Including "Front view" and "Back view" Allowing users to view cabinet connection in front and back of a LED display.
Operation (Online)	Reconnect device		Reconnect all the devices. Screen data in the hardware can be updated to the editing area. The data in the editing area can be saved to file.
	Refresh device		Refresh device status information
	Send		Send screen configuration information to corresponding controllers.
	Save to hardware		Save screen configuration information to hardware so as to avoid information loss.
	Hot backup		Back up devices and Ethernet ports.
	Fast adjust seam data	/	Including "Seam brightness adjustment" and "Restore seam data". "Seam brightness adjustment": Adjust the brightness of seams between cabinets to maximally eliminate the non-uniformity of seam brightness and make images more uniform.
	Test patterns		Choose different screen test patterns.

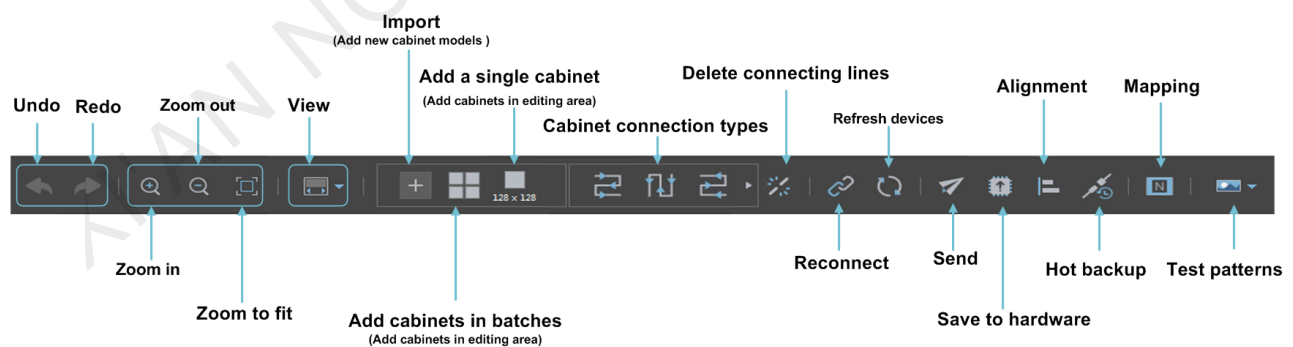
Tools	Calculator	/	Open the calculator of Windows.
	User's Manual	/	Get User Manual of this software.
Help	About	/	Check the information regarding this software.
	/	/	Switch UI language between English and Chinese.
Language	Delete lines	/	Delete the connecting lines between cabinets.
	Alignment		Select cabinets in the editing area and arrange the cabinets.
	Mapping		Click "Mapping", and cabinet sequence number and Ethernet port information are shown in the target cabinet of the LED display.
	Undo (Ctrl+Z)		Reverse last action

2.3 Tool Bar

Description of the toolbar in the editing page while in offline state is shown as below:



Description of the toolbar in the editing page while in online state is shown as below:



3 Language Setting

SmartLCT supports two languages: English and Chinese.

- Click **Language** in the “Function” area of the start page and an option box appears, then select the language you want.

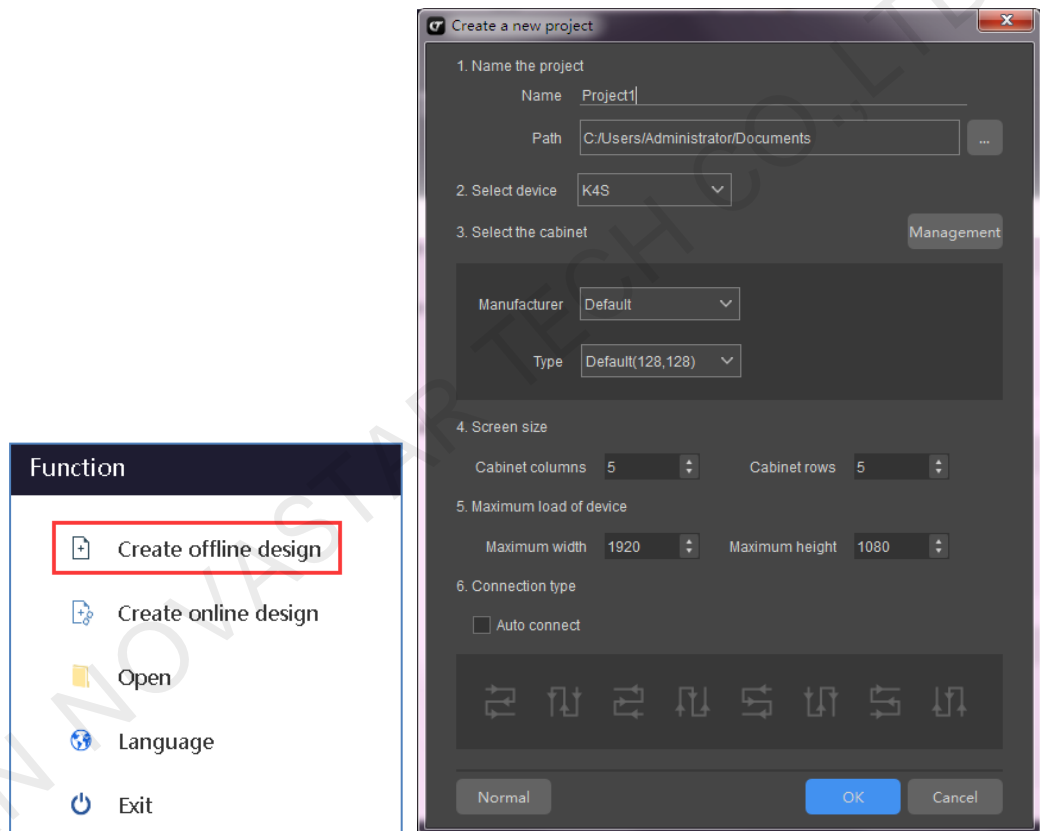


- Enter the page of LED display configuration. Click **Language** on the menu bar and a dropdown menu appears, then select the language you want.

4 Offline Operation

4.1 Creating Projects

Run the software. Click **Create offline design** in the “Function” page to enter the “Create a new project” page.

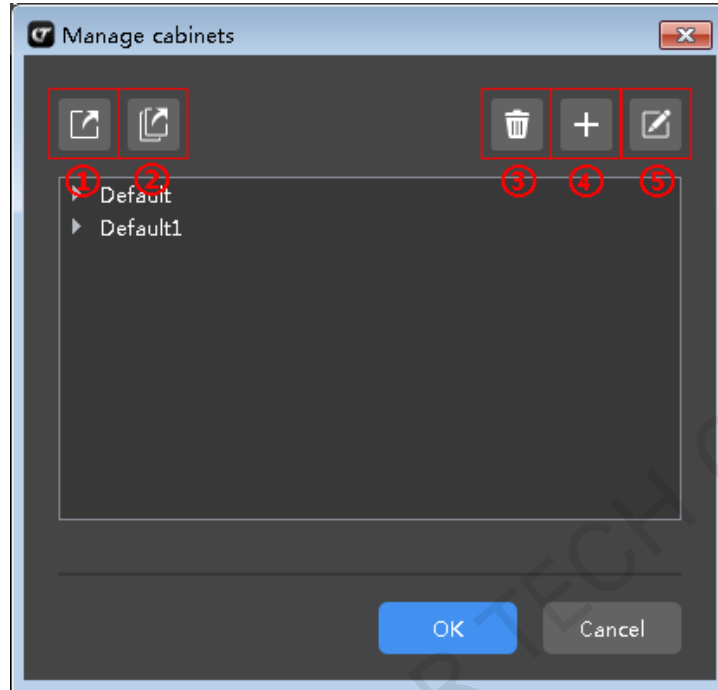


- Customize the project name and select the save path of the project.
- Select the device: Select the matched controller. Here we take MCTRL4K as an example.
- Select the cabinet: Select LED display cabinet manufacturer and type.
- Screen size: Set the number of columns and rows of cabinets.
- Maximum load of device: The maximum width and height can be loaded by the device. Maximum loading capacity: The maximum width and height loaded by the device.
- Connection type: Choose the way to connect the cabinets.

4.1.1 Cabinet Management

- ① Select &Export: Export the information of selected cabinets to file

- ② Export all: Export all the cabinet information to file
- ③ Delete: Delete selected cabinets.
- ④ Add: Add new cabinets.
- ⑤ Edit: Edit selected cabinets.



4.1.2 View Switching


- The “Create a new project” page includes two views: “Normal” and “Smart” .
- It only needs to name the project, choose the save path and select the cabinet in the “Normal” view. For “Smart mode” , please refer to *4.1 Creating Projects*.

4.2 LED Display Configuration

The page of LED display configuration appears after a new project is created.

4.2.1 Adding Devices

- Add device**

Click the  icon in the bottom left corner of the device area to select device model and add new devices.

- Click the device models in “Optional devices” and double click “Number” to enter the number of devices to be cascaded.
- After devices are selected, click the “Add” button to add the selected

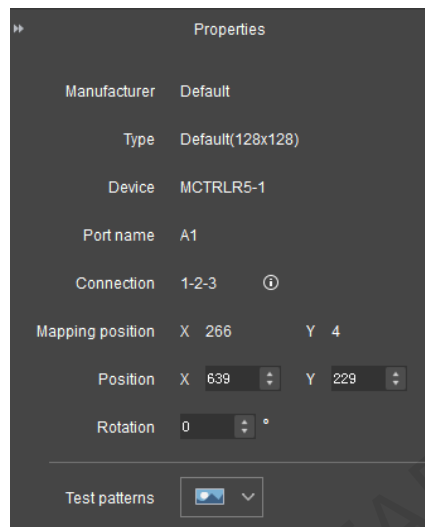
devices to "Selected devices" . Click "OK" to complete the operation.

- **Canvas properties**

Click the blank area of the editing area and the property area on the right is canvas properties.

- **Cabinet properties**

Select the added devices and the property area on the right is cabinet properties. Here we take MCTRL R5 as an example.



- "Properties" include "Manufacturer" , "Type" , "Device" , "Port name" , "Connection" , "Mapping position" , "Position" and "Test patterns" .
- "Connection" : 1-2-3 denotes sending card No.1, port No. 2, receiving card No. 3.
- "Mapping position " : The position of the added cabinet on the screen.
- "Position" : The position of the selected cabinet on the screen.
- "Test patterns" : Choose a test pattern to test display effect.

If devices with rotation capability are connected, for example, MCTRLR5:

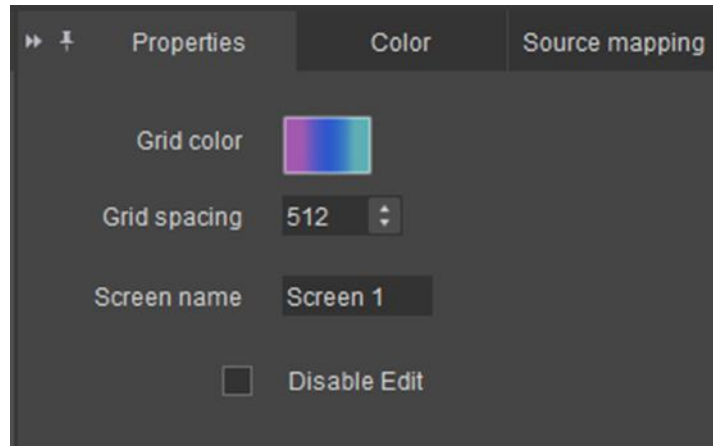
Select a single cabinet and set the center and angle of rotation to enable free rotation of screens.

4.2.2 Canvas Properties

Click the blank of the editing area, **canvas properties** are shown in the right side pf the page. Canvas properties include: "Grid color", "Grid spacing", "Screen name" and "Disable Edit".

- Grid color: Color of the grid on the canvas.
- Grid spacing: Grid spacing is 10 pixels (range: 1-512).
- Screen name: Name current screen.

- **Disable Edit:** After “Disable Edit” is selected, the cabinets in the screen cannot be connected and other edits are prohibited.

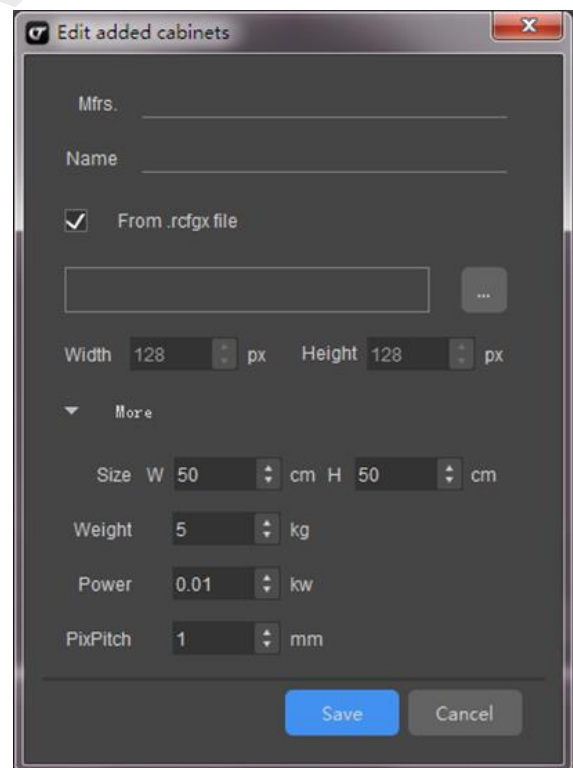
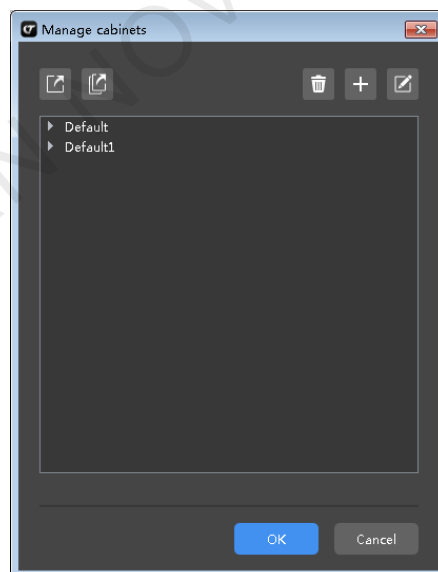


4.2.3 Cabinet Configuration



- **Import cabinets**

As shown in the figure below, click the **Import** button  in the tool bar to enter the “Manage cabinets” page.

Edit cabinet information in the “Edit added cabinet”. Click “More” to edit more cabinet information including “Size”, “Weight”, “Power”, “Pixel Pitch”, then click “Save” and a new cabinet is created.



- **Edit Cabinets**

Click **Add** button  on the tool bar to enter the page of Manage cabinets. Select the cabinet to be edited and click **Edit** button  to enter the page of Edit added cabinet where cabinet information can be edited. Click **Save** after finishing editing, as shown in the figure above.

- **Add Cabinets**

Step1 Select a device and Ethernet ports in the “Device” area.

Step2 Click an added cabinet in the tool bar (allowing to add cabinets in batches) and move the mouse to the editing area. Click and drag the mouse in the blank area to add multiple cabinets. Click (do not drag) the mouse repeatedly in the editing area to add multiple cabinets. Only one cabinet can be added at a time.

Step3 After the cabinets are added, right click the mouse to stop adding.

- **Cabinet Connection**

Choose a cabinet connection type on the tool bar. There are two ways to connect cabinets.

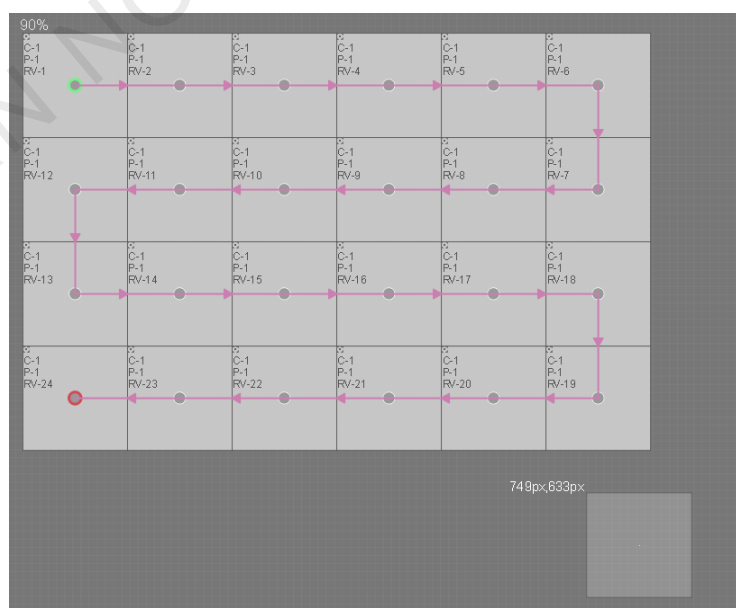
I. Auto

Step1 Click “View”>“Auto connect” in the menu bar.

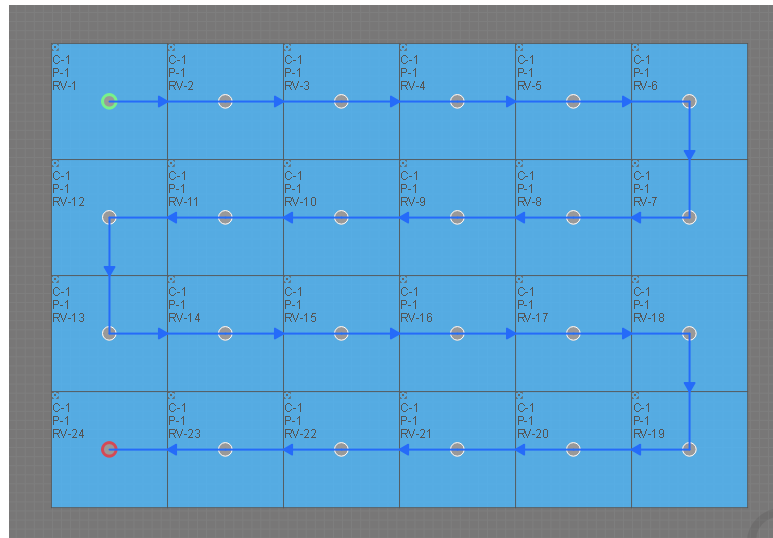
Step2 Select cabinets in the editing area. Then connecting lines between the cabinets appear automatically (or hold and drag the mouse on the editing area to add more cabinets continually and connecting lines between the cabinets appear automatically) Right click on your mouse to stop adding cabinets.

Note:

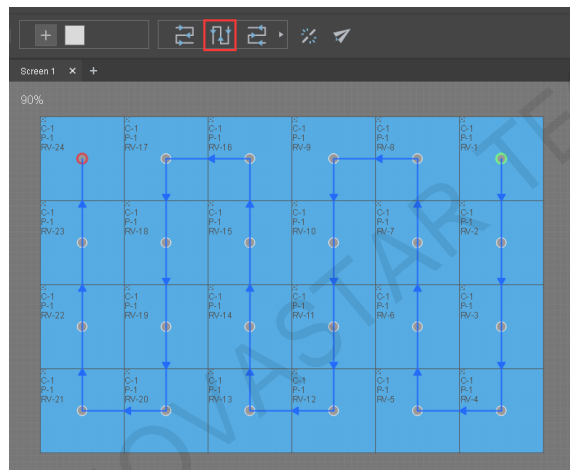
The first connection type in the tool bar is applied to connect cabinets by default in “Auto connection” mode.



Add cabinets



Select cabinets



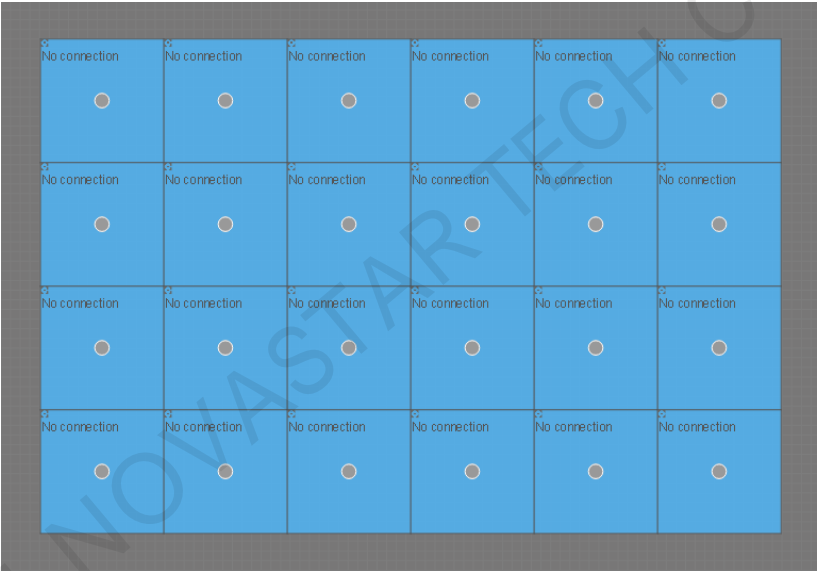
Select new connection type

II. Manual

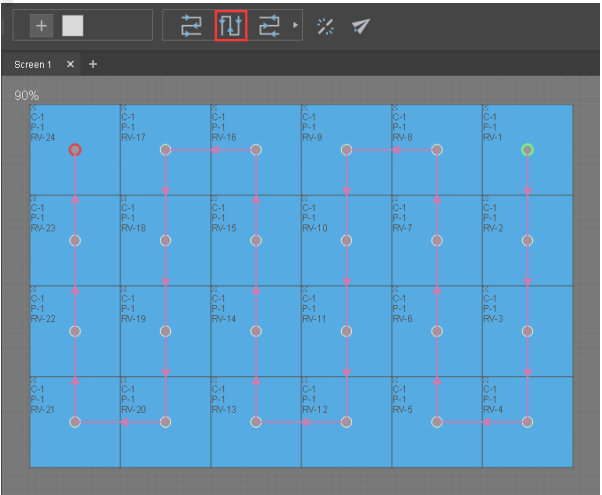
- Step1** Click "View" > "Auto connect" in the menu bar and deselect "Auto connect" in the dropdown menu.
- Step2** Add cabinets in the editing area. No connecting lines appear between cabinets.
- Step3** Select the added cabinets and choose a connection type in the tool bar.



Add cabinets



Select cabinets




Select new connection type

Group Cabinets

- Add cabinets to the editing area. Select multiple cabinets and click “Edit” > “Group” to combine the selected cabinets into a group. Set the “Group Name” of the group in the “Properties” area on the right.
- Add one or more cabinets, right click, select “Add to group” and choose a group name to add the selected cabinets to an existing group.

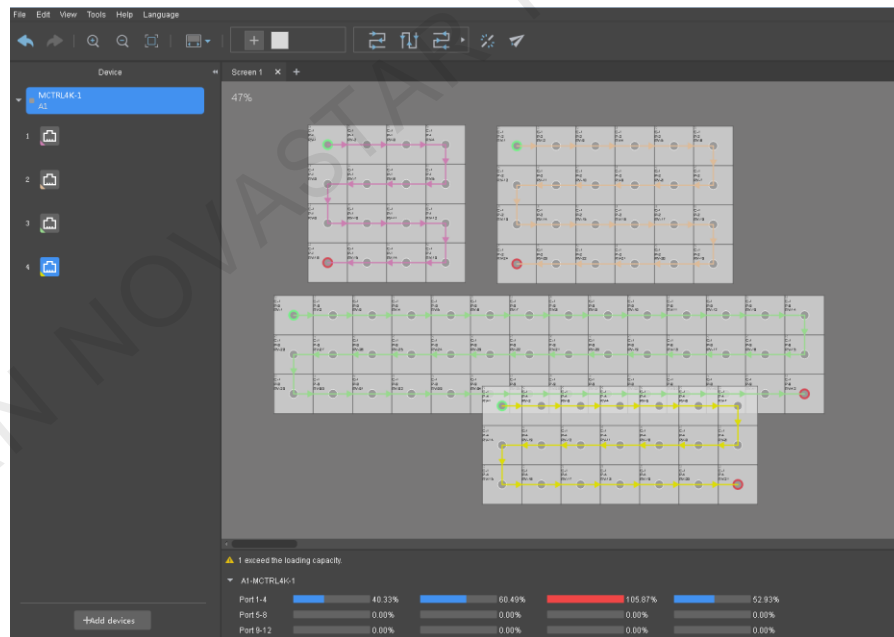
Delete Lines

Select the cabinets between which the lines will be deleted, and click on **Delete lines** button  to disconnect the cabinets.




4.2.4 Loads of Ethernet Ports

“Load condition warning area” clearly shows the loading capacity of Ethernet ports: Blue denotes that the load is normal. The length of the blur bars denotes the usage of the Ethernet port capacity. Red denotes the load is exceeded.

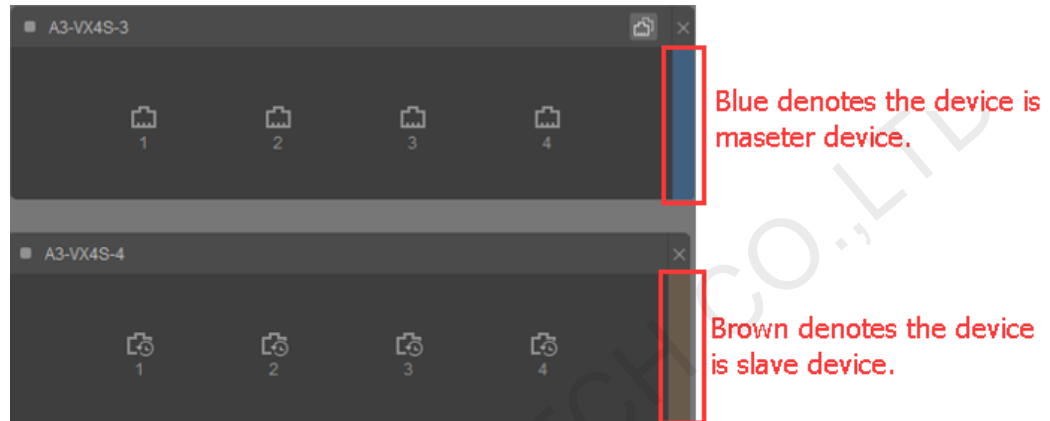


4.3 Hot Backup

- Click on the “Hot backup” button  in the right side of the toolbar to enter the “Hot backup” page. It defaults to “Simple Mode”.

- Add a device to the editing area. When the device is in initial state, click the bar in the right side of the device and set it as master device or slave device. Blue stands for master device and brown slave device.
- If a device is set as slave device while in initial state, device backup and port backup are not available. If devices or ports are backed up, current device cannot be set as slave backup device separately.

Note: Devices supporting single master/slave backup include VX2, VX2U, VX4, VX4S, VX4U, V700, V800, V900, NovaPro HD, MCTRLR5, MCTRL4K, K4U, K4S, K4, K2U, 3D HD.



Simple Mode

Backup between devices and backup between Ethernet ports of one device are available in "Simple mode". (For detailed operations, please refer to the wizard page.)

I. Backup between devices

Step1 Click an added device and move the mouse to the editing area. Click on the blank area and the device is added to the editing area. Similarly, multiple devices can be added to the editing area. (Each device can be added only once.)

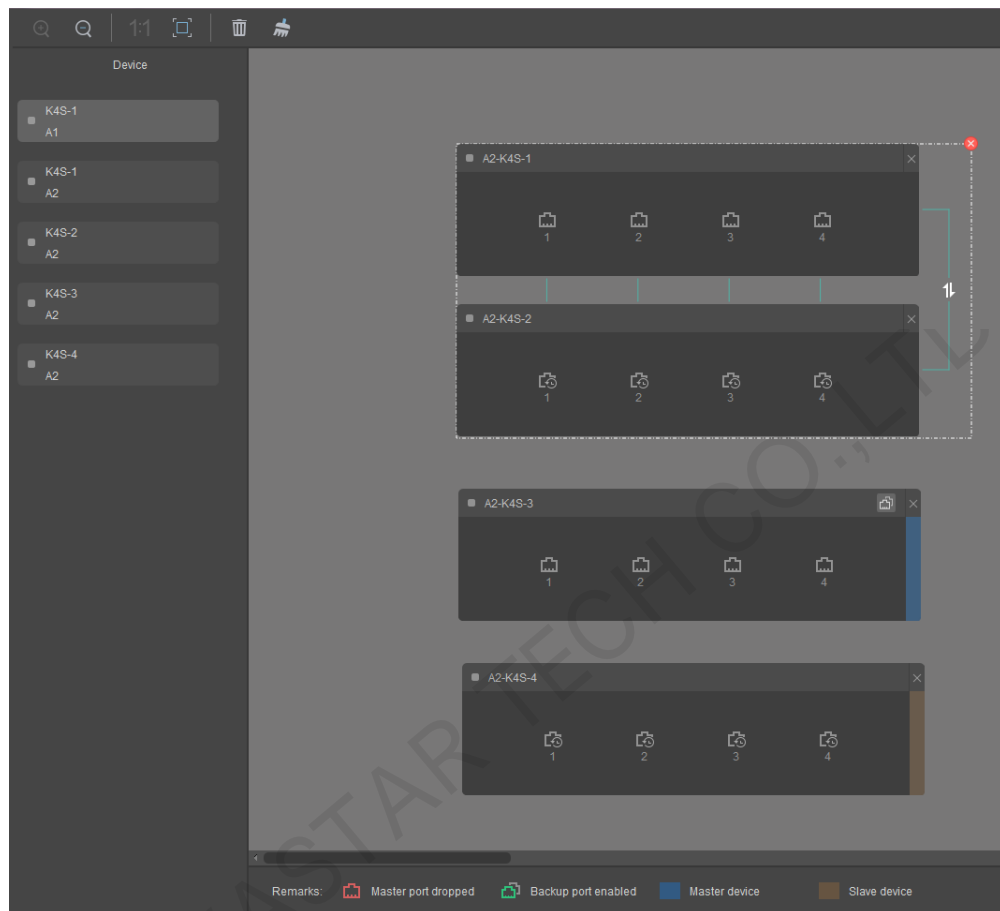
Step2 Method I. Click the triangle icon in the right side of the first device to generate a connecting line and then click the target device to complete device backup.

Method II. Drag one device onto the other device, and device backup is done after these two devices touch one another.

- After the two devices are backed up, a toggle icon appears in the connecting line. Click the icon to toggle between master and slave device.
- Click the delete button in the top right corner of the device to delete the device.
- Click the delete button in the top right corner of the dashed box of the backup device to cancel the backup between the two devices.

Note:

1. Hot backup is only available for the devices with same communication ports.
2. After the backup is done, the Ethernet ports of the two devices will be backed up correspondingly.



Ethernet port status:

Icon	Description	Icon	Description
	Master port dropped		Master port online
	Backup port enabled		No backup
	Backup port not enabled		Backup port enabled
	Slave device		Master device

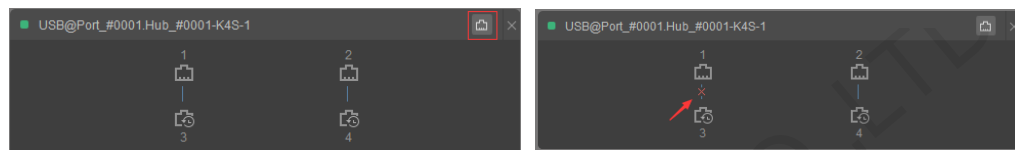
II Backup between the Ethernet ports of one device

- Step1 Click an added device, move the mouse onto the editing area, click on the blank, area and the device is added to the editing area.

Similarly, multiple devices can be added to the editing area. (Each device can be added only once.)

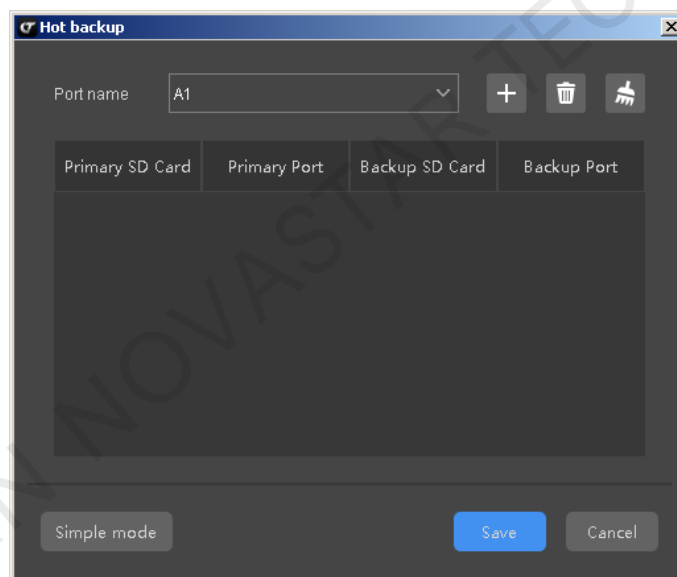
Step2 Click the backup button in the top right corner of the device to back up the Ethernet ports in one device. The Ethernet ports are backed up correspondingly and cannot be crossed. Then the backup between the Ethernet ports in the device is done.

- When the Ethernet ports are backed up, click the cancel backup button to cancel the backup between Ethernet ports.




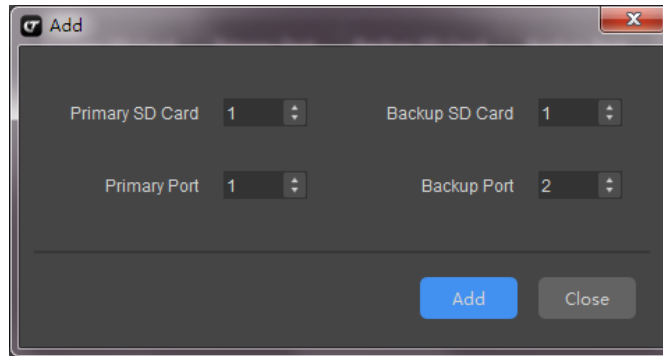
Advanced Mode

In “Simple mode”, click the “Advanced mode” button to switch to advanced hot backup mode, as shown in the figure below.



Step1 Select “Port name” . Two or more devices are required to be added to a communication port. (Only same communication ports can be backed up for one another.)

Step2 Click the Add button  to enter the “Add” page. Select the sequence number of the primary sending card, backup sending card, primary Ethernet port and backup Ethernet port, etc.

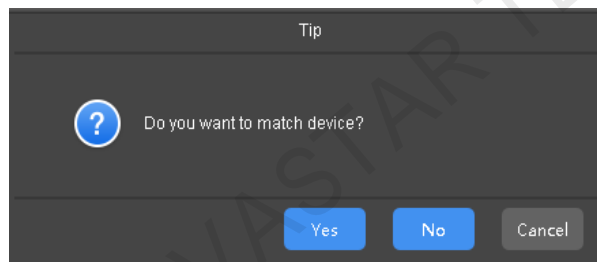


Step3 Click the “Add” button in the bottom of the page to add the devices.

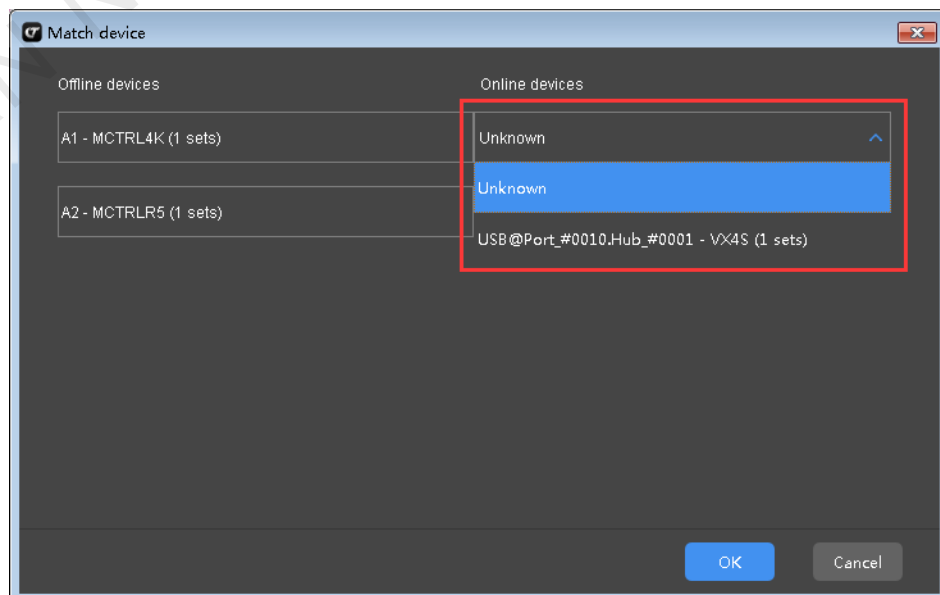
If the sequence numbers of the primary and backup sending cards are the same, it is backup between the Ethernet ports of one device. If they are different, it is backup between devices. (The backup of Ethernet ports can be crossed.)

4.4 Sending Information

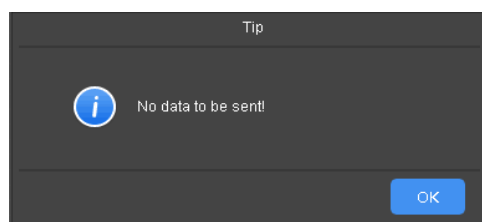
Click  on the tool bar and it will prompt you “Do you want to match device?”



Choose “Yes” and select matched online device on “Online devices” to reconnect the device.



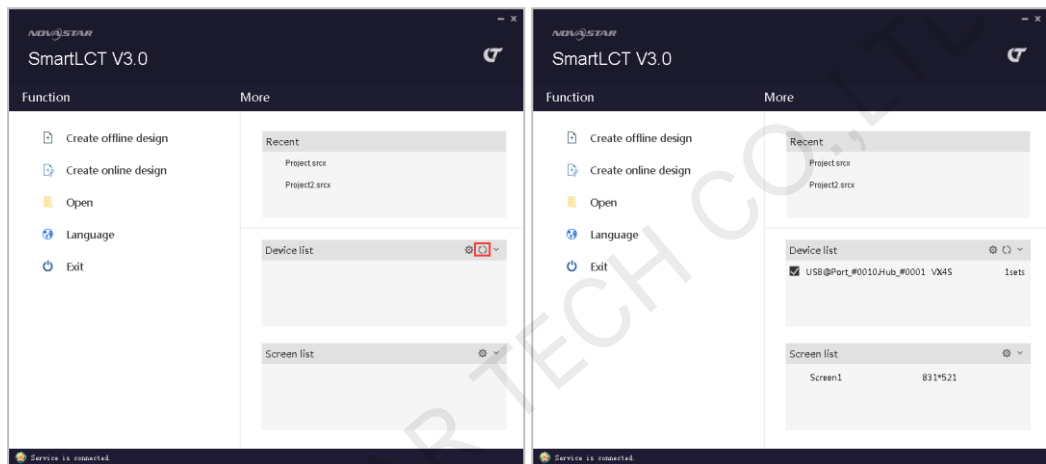
Choose “No” and do not send.



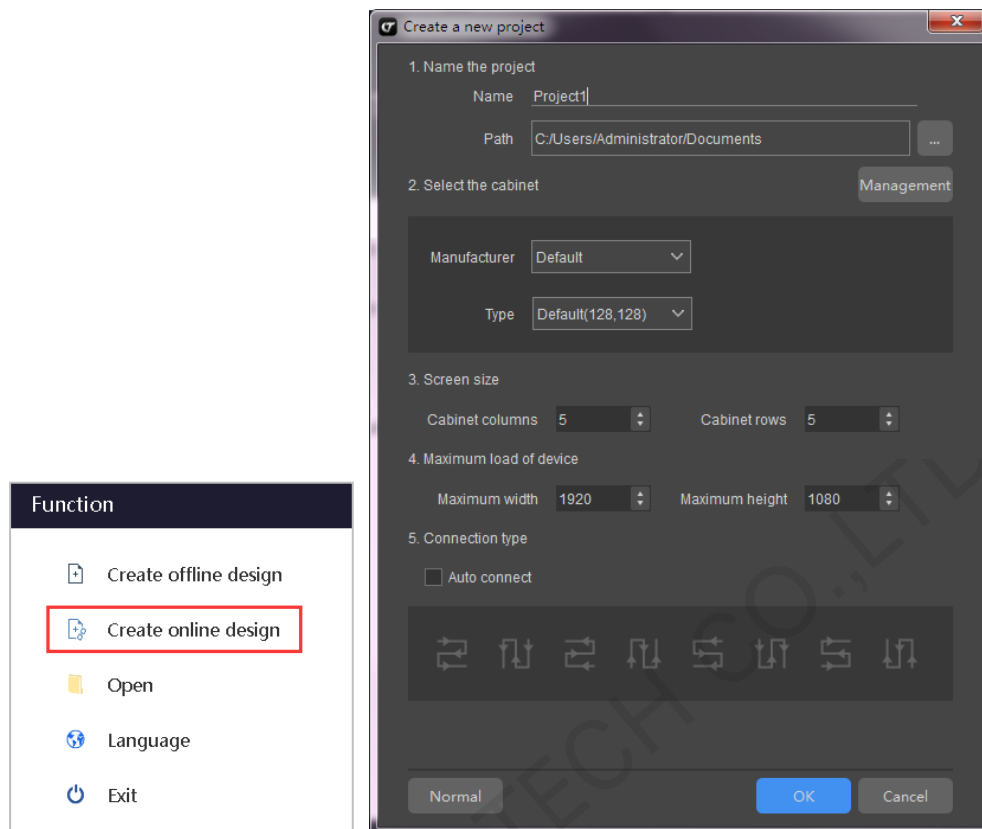
5 Online Operation

5.1 Creating Projects

Run the software and click the “refresh” button to refresh device list and screen list.



Click “Create online design” in the “Function page” to enter the “Create a new project” page.



- Customize the project name and select the save path of the project.
- Select the cabinet: Select LED display cabinet manufacturer and type.
- Screen size: Set the number of columns and rows of cabinets.
- Connection type: Choose the way to connect the cabinets.

5.1.1 Cabinet Management (See [Cabinet Management](#) in offline state)

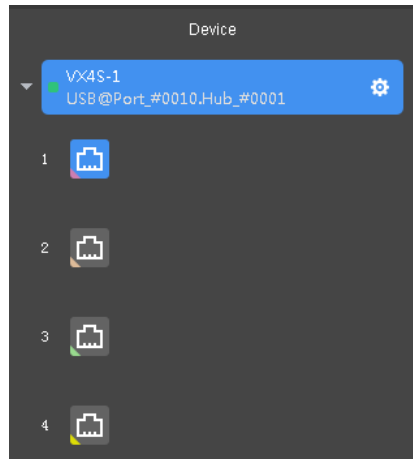
5.1.2 View Switching (See [View Switching](#) in offline state)

5.2 LED Display Configuration

Enter the page of LED display configuration after a new project is created. There is no need to add devices. Connected devices will be added to the device area automatically.

5.2.1 Device List

In the LED display configuration page, devices list and Ethernet port list are shown in the device area.



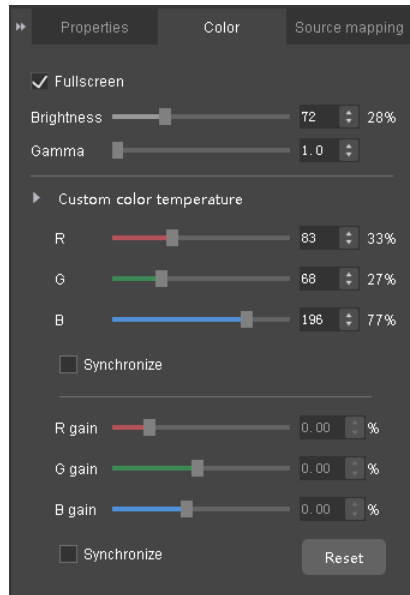
Device Properties

Select a cabinet from editing area and the properties of the cabinet are shown on property area. See details in [Device List](#) in offline state.



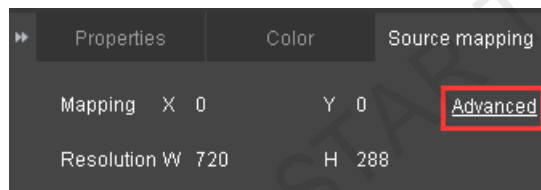
Display Color Adjustment

Move on to “Color” tab to adjust brightness and Gamma of LED display. It allows you to adjust display brightness, Gamma value and customize color temperature and RGB gain. Select “Synchronize” to adjust RGB values synchronously.

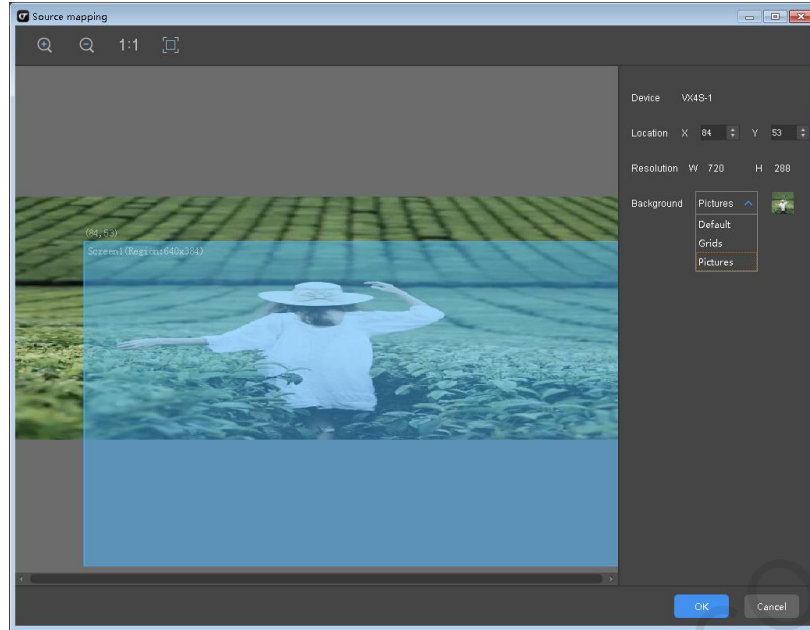


Source Mapping

Move on to “Source mapping” tab to view mapping position of current device (the position of the first added cabinet on LED display) and resolution of the video source of current device.



- Click “Advanced” to enter advanced settings page of mapping of the selected device.
- Adjust mapping position to change cabinet position on the screen.
- Click the drop-down box at the right side of “Background” and you can choose “Default”, “Grids” or “Pictures” as background. (The added background is applied on advanced settings page only, and not shown on LED display.)

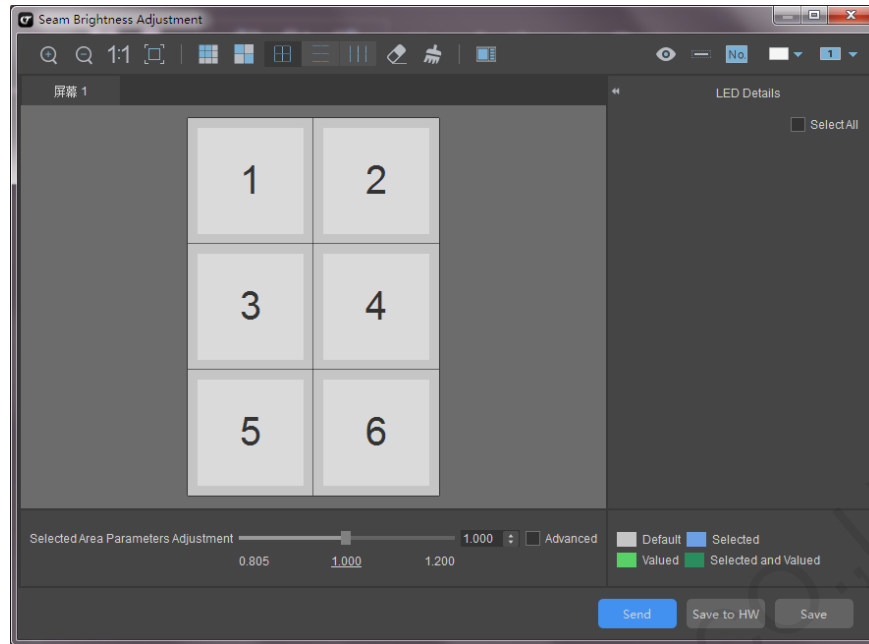


5.2.2 Cabinet Configuration (See Cabinet Configuration in Offline State)

5.2.3 Screen Properties (See Screen Properties in Offline State)

5.3 Seam Brightness Adjustment


- It is required to complete the configuration (refers to adding cabinets and connect them) on the page of LED display configuration.
- Click **Operation>Fast Adjust Seam Data>Seam Brightness Adjustment** to enter the page of Seam Brightness Adjustment.
- The number of cabinets on the page of Seam Brightness Adjustment is the same as the number on the page of LED display configuration.

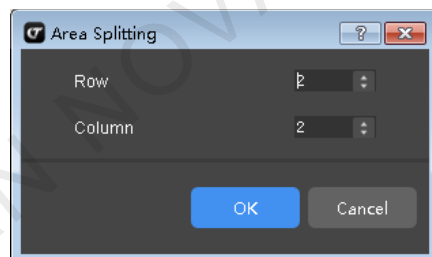


Buttons at the bottom right corner of the page include “Send”, “Save to HW” and “Save”:

- **Send:** For sending seam brightness information to sending cards.
- **Save to HW:** Save seam brightness adjustment parameters to hardware.
- **Save:** For saving current seam brightness information.

5.3.1 Area Splitting

Click the icon  on tool bar and the page of Area Splitting appears. Set the number of rows and columns after a cabinet is split, then click **OK** to see the result.





5.3.2 Cabinet Restoring


Click the icon  on tool bar to restore the spilt cabinets to original state.

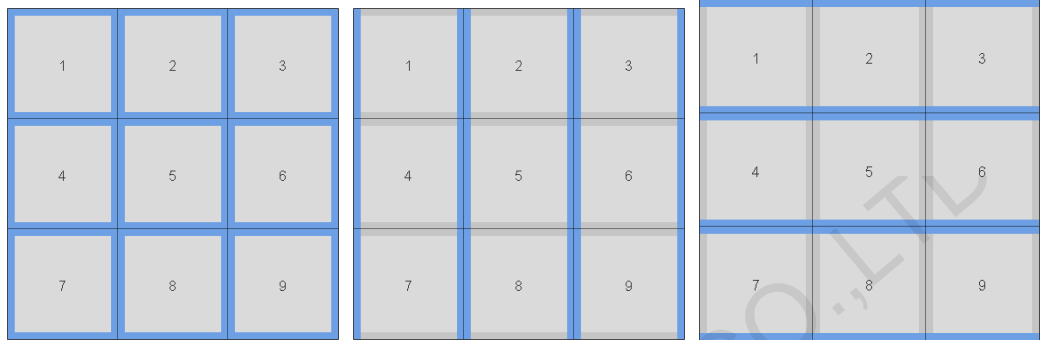
5.3.3 Selection

Selection includes “Select row and column”, “Column selection” and “Row selection”.

Click the icon  on tool bar, then click and drag your mouse to select cabinets and all the borderlines of the cabinets are selected, as shown in the figure(left) below.

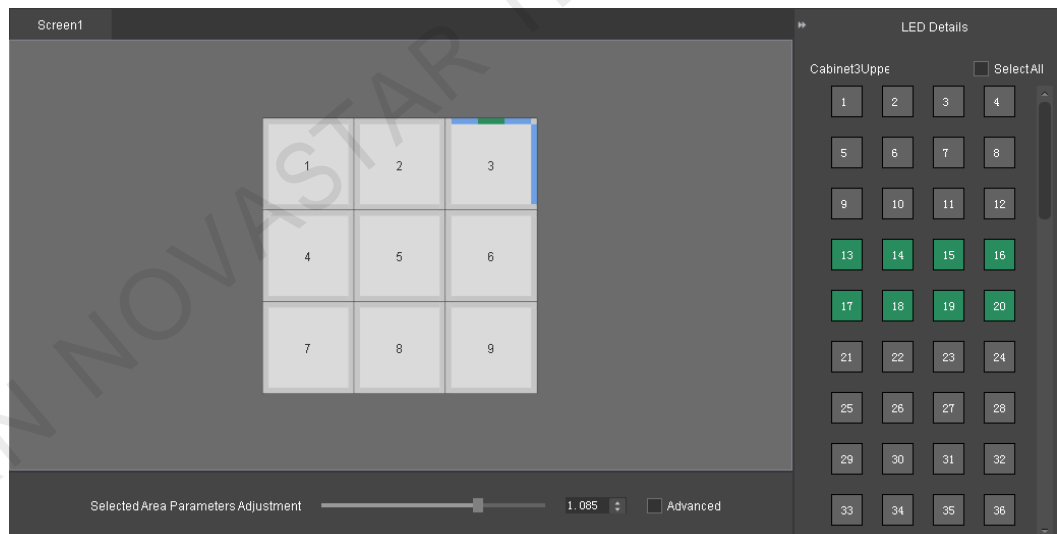
Click the icon  on tool bar, then click and drag your mouse to select cabinets and only horizontal borderlines of the cabinets are selected, as shown in the figure(middle) below.

Click the icon  on tool bar, then click and drag your mouse to select cabinets and only vertical borderlines of the cabinets are selected, as shown in the figure(right) below.



5.3.4 LED Details

Click on the borders of any cabinets and LED details will appear on the right side of the screen. Details of LEDs on the right border of Cabinet4 are shown as the figure below.





Select some of the LEDs, click and drag the slider on the right side of “Selected Area Parameters Adjustment” to adjust the parameter (defaults to 1.000). The selected area will be shown on the border of the cabinet.


Meanings of different colors:


Gray	There is no adjustable value if not selected.	Blue	There is no adjustable value if selected.
Light green	There are adjustable values if not selected.	Dark green	There are adjustable values if selected.

5.3.5 Display Window Modes


Click the button  on toolbar to switch display window mode (free switch between normal mode and expand mode).

Click the button  to show the dashed box of the LEDs in the edge of cabinets.

Click the button  to show or hide display window.

Click the button  to show or hide the selection area(editing area of the seam brightness adjustment page).

Show/Hide Display Number

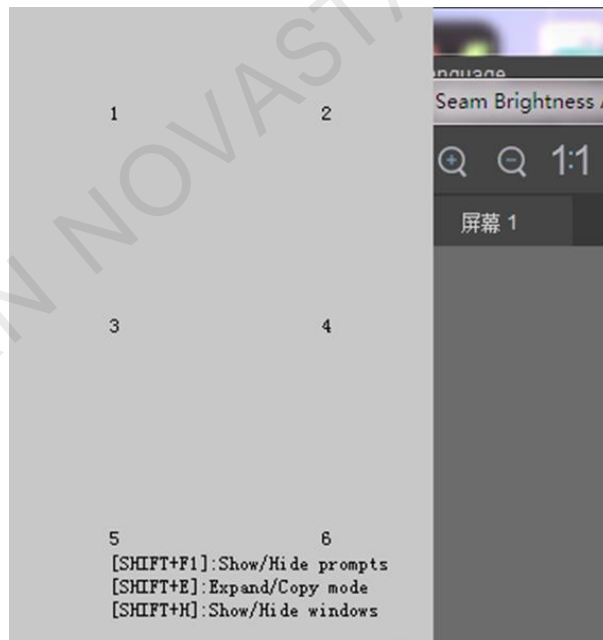
Click the button  in the tool bar to show cabinet numbers on display window. Click the button again to hide the numbers.

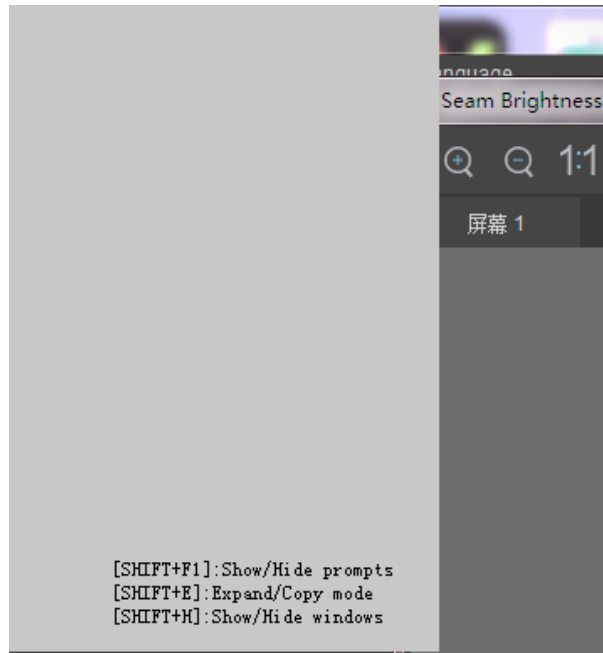
Shortcuts are shown in the bottom right corner of the display window. Details are as follows.

SHIFT+F1: Show/hide prompt


SHIFT+E: Expand mode/copy mode

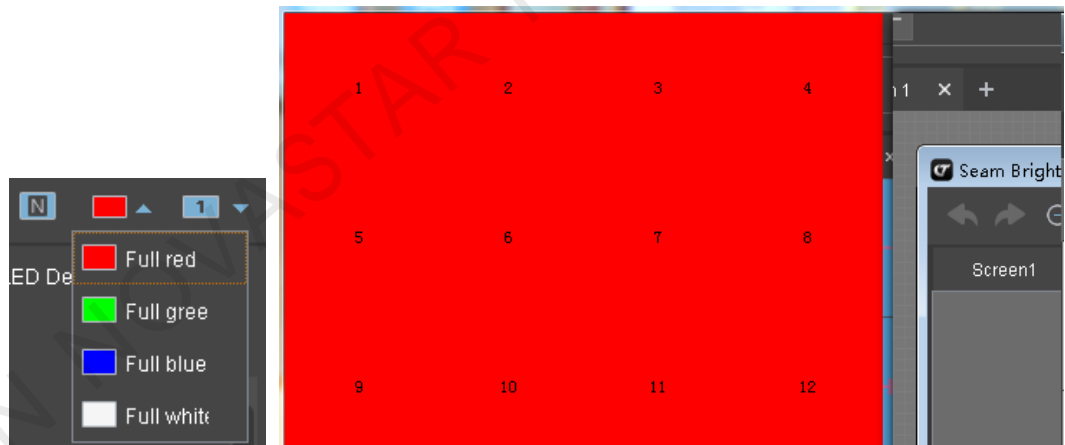
SHIFT+H: Show/hide display window






Display Window Background

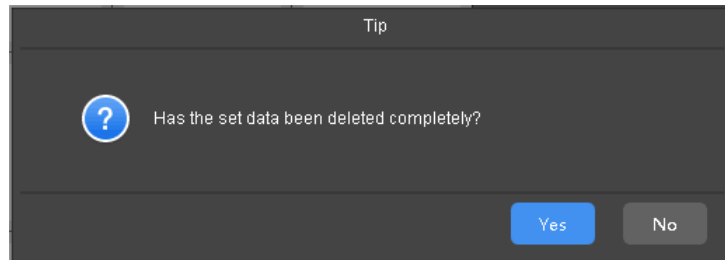
Click the button  on tool bar to choose the background color of display window.



5.3.6 Deleting

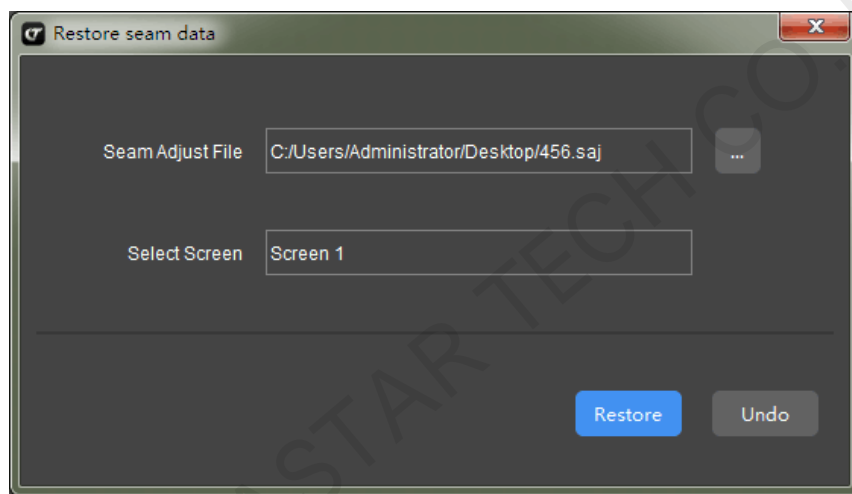
Click the button  on tool bar to deselect the borderlines of all the cabinets.


Click the button  on tool bar and a dialog box pops up to conform "Has the set data been deleted completely?" Choose **Yes** to restore the interface to original state.



5.4 Restoring Seam Data


After completing the configuration (refers to adding cabinets and connect them) on the page of LED display configuration. Click **Operation>Fast Adjust Seam Data>Restore Seam Data** to enter the page of "Restore Seam Data", as shown in the figure below.



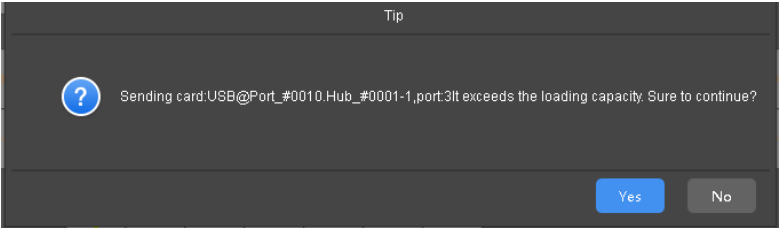
Click on the icon  at the right side of "Seam Adjust File" to view and choose a path to save the file. After the file is loaded successfully, click **Restore** to restore the seam data which is adjusted before. Click **Undo** to cancel the operation to restore seam data.

5.5 Hot Backup (See [Hot Backup](#) in offline state)

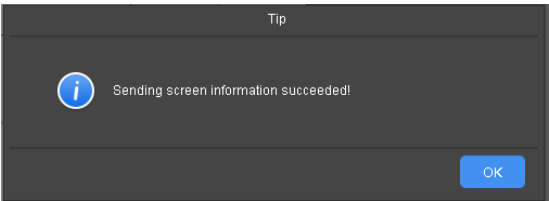
5.6 Sending Information

Click the button  on tool bar to send LED display configuration information to corresponding device.

If the loading capacity of Ethernet ports is exceeded, it will conform "It exceeds the loading capacity. Sure to continue?"



If the Ethernet ports can load normally, the information will be sent successfully.



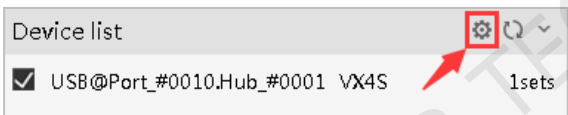
6 V-Sender

Devices supported by V-Sender include MCTRL300 (MSD300), MCTRL660, VX4S, Pro HD, 3D HD, MCTRL4K.

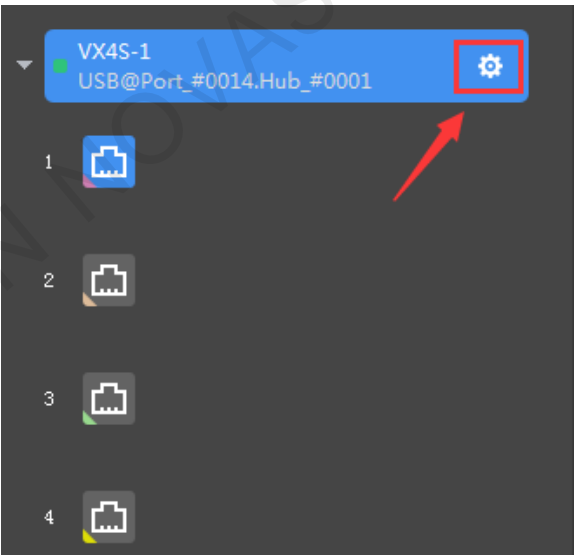
When different devices are added, user interface of V-Sender will change according to different functions of the devices.

6.1 How to Access V-Sender?

I Click the button as show in the figure below behind “Device list” on the stare page of SmartLCT to access V-Sender.






II As shown in the figure below, click the button on the page of LED display configuration to enter V-Sender.



6.2 Menu Bar/Tool Bar

Menu Bar/Tool Bar	Icon	Function
-------------------	------	----------

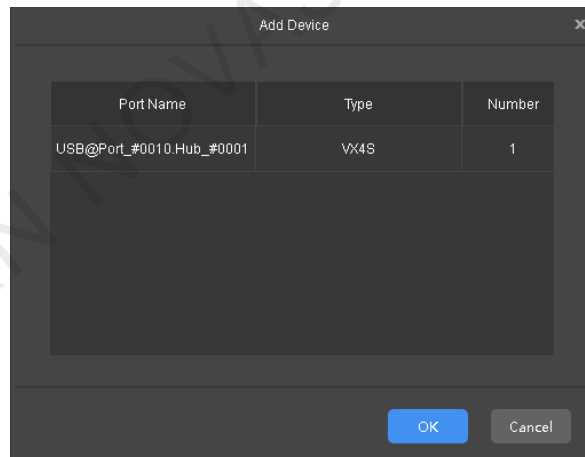
Device	Reconnect Device		Connect the device again.
	Refresh		Refresh device data.
	Add Device	/	Add new devices.
Settings	Upgrade Firmware	/	Upgrade the hardware program of devices.
	Self-Test	/	Set screen test patterns.
	Factory Reset		/
language	/	/	Switch UI language between Chinese and English (If the UI language of SmartLCT is changed, the language of V-Sender will be also switched at the same time)

6.3 Adding Devices

I Click **Device>Add Devices** on the menu bar.

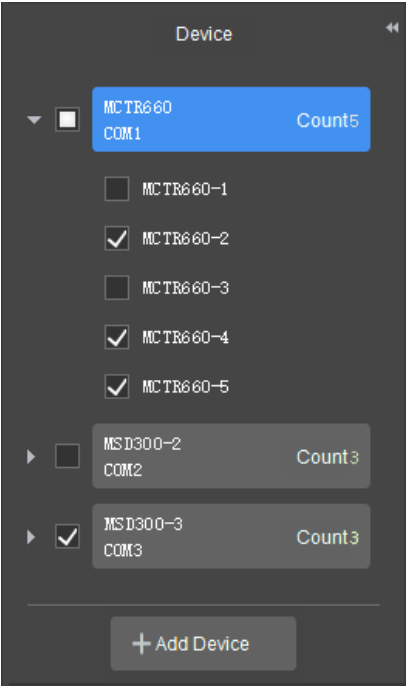
II Click on  in the bottom of the device list.

Click **Add Device** and the “Add Device” page appears, select the device you want to add and click **OK**, then the new device is added to the page.



6.4 Device Information

1. Enter V-Sender and allow you to view device model, Ethernet port and the number of cascaded devices in device list.



2. After the device is added successfully, the picture and function introduction of the device will be displayed on the Overview page of editing area, as shown in the figure below (K4S is taken as an example).



3. Ethernet port status: “backed up ¬ connected” , “backed up& connected” , “not backed up & not connected” , “not backed up& connected” , “Backup takes effect.”



denotes that the port is primary port and connected to receiving cards.



denotes that the port is primary port and not connected to receiving cards.



denotes that the port is backup port and connected to receiving cards.



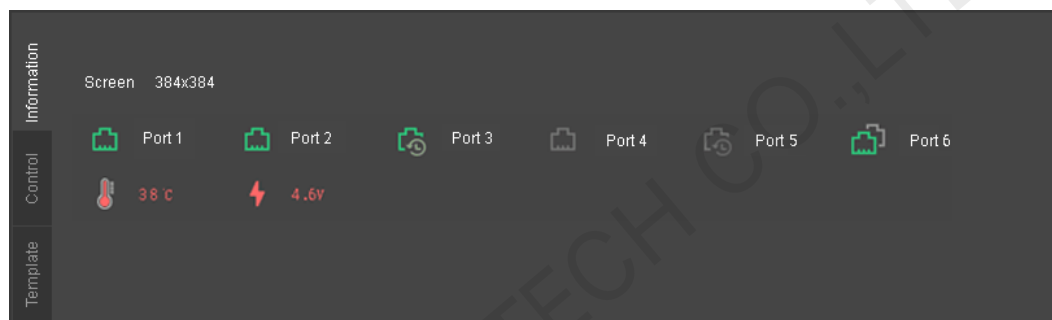
denotes that the port is backup port and not connected to receiving cards.



denotes that the backup port is being used for signal output now. (It indicates that cable of this output channel is disconnected.)

Note:

The items of device information displayed are different while adding different devices, for example, if a Novar HD unit is added, the information includes “Temperature” and “Voltage”. The figure below shows the device information of NovaPro HD.



6.5 Device Attributes

6.5.1 Attributes

You can see the attributes of the device on the right side of the page (here taking VX4S for example). It allows you to view device name, port name, ID and firmware version.

Attribute Input Color Output System Audio

Name VX4S

Port Name USB@Port_#0010.Hub_#0001

ID 1

Protocol Version 1.600

MCU Version 1.6.0.0

Remarks 2017.1.9 VX4S V1.6.0.0 SmartLCT Debug V1.11

FPGA Version 1.6.0.0

Remarks 2017.1.9 VX4S V1.6.0.0 SmartLCT Debug V1.11

FPGA1 Version 1.3.2.0

Remarks 2016.9.19 VX4S V1.3.2.0

Font Version 0.0.5.1

Remarks 2017.01.04 VX LanguageFont V1.5.0.0

6.5.2 Input Signal Settings

Move on to “Input” tab and users can set input “Source Type” and “Data Bits”.

- Source types: DVI, DP and HDMI.
- Input source data bits are based on source types. Data bits of different source types are different. Data bits of source types including DVI, DP and HDMI are 8.
- You can use the preset values as “Resolution” and “Refresh Rate” in EDID or customize, as shown in the figure below.

Attribute Input Color Output System Audio

Source Type DVI

Data Bits 8

EDID

☒ Preset ☐ Customize

Resolution 1920*1080

Refresh Rate 60

Apply

EDID

☐ Preset ☒ Customize

Resolution W 1920 H 1080

Refresh Rate 60

Apply

6.5.3 Output Signal Settings

Montage

When the number of pixels of the LED display exceeds the loading capacity, montage needs to be enabled. The total pixels of all cascaded devices should be the same as the pixels of the LED display.

Montage: “Equal Division” and “Non-Equal Division”. See detailed introduction in the chapter [Montage](#).

Note:

When a device is used for montage, “Disable Zoom” and “Custom Zoom” are unavailable and only “Auto Fit to Screen” is available.

Main Screen

Enable or disable main screen and set the zoom mode of main screen.

Zoom modes include “Disable Zoom”, “Custom Zoom” and “Auto Fit to Screen”. See details in the chapter [PIP](#).

Minor Screen

Enable or disable minor screen and set the size and start position of minor screen as well as the size of position of the picture captured. The picture captured will be displayed on the LED display.

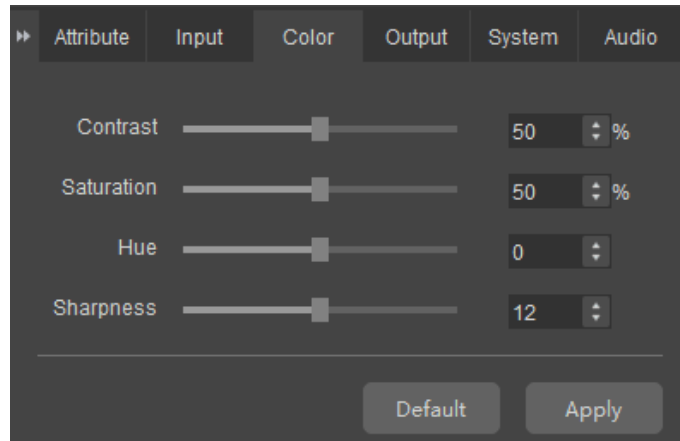
Video Source Synchronization

Keep video source input and output of the device in sync.

Note: Video Source Synchronization is not available when montage is enabled.

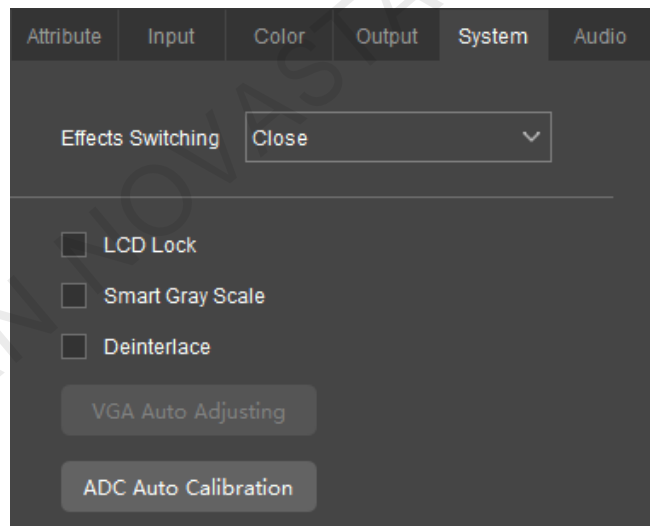
6.5.4 Display Color Settings

You can control the color of LED display by adjusting the parameters of “Contrast”, “Saturation”, “Hue” and “Sharpness”. Click and the sliders of corresponding parameters to adjust the values. Click “Apply” to save your settings. Click “Default” to restore to default values, as shown in the figure below.



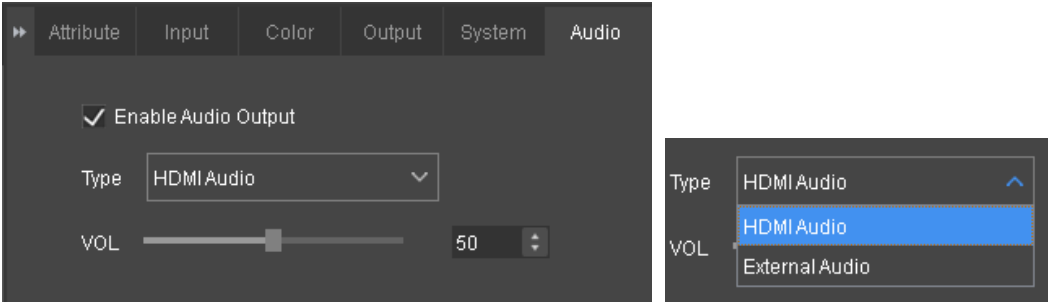
6.5.5 System Settings

- “LCD Lock” : Lock the LCD of the connected device which cannot be operated after it is locked.
- “Smart Gray Scale” : Control the grayscale pf LED display.
- “Deinterlace” : Convert interlaced video signal to progressive signal.
- “Genlock” : Synchronize read-only parameters.
- “VGA Auto Processing” : Adjust the sampling parameters of VGA input signal automatically and make the pictures distinct and complete.
- “ADC Auto Calibration” : Solve the problem such as color cast, dim pictures without, etc.



6.5.6 Audio Settings

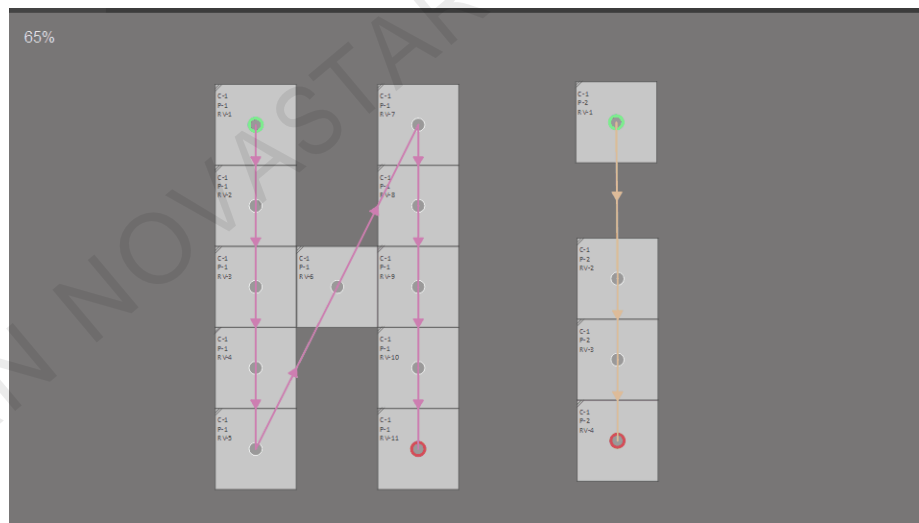
- Set whether to output the audio signal;
- There are two audio types including “**HDMI Audio**” and “**External Audio**” ;
- Adjust the volume by clicking and dragging the slider at the right side of **Volume**.



7 Features

7.1 Screen Settings Like Building Blocks

- Step1** Select a device and its Ethernet ports in the “Device” area. Click an added cabinet (capable of adding in batches) in the toolbar. Move the mouse to the editing area, click and drag the mouse in the blank area to add multiple cabinets. (Only click the mouse and don’t drag to add one cabinet each time.)
- Step2** After cabinets are added, click to select one or more cabinets. Cabinet location can be changed and screens of different shapes can be built by dragging the mouse, just as simple as building blocks.



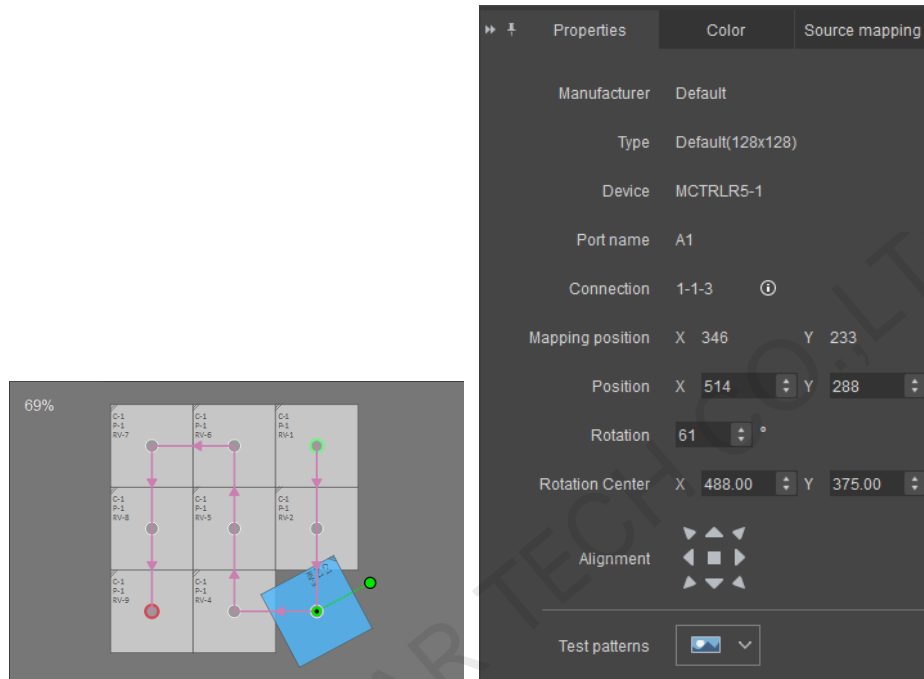
7.2 Full 360° Rotation

Working with MCTRL R5, SmartLCT can enable rotation capability.

Rotation of a single cabinet

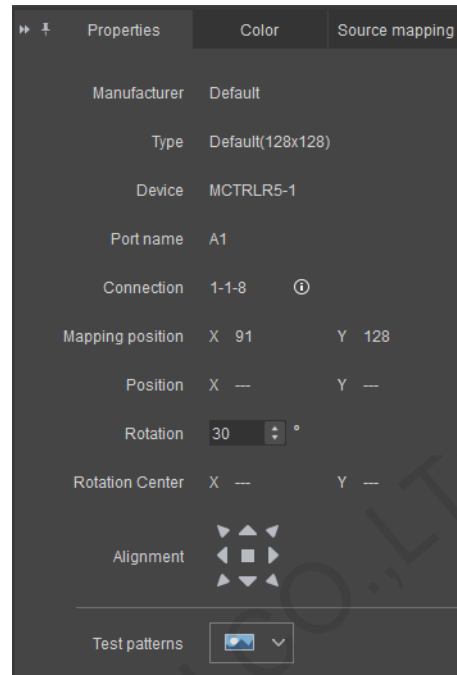
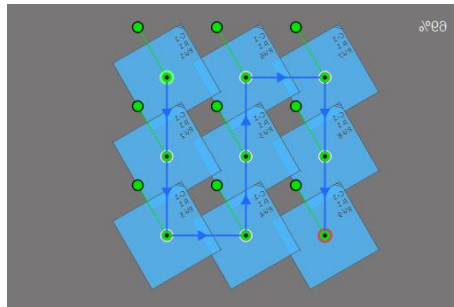
- Step1** After cabinets are added to the editing area, click to select a cabinet.

- Step2** Select a cabinet and a rotating bar of the cabinet appears. Click the bar and drag the mouse, the cabinet is rotated around the center. The center and angle of rotation can be set in the “Properties” area on the right.



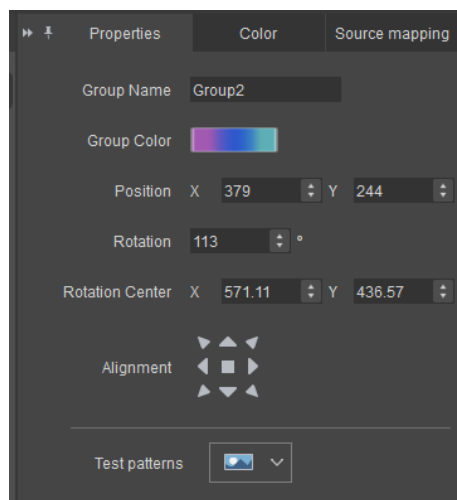
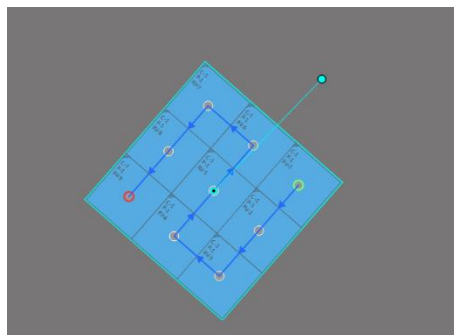
Rotation of multiple cabinets

- Step1** After cabinets are added to the editing area, select multiple cabinets.
- Step2** After the cabinets are selected, a rotating bar appears in the rotation center of every cabinet. Click any one of the rotating bars and drag the mouse, every cabinet will be rotated around its rotation center. You can also set the center and angle of rotation in the “Properties” area on the right to rotate multiple cabinets.



Rotation of grouped cabinets

- Step1** After cabinets are added to the editing area, select multiple cabinets. Click "Edit" > "Group" in the menu bar and the selected cabinets become a group.
- Step2** Click any cabinet in the group. All the cabinets can be selected and a .rotating bar appears in the center of the group.
- Step3** Click the bar and drag the mouse, the cabinet group is rotated around the center. You can also set the center and angle of rotation in the "Properties" area on the right to rotate cabinet group.

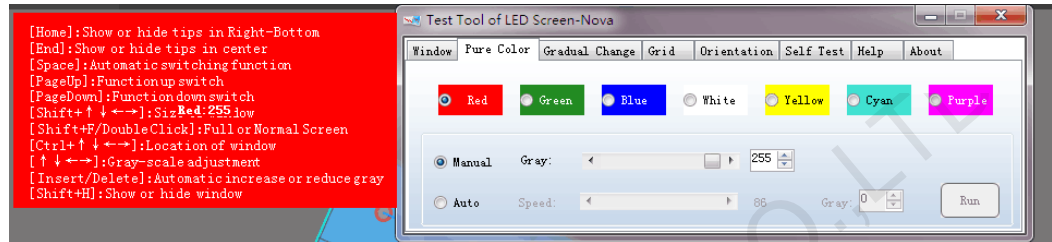


LED display can be rotated with any angle through SmartLCT working with controller MCTRL R5 and receiving receiving card A8s,

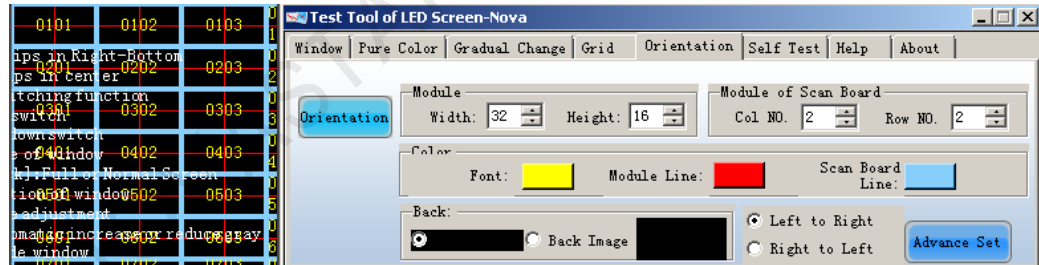
7.3 Receiving Card Debugging

Click “Tools”>“Test Tool” to enter the page of receiving card debugging (the Test Tool of LED Screen page).

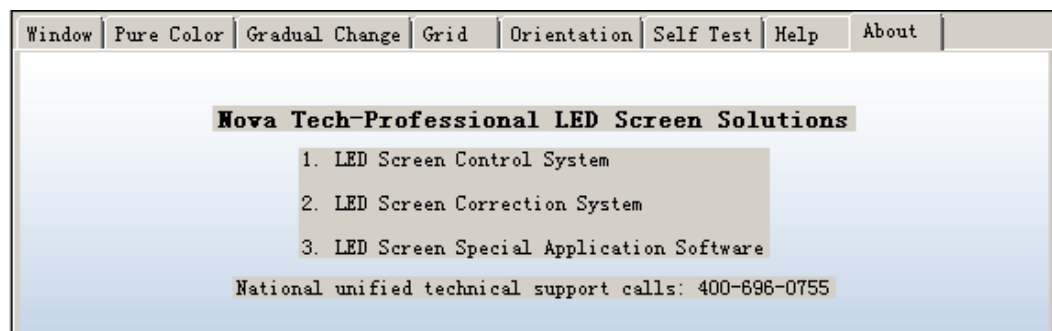
Note: "Receiving Card Debugging " only supports Windows.



- “Window” : Set window size.
- “Pure Color” : Adjust window color (pure color and grayscale).
- “Gradual Change” : Adjust gradient color of the window.
- “Grid” : Add grid and grid color for the window.
- “Orientation” : Set module size and the number of modules loaded by the scanning board. Detailed settings are shown as the figure below.



- “Self Test” : Self-test can be performed when the connected device is online.
- “Help” : Shortcus for quick operations.
- “About” : LED screen solutions. See detials in the figure below.

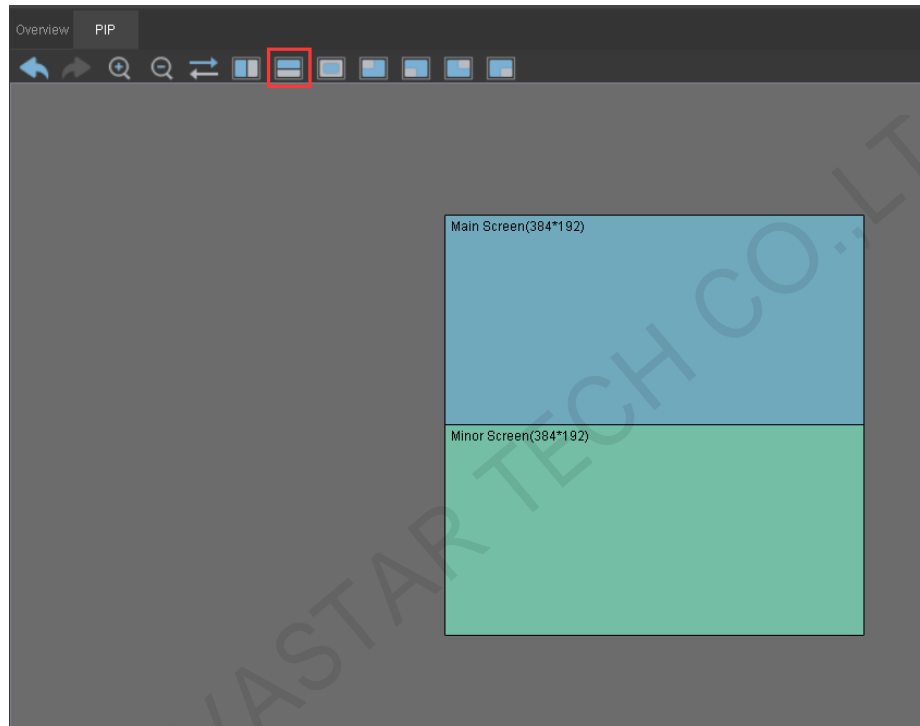


7.4 PIP





Switch to **PIP** in the editing area to enter the PIP setting page. Click different icons in the toolbar to adjust the layout status of the main screen and the minor screen, as shown in the following figure.

Note:

Move the mouse to the editing area. After the zoom icon appears, click and drag the mouse to change the size of both the main screen and the minor screen.



Toolbar	Icon	Function
Cancel		Cancel the last operation.
Revert		Revert the last operation.
Zoom in		Zoom in the screen.
Zoom out		Zoom out the screen.
Main and Minor Screens Switching		Switch between the main screen and the minor screen.
Horizontal Layout		As shown in the picture
Vertical Layout		As shown in the picture
In the Middle		As shown in the picture

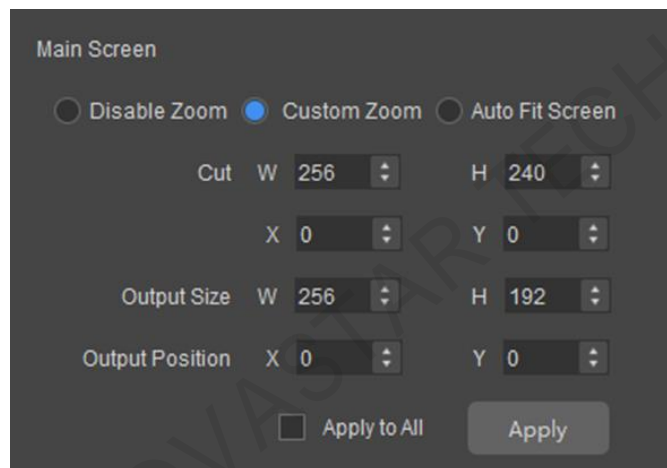
Upper Left Layout		As shown in the picture
Lower Left Layout		As shown in the picture
Upper Right Layout		As shown in the picture
Lower Right Layout		As shown in the picture

Main Screen Settings

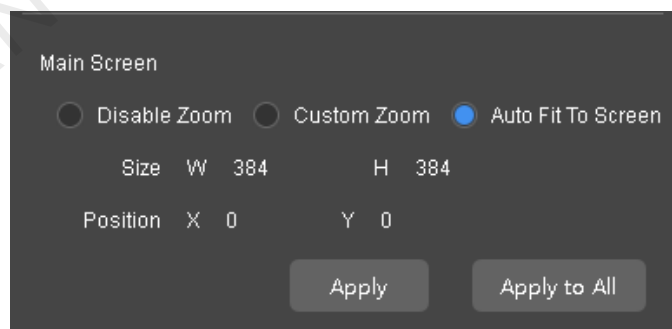
Set the main screen's scaling status including "Disable Zoom", "Custom Zoom", and "Auto Fit to Screen".

"Custom Zoom": Set the size and start position of the "Cut" image and the cut image will be displayed on LED screen.

"Output Size" is the size of current main screen displayed in the editing area. "Output Position" is the start position of current main screen displayed in the editing area.



"Auto Fit to Screen": Input contents are completely scaled to the screen body size, automatically fitting the screen size. This mode is suitable for full-screen display of the display contents.

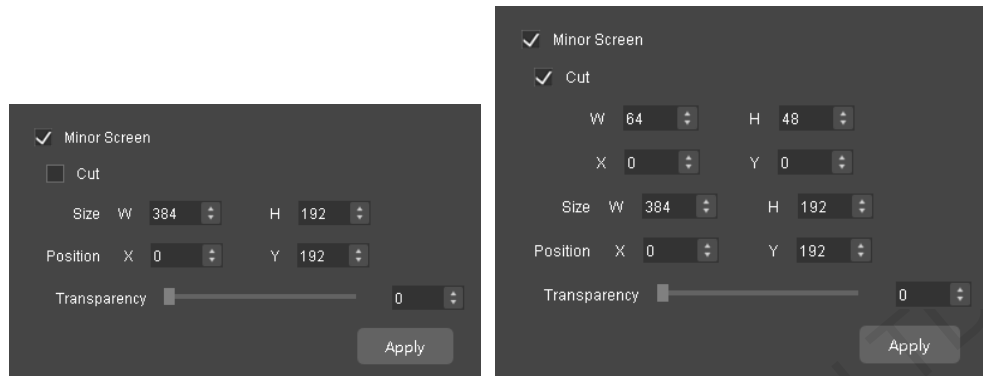


Select "Apply to All" to apply the parameters set to all the input signal sources.

After the setting is done, click "Apply" to send the current configuration information to the signal source.

Minor Screen Settings

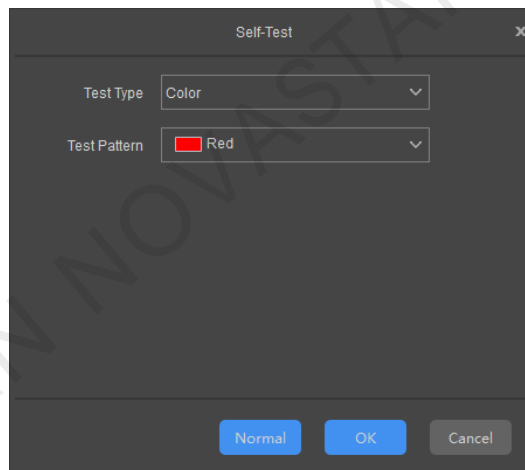
Tick “**Cut**” to edit the minor screen’s size and starting position, and the cut image will be displayed on the screen.



After setting, click **Apply** to send the current configuration information to the signal source.

7.5 Self-Test

- Choose **Settings, Self-Test** to enter the self-test page.
- **Test Type** includes “**Color**” and “**Grid**” .
- **Test Pattern**: Different test types are corresponding to multiple patterns.



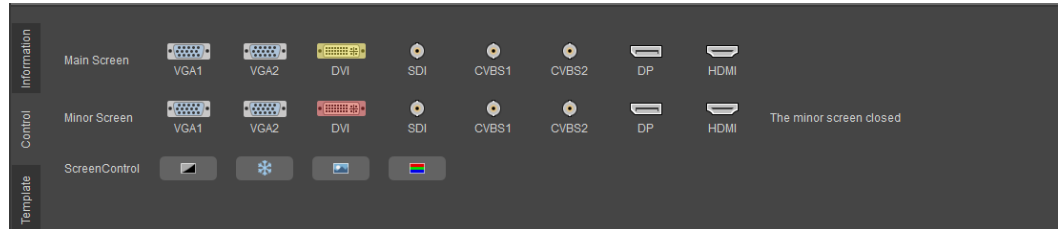
After the test is done, click “Normal” in the bottom of the page to restore the screen to the original state.

7.6 Display Control

Switch to **Control** page at the bottom of the editing area. Freely choose the signal source of both the main screen, the minor screen, and the screen status.

The screen status includes “**Black Out**”, “**Freeze**”, “**Normal**” and “**Test Patterns**”.

- “**Black Out**” : does not display.
- “**Freeze**” : freezes the current displayed contents.
- “**Normal**” : normally displays the contents coming from the input source.
- “**Test Patterns**” : Same as [Self-Test](#).



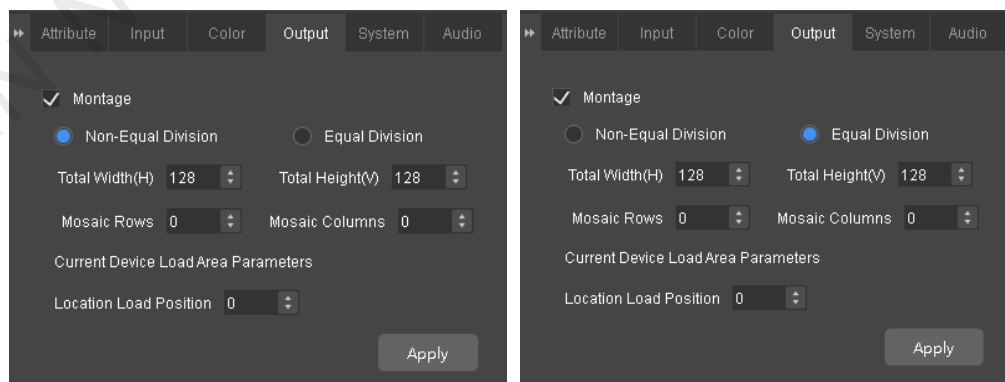
7.7 Montage

Click “**Output>Montage**” in the right attribute area of V-Sender page to enter the montage setting page.

Montage function is required when the screen pixel numbers exceed the loading capacity of a single device. Sum of all the cascading device loading areas is the total number of the screen pixels (taking VX4S as an example).

- “**Non-Equal Division**” : Each VX4S loads different areas. Total number of the screen, loading area of each VX4S, and starting position of the loading area are required to be set;
- “**Equal Division**” : Loading area of each VX4S is the same, and just set the total number of the screen, row and column number, and the loading area of this VX4S.



After parameter setting, click **Apply** to send the parameter-set to hardware.



7.8 Template Settings

Switch to **Template** page at the bottom of the editing area. Save the current configured parameters as templates, of which default number is 10, to be directly loaded next time.



- Click the  icon to save current configured parameters to templates and you can choose the template where the parameters will be saved.
- Click the  icon to delete the selected template.

7.9 Image Exporting

Screen configuration information can be exported as images which are convenient for you to view.

Step1 Click "File" > "Export" to set the information of the image to be exported in the page that appears.

Step2 Select front view or back view as required.

Step3 Choose the save path of the image to be exported.

Step4 Company name and Logo can be self-defined.

Step5 Company name can be set as watermark.

Step6 Click the "Export" button to export the image to local computer.

