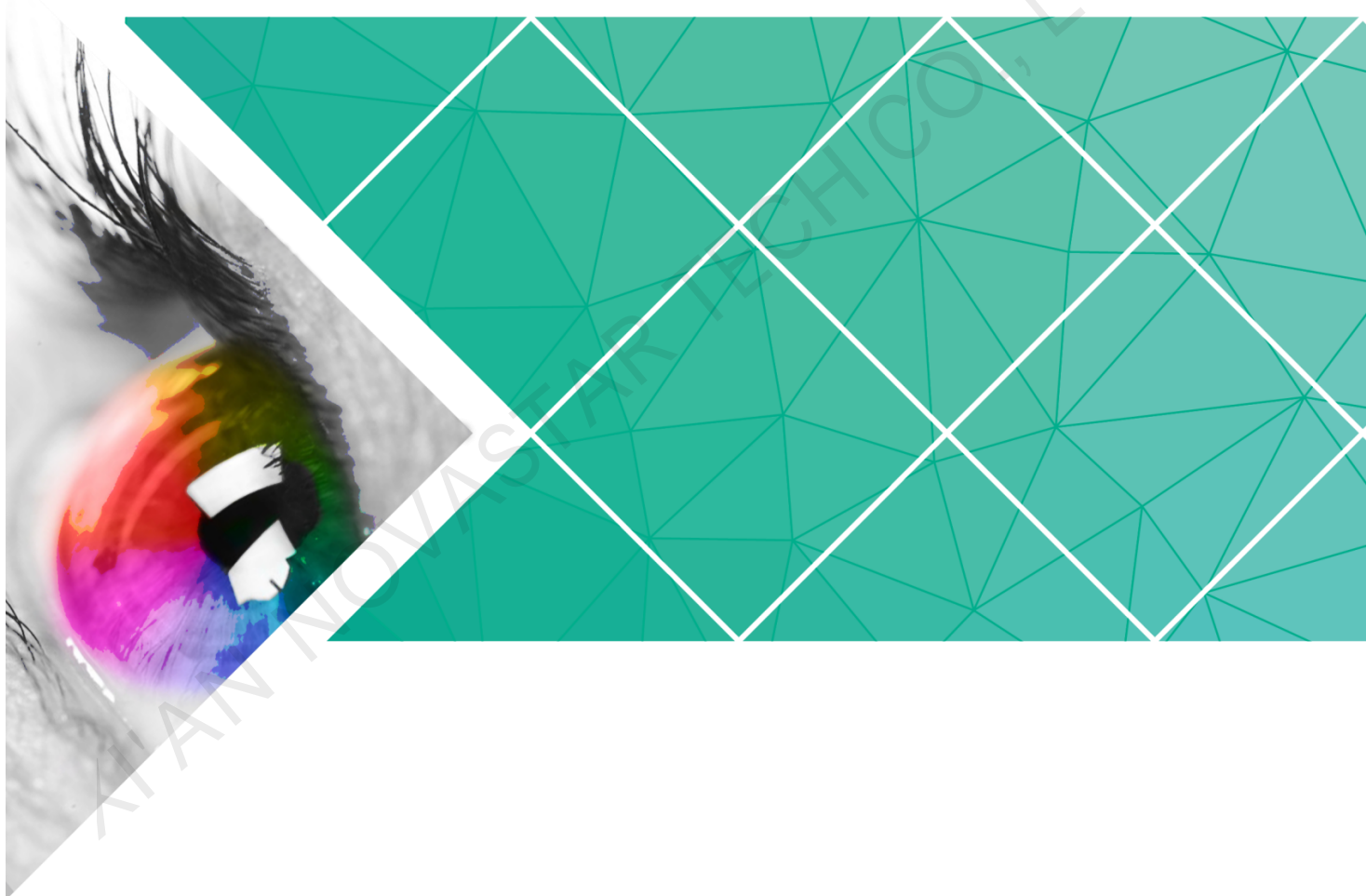




NovaLCT

LED Configuration Tool for Synchronous System



User Guide


Product Version: V5.1.0

Document Number: NS110100570

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1 System Overview

NovaLCT

NovaLCT is the screen configuration tool operating on Windows. Working with receiving cards, monitoring cards and multi-function cards in the applications of synchronous system, NovaLCT allows smart settings, brightness adjustment, power supply control, LED error detection, hardware monitoring for LED displays. Users can easily control the key information of their LED displays with a computer and make the display always perfect.

Synchronous system

NovaStar's asynchronous system employs advanced technologies and can be widely used in LED displays.

- High gray scale and high refresh rate: universal chip, with high grey scale, high refresh rate and high performance.
- Point-by-point chroma correction: correct color of every lamp, eliminate chroma difference among batches of LEDs.
- Comprehensive status monitoring: supervising work status, temperature, humidity, smog, supply voltage of switch, fan rotating speed and single lamp open and short circuit of every cabinet.
- Infinite area load: unique cascade and synchronization technology, and huge stable and reliable load without black out, jitter or stutter.
- Perfect anomalous type support: arbitrary cabling, arbitrary point extraction, arbitrary point insertion, anomalous plate, anomalous cabinet, anomalous screen and easy load.
- Low grey scale with richness and smoothness: first-class build-up of luminance, and grey scale of 16-bit, which makes the image of the screen fine and smooth;
- Green, energy saving, and environmental protection: low voltage, low power consumption, low radiation, and easily passing EMI/EMC.
- Overall chip supported: support TI, Toshiba, MBI, SITi, ENE, MY, Ri yue cheng, Microblock and other series of products, and support TLC59282, TLC5929, TLC5944, DM13A, DM13H, P2510, SUM2016, SUM2017, MBI5020/5024/5034/5035/5042/5050/5152, SUM2032, MY9221/9262, RT5924, 16158, 5122, 5929, 5266, 5166 and other IC.
- No sending card mode supported, being fit for small screen control.

The system is under two situations: with sending card or no sending card; when it has no sending card, the computer is directly connected with the receiving card through the Ethernet cable.

Figure 1-1 Diagram of system architecture

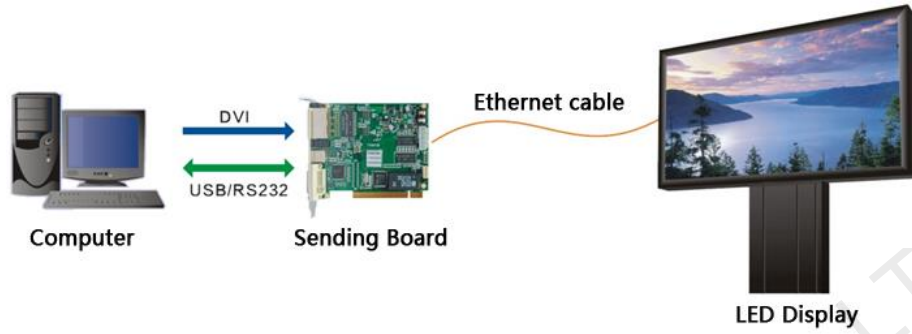
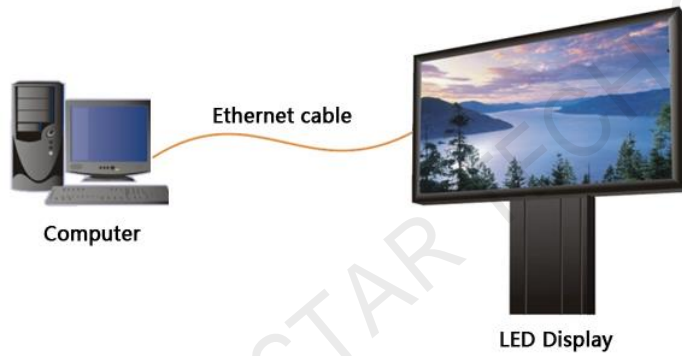


Figure 1-2 Diagram of system architecture with no Sending card



2 Software Installation

Preconditions

- Have prepared a PC with Windows system installed.
- Have obtained the installation package "NovaLCT V5.0.0.zip" from NovaStar official website www.novastar.tech.
- Have disabled antivirus software.

Installation

Firstly please unzip the installation package "NovaLCT V5.0.0.zip", then double-click "NovaLCT V5.0.0.exe" and follow the installation wizard to complete the software installation. If the firewall prompt appears, please select to allow the installation.

3 Terminal Connection

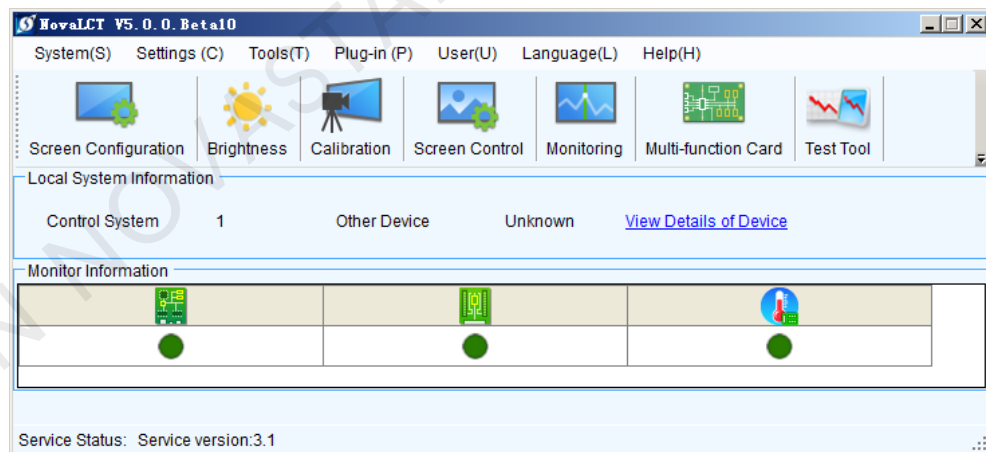
3.1 Advanced User Login

Asynchronous users need to log in to NovaLCT as advanced users to configure screens as required.

- Step 1 Open NovaLCT and choose **User > Advanced Synchronous System User Login**.
- Step 2 Enter the password for logging in the terminal, and click **Login**.

The default password is "**admin**". If the login is successful, the interface below will appear, as shown in [Figure 3-1](#).

Figure 3-1 Successful login interface



3.2 Demonstration Login

NovaLCT allows users to log in, operate and learn about the functions in demonstration mode without connecting hardware devices.

- Step 1 Open NovaLCT and choose **User > Demonstration Login**.
- Step 2 Enter the login password and click **Login**.

The default password is "**admin**".

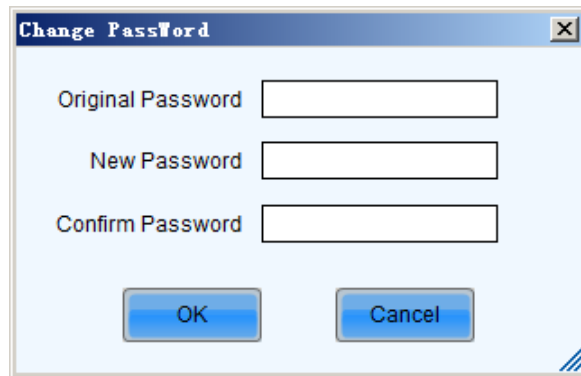
3.3 Changing Password

To enhance system security, users can regularly or irregularly change the advanced user log-in password.

Step 1 After advanced user login is successful, choose **User > Change Password**.




Step 2 Enter the original password, and enter the new password twice. Then click **OK**.





Figure 3-2 Changing password





The image shows a 'Change Password' dialog box with a blue title bar and a close button (X) in the top right corner. Inside the dialog, there are three text input fields stacked vertically, labeled 'Original Password', 'New Password', and 'Confirm Password'. Below these fields are two buttons: 'OK' on the left and 'Cancel' on the right. The dialog box is set against a light blue background.

4 Function Overview

Menu		Description
System	Reconnect	This is used to reconnecting the NovaLCT to the synchronous system.
Settings	Screen Configuration (Advanced user)	 <p>Shortcut button: <small>Screen Configuration</small></p> <p>This is used for configuration of the LED screens.</p>
	Brightness	 <p>Shortcut button: <small>Brightness</small></p> <p>This is used for adjusting the LED display brightness. There are two ways for brightness adjustment, automatic brightness and manual brightness.</p>
	Multi-function Card	 <p>Shortcut button: <small>Multi-function Card</small></p> <p>This is used to open the page for Multi-function card configuration.</p>
	Multiple-screen Management	This is used to open the page for combination display configuration. It makes the management of brightness control and monitoring of multiple LED displays easier when these LED displays are combined together.
	Hardware Information	This is used to check the information about the current LED display control system.
	Prestore Screen	Enter the restore screen, booting screen and no signal (including the disconnected network cable and no DVI signal) screen settings can be conducted.

Menu		Description
	Advanced Color Configuration (Advanced user)	<ul style="list-style-type: none"> • Factory setting (current gain, RGB brightness). • Configuration color space (original color space, target color space). • Color temperature table.
	Adjust Screen Effect (Advanced user)	Enable/Disable 18-bit mode and ClearView mode.
	Cloud Monitoring	Shortcut button:  Cloud Monitoring Register the display screen to NovaiCare.
	Module Flash	View correction coefficients of the receiving card and module. Save correction coefficients in the receiving card and module. Test whether Flash is normal.
	Receiving Card Relay (Advanced user)	Set parameters for the receiving card relay. Reset the time of the receiving card.
	Configure Information Management	Import/Export all the configuration files.
	The Main Window Starting Position	Set the initial coordinates.
Tools	Calibration	Shortcut button:  Calibration Calibrate the screen and manage the calibration coefficients.
	Screen Control	Shortcut button:  Screen Control Perform the screen control functions which include "Black Out", "Freeze" and "Normal". Besides, self test options are also provided.
	Monitoring	Shortcut button:  Monitoring Enter the monitoring page to view the monitoring results or set the monitoring parameters.

Menu		Description
	Led Error Detection	Enter "Led Error Detection" page to perform LED error detection after the screen has been properly configured.
	Multi-batch Adjustment	Adjust the brightness of the display according to the batches of cabinet.
	Controller Cabinet Configuration File Import	Add/Delete configuration files. Modify file name. Save the configuration file in hardware.
	Quickly Adjust Dark or Bright Lines	Adjust or restore dark or bright lines caused by cabinet splicing.
	Video Control	Input setting, output setting and stitching management of video processor.
	Module ID Setting (Advanced user)	Perform module ID configuration to make module management easier. Some modules do not support ID configuration, please contact NovaStar's technicians for details.
Plugins	Test Tool	 Shortcut button:  To open the page which all test tools (test content) for LED displays testing are in.
	Calculator	Click on this item will open the Microsoft Windows calculator.
	External Program	Click on this item will add an external program.
User	Advanced User Login	Log in the synchronous system with the password "admin".
	Enter Demonstration mode	Experience the related functions of the synchronous system. No hardware connection is required and the password is "admin".
	Connect Asynchronous Terminal	Log in the multimedia player.
Language	-	Support multiple user interface languages.
Help	User Documents	View software-related user documents.
	Update log	View software update logs.
	About	View software version, company name and other information.

5 Main Functions of NovaLCT

When in the mode with no sending card, the control system software will have no sending card operation page, all the parameter setting related to the sending card shall be omitted, and other operations are the same as having sending card.

5.1 Screen Configuration

5.1.1 Screen Configuration Using System Configuration Files

The advantage of using system configuration files to configure LED displays is that the configuration procedure is very simple and easy, and no manual configuration operation is required.


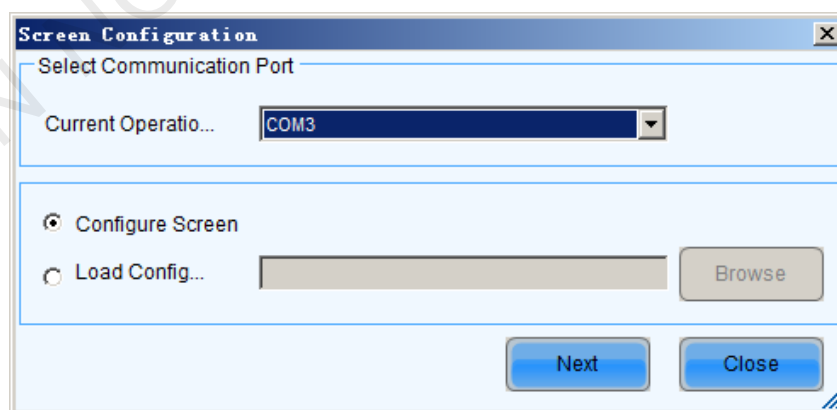
-  Step 1 Click **Screen Configuration** on the main interface, and the **Screen Configuration** window pops up as shown in [Figure 5-1](#).

Figure 5-1 The Screen Configuration window




- Step 2 Set the **Current Operation Communication Port**.
- If the control computer is connected to the synchronous system with one line, the communication port that the software defaults to is the current communication port.

- If the control computer is connected to multiple synchronous systems with different lines, please choose the corresponding communication port of the synchronous system to be configured.

Step 3 Select the **Load Config File** option, use the **Browse** button to select the system configuration file to be loaded.

Step 4 Click **Next**. The selected configuration file will be automatically loaded to the LED display system. The LED display system will have been configured when the load operation is finished.

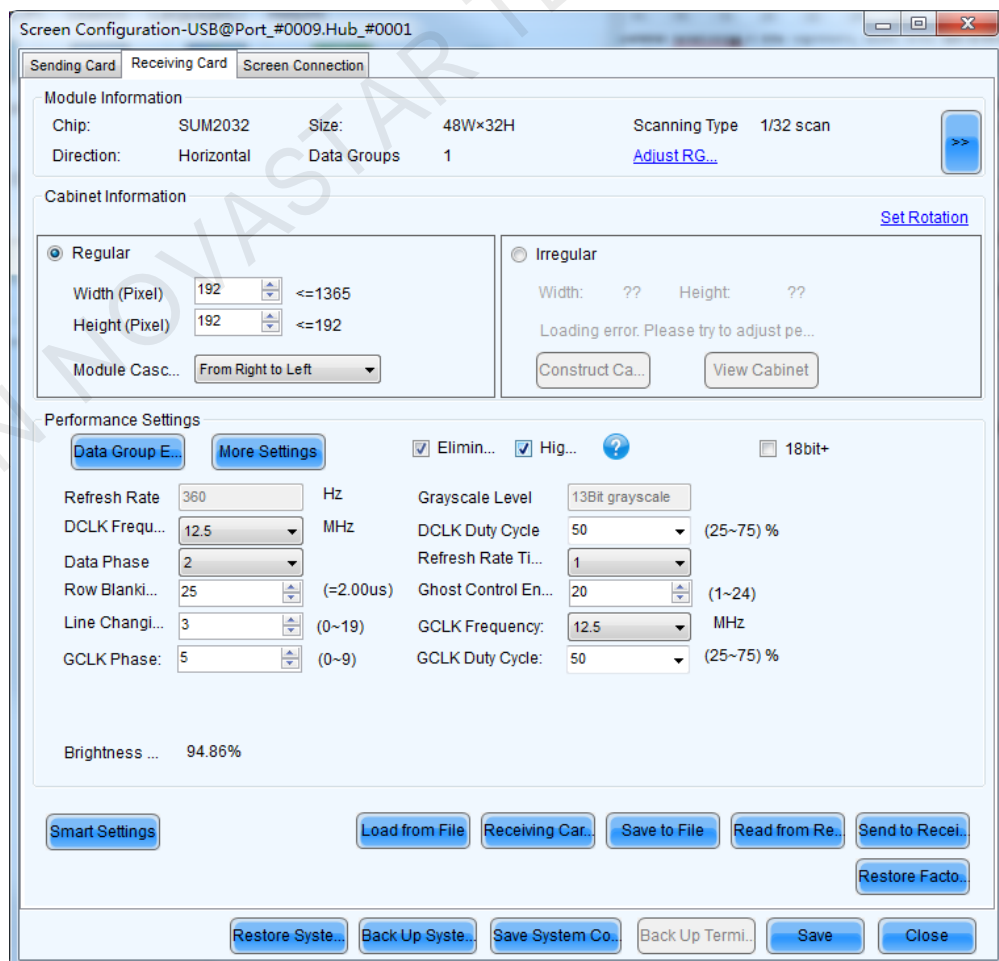
	<p>Note:</p> <p>The loaded performance parameters from the configuration file can be adjusted if they are not suitable. Please refer to 5.1.5 Adjust the Performance Parameters for details about how to adjust the performance parameters.</p>
---	--


5.1.2 Smart Screen Configuration

Step 1 Click the **Screen Configuration** button on the main interface, and then select **Configure Screen**.

Step 2 Click **Next** and the window below will pop up.

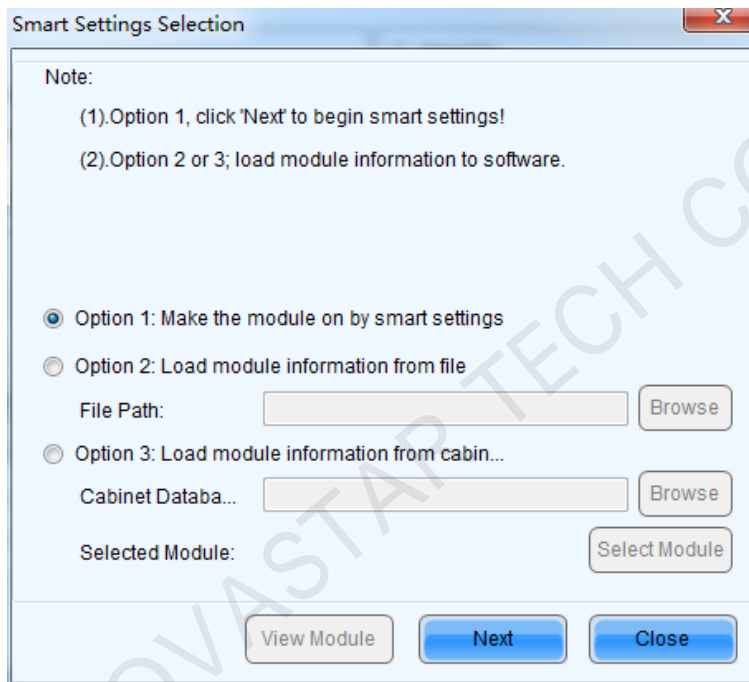
Figure 5-2 Screen Configuration – Receiving Card



	<p>Note: Make sure the resolutions of the sending card and the computer video card are the same, otherwise the LED display may not be able to work normally. Reset the video card resolution or change that of the sending card if their resolutions are not the same. Refer to 5.1.6 Adjust Resolution and Refresh Rate for details about how to change the sending card resolution.</p>
---	--

Step 3 Choose **Receiving Card > Smart Settings** to open the **Smart Settings Selection** dialog. Shown in [Figure 5-3](#).

Figure 5-3 Smart Setting



Step 4 Select **Option 1: Smart setting** and click **Next** to activate smart setting wizard. The **Smart Setting Step 1** window will appear, as shown in [Figure 5-4](#).

Figure 5-4 Smart Settings Guide 1

Smart Settings Guide 1

Module Chip 1:
Module Chip: SUM2032 Select chip type

Data Type
Data Type: Parallel drive

Module Information
Module Type: Regular Module Irregular Module


Quantity of Pixels (virtual scr...): x: 48 y: 32

Row Decoding Type: 74HC138 Decoding

Working Mode of Receiving Card
Hub Mode: Normal 20 Groups 24 Groups 28 Groups
Ghost Control Sign...: High Low

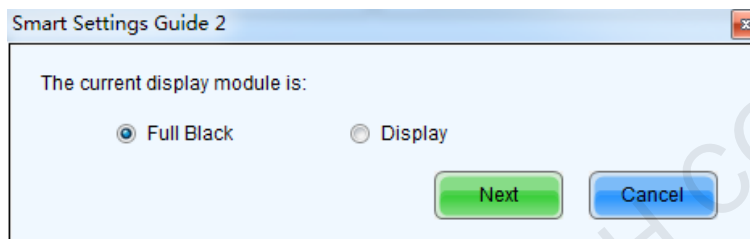
Next Cancel


- **Module Chip**
Select the driver chip type from the list according to what is actually used for the cabinets.
- **Data Type**
Select the data type from the list.
- **Module Type**
The option can be regular module or irregular module. If it is set to be irregular module, the counts of driver chips for one data set and one color should be given.
- **Quantity of Driver Chip with One Data Group**
This parameter is shown only when **Irregular Module** is selected. Users can set this parameter according to the module schematic diagram.
- **Quantity of Pixels**
This is the size of the real pixel array of a module.
- **Row Decoding Type**
This list provides multiple options. You can choose one based on the module.
- **HUB Mode**
Select the Hub mode of the receiving card, which could be normal, 20 groups, 24 groups and 28 groups.
- **Ghost Control Signal Polarity**
Set the ghost control signal as high active or low active.

	<p>Note:</p> <p>If the module array size is set as the default (1 column, 1 row), the modules in the first rows of the module arrays of all cabinets will be lightened (LED lights on).</p> <p>Or if the module array size is set as the real numbers, the last module of each first row of the module arrays of all cabinets will be lightened (LED lights on).</p>
---	---

Step 5 Click **Next** to access **Smart Settings Guide 2**. Shown in [Figure 5-5](#) is the Smart Settings Guide 2 window.

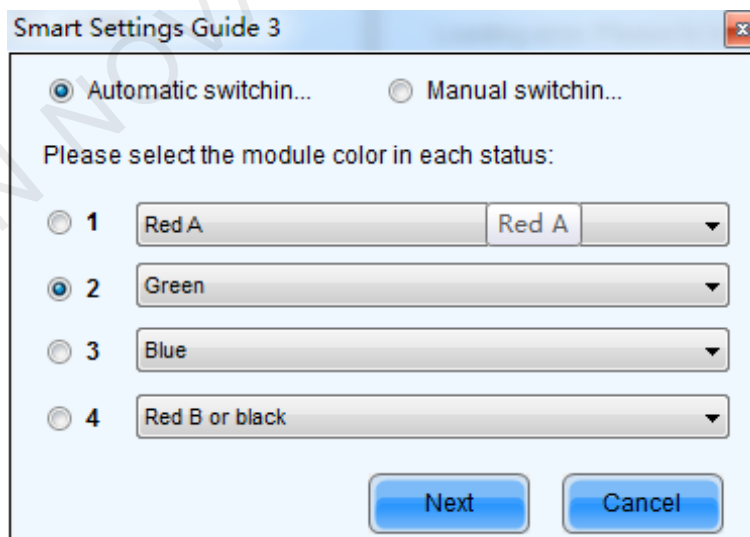
Figure 5-5 Smart Settings Guide 2



	<p>Note:</p> <p>This step will be skipped if module polarity is known and set in Step 1.</p>
--	---

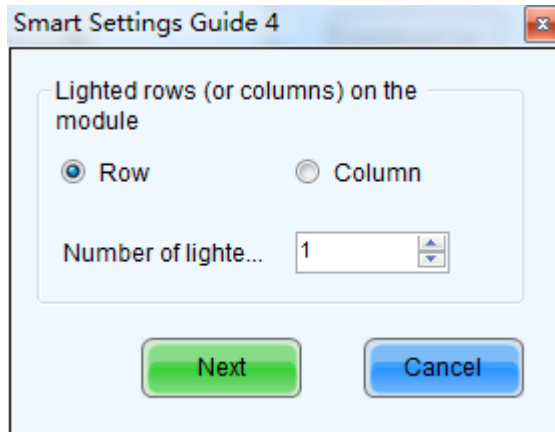
Step 6 Click **Next** to access **Smart Settings Guide 3**. Shown in [Figure 5-6](#) is the Smart Settings Guide 3 window.

Figure 5-6 Smart Settings Guide 3



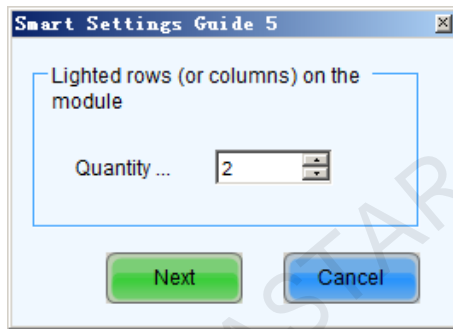
Step 7 Complete the settings in **Smart Settings Guide 3** according to the actual situation, and click **Next** to access **Smart Settings Guide 4**. Shown in [Figure 5-7](#) is the Smart Settings Guide 4 window.

Figure 5-7 Smart Settings Guide 4



Step 8 Complete the settings in Smart Settings Guide 4 according to the actual situation, and click **Next** to access **Smart Settings Guide 5**. Shown in [Figure 5-8](#) is the Smart Settings Guide 5 window.

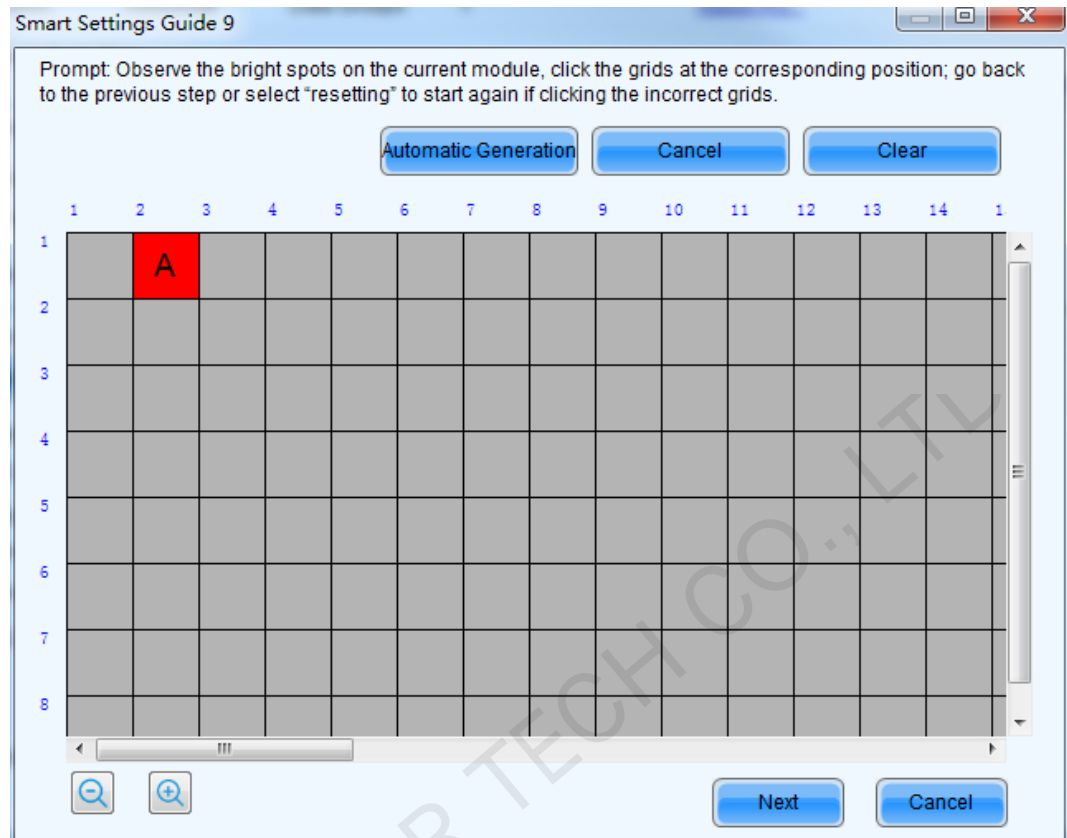
Figure 5-8 Smart Settings Guide 5




Step 9 Complete the settings in Smart Settings Guide 5 according to the actual situation, and click **Next** to access **Smart Settings Guide 9**. Shown in [Figure 5-9](#) is the Smart Settings Guide 9 window.



Click the corresponding grids according to the position of the lightened lights until no light is lightened any more. A line of the lightened lights routing will be drawn at the same time.

Figure 5-9 Smart Settings Guide 9



Note:

 Hold the left button of the mouse and drag, or use Tab and Enter to draw the routing line. Use **Automatic Generation** button to accomplish drawing routing lines of the same pattern.

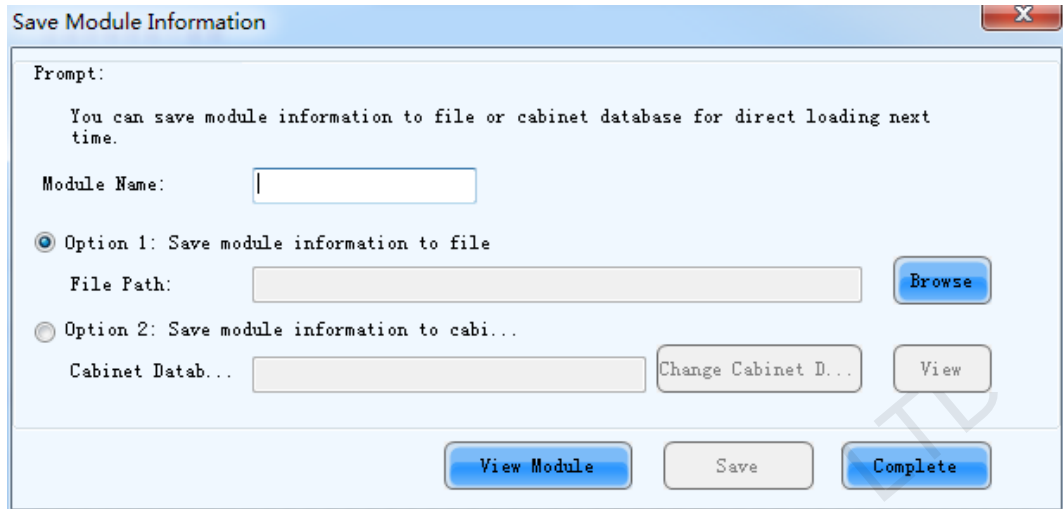
Click  or  to zoom out or in the module layout.

Step 10 A message indicating the finish will be shown when enough lights have been processed. Click **OK**.

Step 11 Click **Next** and a message pops up indicating the settings are completed, then click **OK**.

The **Save Module Information** dialog is shown in [Figure 5-10](#). Saving the module settings to files will make it easier to perform module configuration for another LED displays constructed by modules which require the same settings as the one just set (Option 2 or Option 3 in [Figure 5-3](#)). Click **Finish** directly if you don't want to save the settings.

Figure 5-10 The Save Module Information dialog

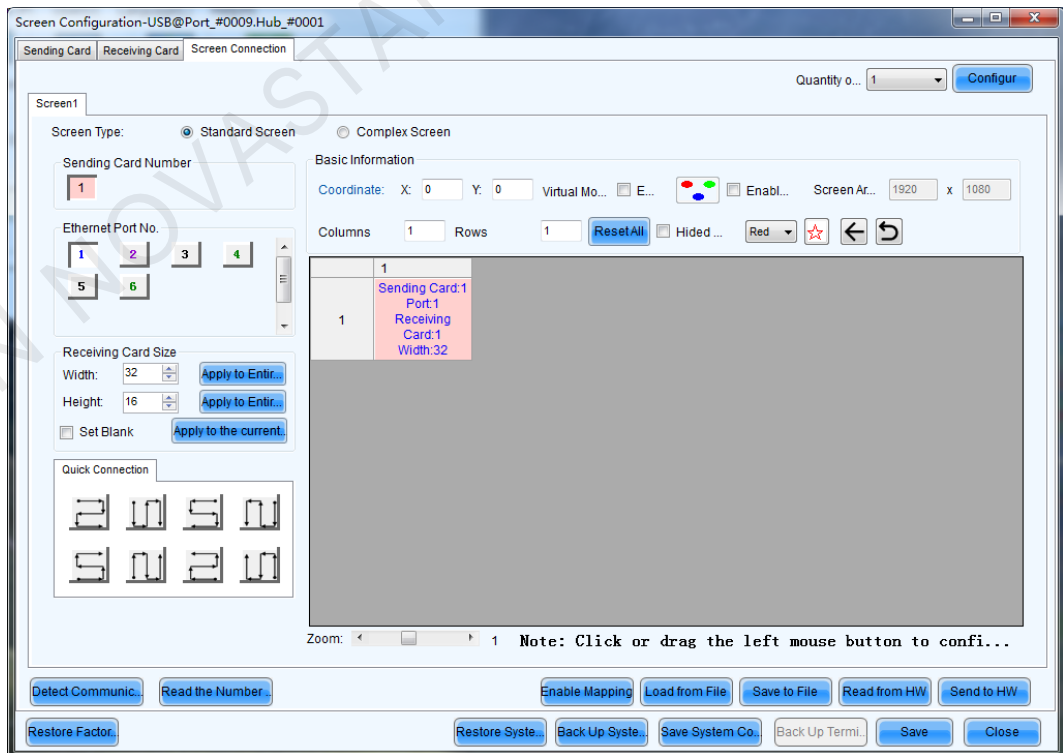


5.1.3 Screen Connection

Select **Screen Connection** page in the **Screen Configuration** window (Figure 5-2).

Enter screen number (number of the LED displays to be configured) and click **Configure** button, The default screen configuration page (page for standard LED display configuration) will displayed, as shown in Figure 5-11.

Figure 5-11 Screen connection



- **Quantity**
This is the number of LED displays that are to be configured.


- **Configure**
This button is used to load the Screen Number to the NovaLCT application.
- **Read form HW**
This is used for the application to read the LED display information from the hardware.
- **Detect Communication Status**
This is used to check whether the communication within the current LED display is good.
- **Read the Number of Receiving Cards**
Get the number of receiving cards loaded by each of the Ethernet ports of the current sending card.
- **Enable Mapping (only supported by some receiving cards of the Armor series)**
When this function is opened, current serial number of the cabinet and its Ethernet port No. will be shown on the cabinet.
- **Load from File**
Load screen information files save on control computer.
- **Save to File**
This is used to save screen information files as screen information file (*.scr).
- **Send to HW**
This is used to send the LED display configuration settings to the connected sending card.
- **Restore Factory Settings**
Reset current parameter configuration to factory settings.
- **Restore System Configuration**
Reset current operating status of the system (or sending card, or receiving card) to the status in the backup file.
- **Back Up System Configuration**
Back up current configuration parameters.
- **Save System Configuration File**
Save system configuration parameters as a file.
- **Save**
This is used to save the settings to a FLASH chip. The saved data won't be lost even the hardware is powered off.
Screen types include standard screen and complex screen. Configurations for different types of screen will be given as follow.

Standard Screen Configuration

Set the cascade type of receiving cards manually, as shown in Figure 5-11.

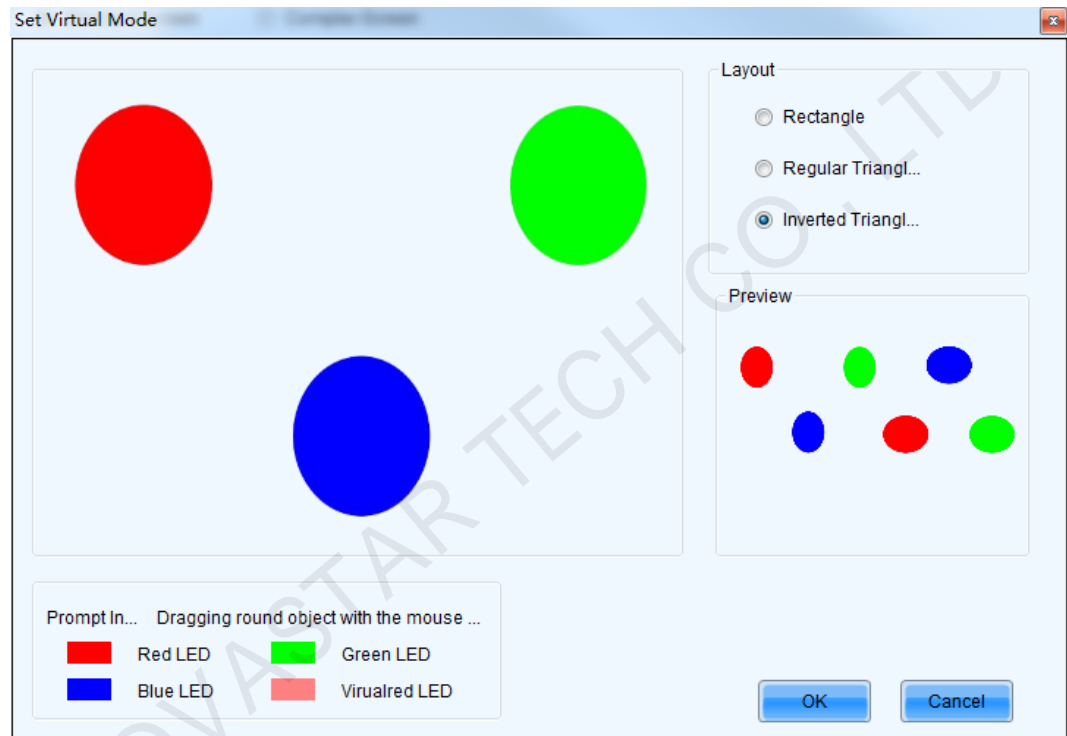
- **Coordinate**
This is the upper-left corner of a rectangular area of the computer display. The rectangle area of the computer display is called mapping area. Content inside the mapping area will be shown on the LED display. The default location is (0, 0), which is actually the upper-left corner of the computer display.
- **Virtual Mode**


Specify the pixel mode of the LED display. The option could be real pixel or virtual 3 lights or virtual 4 lights.

Check **Enable** to enable virtual mode, click  to enter into the setting interface of the virtual mode. Select the layout type of the lights on the top right corner of the window, and drag the mouse on the left side of the window to change the arrangement of the lights.

For example, if the **Rectangle** is selected, the changed positions are as follows.


Figure 5-12 Setting virtual mode



- Receiving Card Columns/Rows
These are the numbers of columns and rows of the receiving card array of the LED display. A sketch map of the receiving card array will be shown in this page after these two parameters are set.
- Reset All
This button is used to reset all cabinet settings and connection settings.
- Hidden Wiring
After selecting this function, the receiving card's wiring in the following topology will be hidden.
- 
This is a mark for receiving card classification. Select one receiving card and click on the drop-down box to choose one color from red, green and blue, and then click on the given receiving card to add the mark.
- Sending Card Number

This parameter is used to specify the current sending card (sending card). The sending card of the chosen index is will be set as the current sending card. And all relating settings are for this sending card.

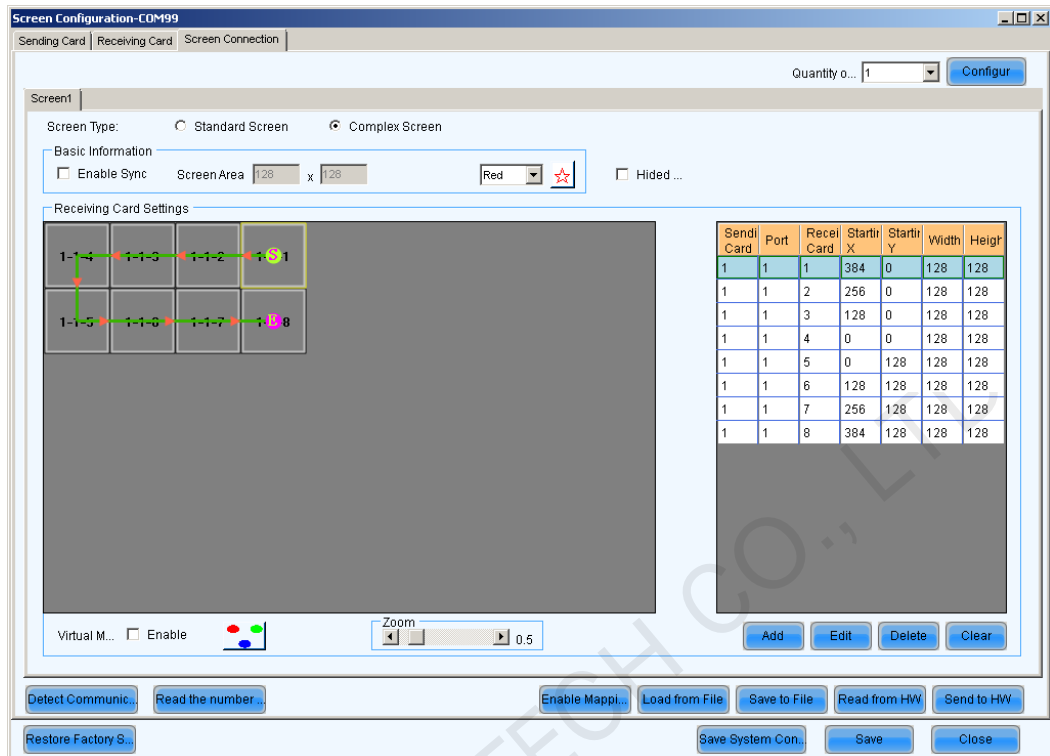
- Output Port Number
Select an Ethernet port of the sending card. Click **Read the Number of Receiving Cards** and hover over the port with your mouse. The number of receiving cards loaded by the port will be displayed.
- Back
This button is used to clear all settings related to the last set sending card.
- Clear Current Output Port
This button is used to clear all settings related to the current output port.
- Width/Height
These are the width and height of the pixel array of the current receiving card.
- Apply to the Entire Column
Select a receiving card, and set the width the same as the loading width of the column the selected receiving card belonged to.
- Apply to the Entire Line
Select a receiving card, and set the height the same as the loading height of the line the selected receiving card belonged to.
- Apply to the Current Port
Click this button to set the pixel array sizes of all receiving cards connected to the current Ethernet port the same as that of the current receiving card.
- Set Blank
Select this if the current position (pixel array of the current receiving card) needs to be left unset.
- Quick Connection
Quickly set cabinet connection. In **Quick Connection**, select a connection type. Drag the mouse to select the receiving cards corresponding to the output port. The connection is done automatically.
- Auto Connection:
Support quick cabinet connection by a single direction (supported only by MCTRL660 PRO).

	<p>Note:</p> <ul style="list-style-type: none">• For different sending cards, the background colors of the grids are different.• For different Ethernet ports, the font colors are different.• The right button of the mouse can be used to clear the settings for the current sending card.
---	--

Complex Screen Configuration

Set the sending card, Ethernet port, start coordinates and pixels to be loaded of each of the corresponding receiving cards.

Figure 5-13 Complex screen configuration page



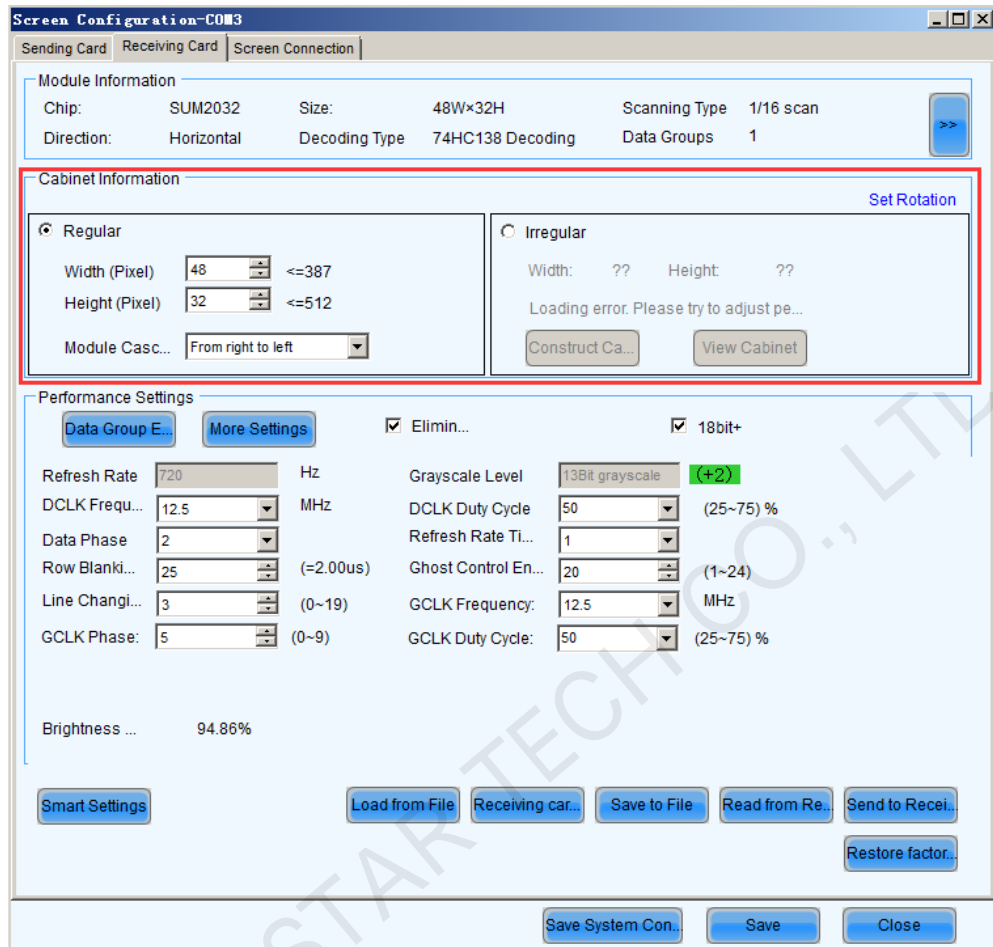
- **Add**
Click **Add** to access the window for receiving cards information setting, such as index of its host sending card, Ethernet output ports, mapping areas, pixel array sizes and so on. The setting will be shown in the list.
- **Edit**
To edit the information that has been set for receiving cards.
- **Delete**
To delete the selected receiving card from the receiving cards list.
- **Clear**
To delete all receiving cards from the list.

5.1.4 Set Cabinet Information

Pixel array size and module cascade direction can be set in this panel.

Choose **Screen Configuration > Receiving Card**. In the **Cabinet Information** area, configure the cabinet information, as shown in [Figure 5-14](#).

Figure 5-14 Cabinet information settings




Note that the Regular panel is for regular cabinets parameters setting and the Irregular panel is for irregular cabinet parameters setting.

- Cabinet rotation: Set image rotation angle to 0°, 90°, 180° or 270°.
- Width/Height

These two items specify the width and height of the cabinet pixel array.

Maximum width varies with parameters of refresh rate, gray scale levels, and shift clock frequency. Normally, the higher the refresh rate is and the finer the gray scale levels are, the smaller the maximum width will be; while the higher the shift clock frequency is, the larger the maximum width can be. But as the shift clock frequency is limited by driver chips and module design, the maximum width is also limited.

The Maximum Height depends on the module design.

	<p>Note:</p> <ul style="list-style-type: none"> • If the module cascade direction is from left to right or from right to left, then as mentioned above, the Maximum Width depends on the parameters such as refresh rate, gray scale levels and shift clock frequency, and the Maximum Height depends on the module design. • If the module cascade direction is from top to bottom or from bottom to top, then, factors affect the Maximum Width and Height are just switched. The Maximum Height depends on the parameters such as
---	---

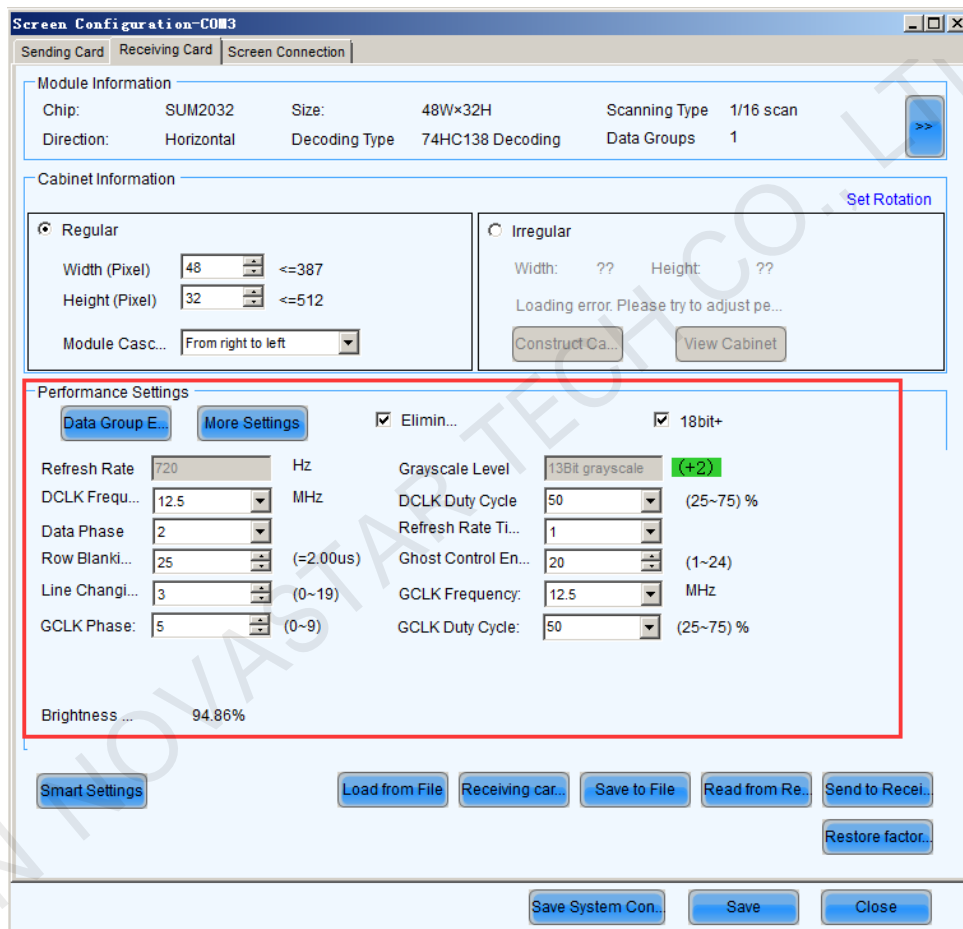
	refresh rate, gray scale levels and shift clock frequency, and the Maximum Width depends on the module design.
--	--

5.1.5 Adjust the Performance Parameters

To achieve the best performance, performance parameters should be set properly.

On the **Screen Configuration** page, choose **Receiving Card** tab, as shown in [Figure 5-15](#).

Figure 5-15 The Performance Setting panel



Eliminate Afterglow: Some of chips are supporting the functions of eliminating afterglow, and the software defaults to be ticked.

Data group exchange

Adjust the order of the data groups.

There are intuition and group data group exchange modes.

- As shown in [Figure 5-16](#), in intuition mode, fill out on software based on the order displayed on the screen.
- As shown in [Figure 5-17](#), in group mode, click proper positions in sequence according to block flashing orders on the screen. Simultaneously, corresponding

series numbers are generating to display the area without flashing block, and click **No flashing area**.




-  : Clear current data, and reset.
-  : Send data to hardware.
-  : Save current data.

Figure 5-16 Intuition mode

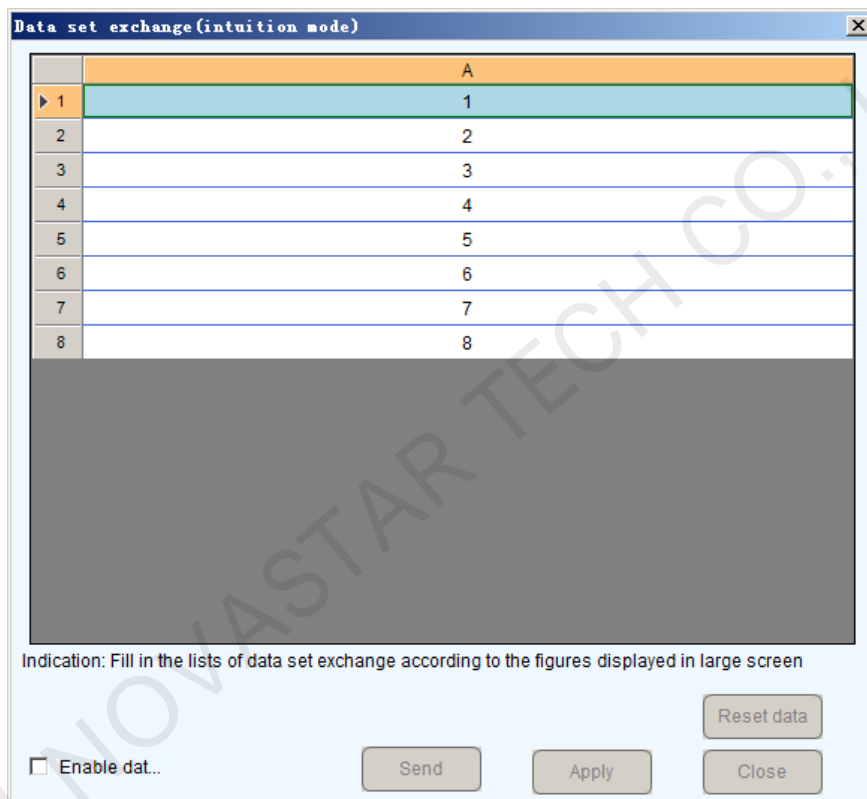
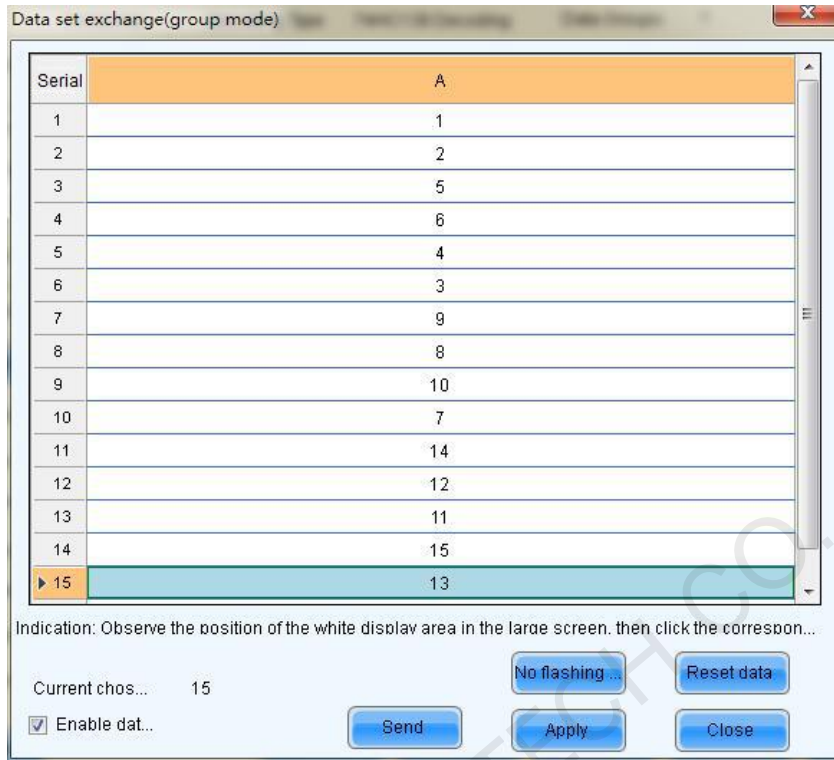


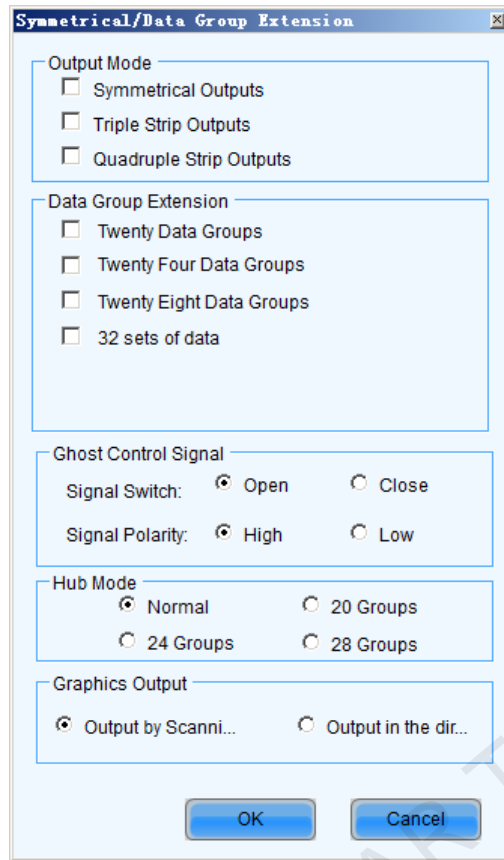
Figure 5-17 Group mode



More settings

- Symmetrical/Data Group Extension

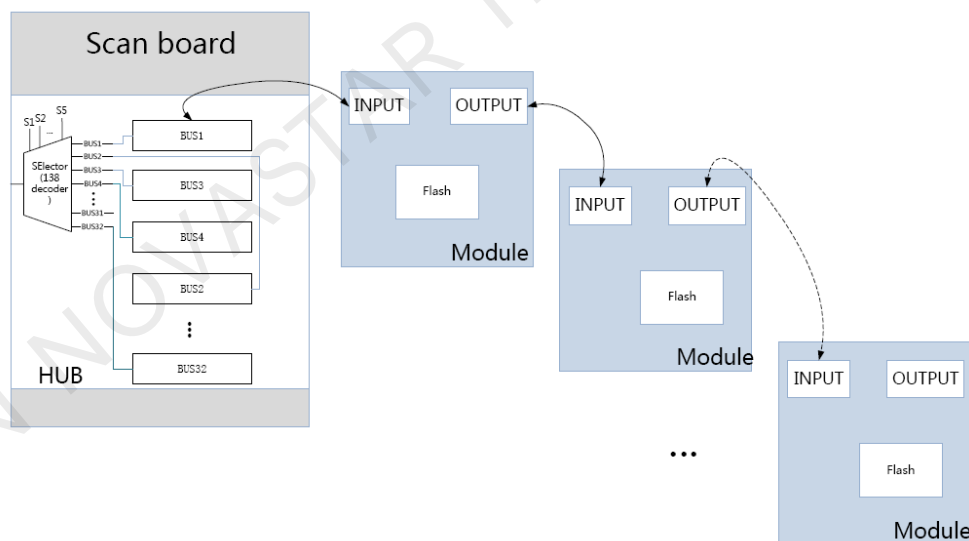
Figure 5-18 More settings



- Output Mode
 - Symmetrical Output: If selected, the two 50-pin output ports of a receiving card will work for the left and the right half of the cabinet pixel array respectively.
 - Three doors output: Being optional, and after being selected, the loaded box will be divided into three parts from left to right.
 - Four doors output: Being optional, and after being selected, the loaded box will be divided into four parts from left to right.
- Data Group Extension (Only one of the following options can be selected.)
 - Twenty data group: If selected, the receiving card will provide 20 sets of output data for the cabinet.
 - Twenty Four data group: If selected, the receiving card will provide 24 sets of output data for the cabinet.
 - Twenty Eight data group: If selected, the receiving card will provide 28 sets of output data for the cabinet.
 - 32 sets of data: If selected, the receiving card will provide 32 sets of output data for the cabinet.
- Ghost Control Signal
 - Signal Switch: the **On** or **Off** could be selected.
 - Signal Polarity: the polarity of the signal could be selected according to the design of the afterglow circuit.
- Hub Mode

- Select the Hub mode of the receiving card, which could be divided into normal, 20 groups, 24 groups or 28 groups.
 - Graphics Output
 - The output in the scanning direction or the output in the reverse direction could be selected.
 - Monitoring Card Data Line Adjustment
 - If the monitoring corresponding signals are mismatched when the monitoring card HUB is connected to the receiving card, the corresponding signal of each monitoring data line can be adjusted manually.
 - Additional Function
 - Eliminate the afterglow of the insulated points, and shut down the indicators of the receiving card, Shorten the synchronization time, Brightness slowly brighten, and EMC Function.
 - Flash Arrangement
 - Figure 5-19** is the physical connection schematic diagram of Flash. According to that diagram, the sequence number of BUS is determined by selector. Users shall consult HUB board designer for connection of the flash module to confirm the sequence number of BUS. One BUS can be cascaded with multiple modules. The MOM Topology can be set on the software according to the actual order of connection.

Figure 5-19 Physical connection schematic diagram of Flash

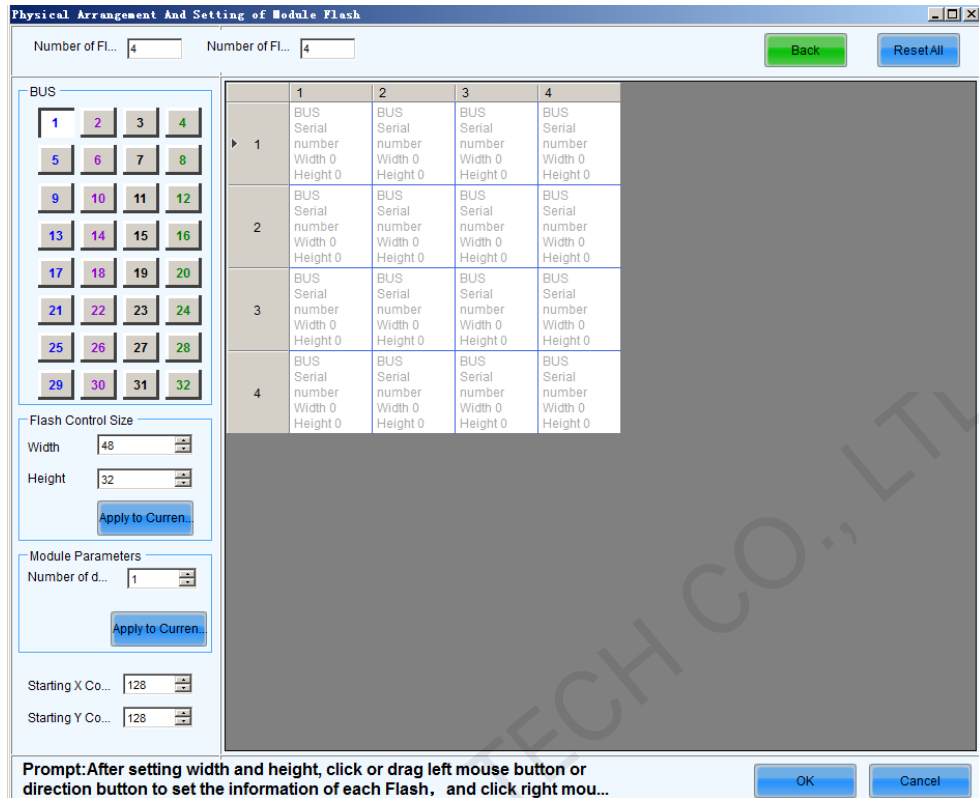


As shown in **Figure 5-20**, to set MOM Topology on the software, firstly set FLASH row and column numbers, and then click anywhere on the right side of the window, select the corresponding BUS, and based on the actual route, click the left button of the mouse or press the arrow key to set each piece of Flash information according to the order (control size and coordinates).

Select a BUS and set Flash control size, and then click "Apply to current BUS"; the size of Flash with BUS connection will be modified as the current value.

After Flash Control Size is set, click "Reset All", and then all Flash Control Sizes will be reset as the size set currently.

Figure 5-20 MOM Physical Setting

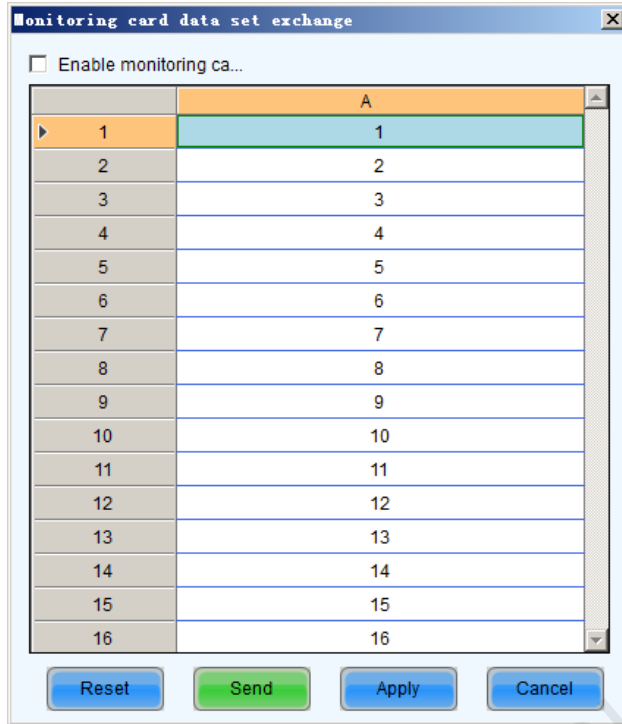


- Monitoring Card Data Set Exchange

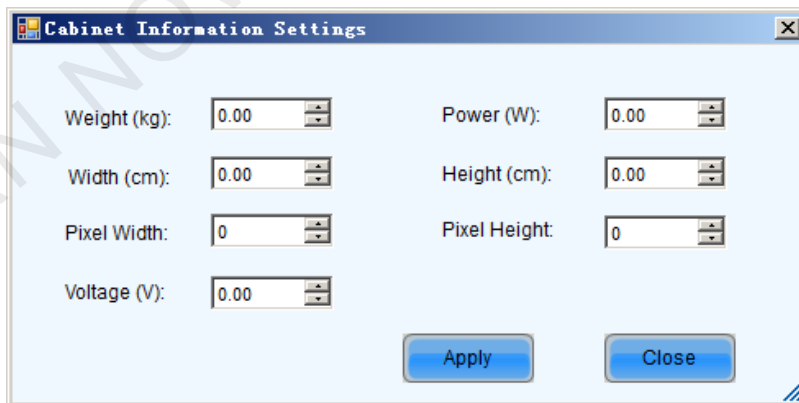
Monitoring card data set exchange function supports the exchange of serial 16-set data, serial 20-set data, and parallel 64-set data. In case of an incorrect HUB connection with data set exchange being set in **Data group exchange**, settings thereof must be served as reference to modify the corresponding information of the monitoring card data set.

Set data type in **Smart Settings** or set data set expansion in **Symmetrical/Data Group Extension**. When it is set to parallel 16-set or 20-set data, the system will supply 16-set or 20-set data exchange for the monitoring card. When it is set to serial 24-set or 28-set data, the system will supply a 64-line monitoring card data set exchange configuration window.

Select **Enable monitoring card data set exchange** to make it work after exchange data configuration.



- Reset: Clear the configured monitoring card data set exchange information and set to the default configuration.
 - Send: Send the configuration data to the hardware.
 - Apply: The system will save the configured data.
 - Cancel: Cancel the current configuration and exit the configuration interface of the monitoring card data set.
- Cabinet Information Settings
Set the basic cabinet information, such as weight, power, width, height, pixel width, pixel height and voltage.



Other Parameters

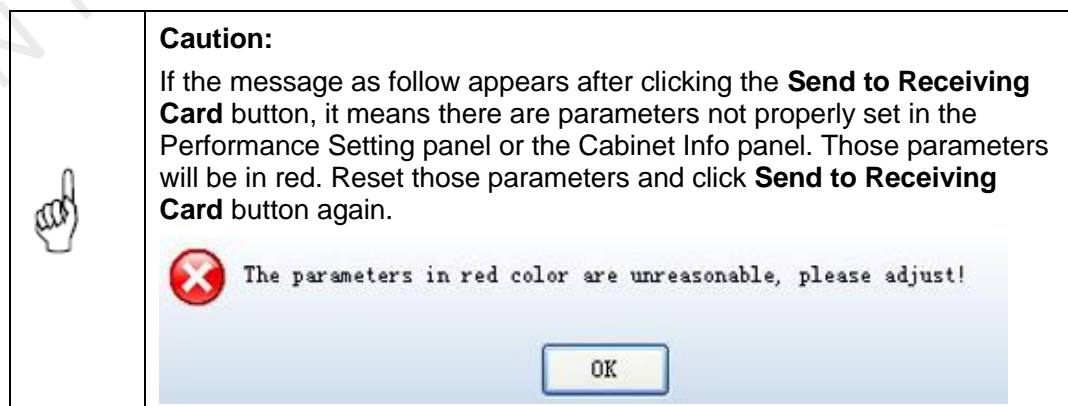
- Refresh Rate
This is the rate that images shown on a LED display are update. The higher the refresh rate is, the more stable the video is for watching.
- Grayscale Level

Normally, 256 levels of gray scale is enough for two-color LED displays, 4096 levels enough for indoor full color LED displays, and 16384 levels enough for outdoor full color LED displays. And apparently, the more levels the gray scale is divided into, the more exquisite the shown images will be.

- **Frequency**
This is the frequency of the shift clock.
- **Data Duty**
This is the duty cycle for the shift clock. The shift clock frequency can be increased by changing this parameter. Normally, the duty cycle should be set as 50%.
- **Data Phase**
By phase here refers to the time relation between the shift clock and the corresponding data to be shifted. This parameter can be used to eliminate the errors due to the phase, such as image dislocation and flashing pixels.
- **Accelerate Rate**
This parameter is used to increase the refresh rate.
- **Blanking Time**
This is the line blanking interval. This parameter can be used to weaken the decoy. Increase the value of this parameter if decoy is serious.
- **Ghost Control**
This refers to the time to end the process for weakening decoy. It is used in conjunction with Blanking Time and Line Change Time to weaken the decoy.
- **Line Change Time**
This parameter refers to the time to switch to the next row. It is used in conjunction with Blanking Time to weaken the decoy of scan mode LED displays.

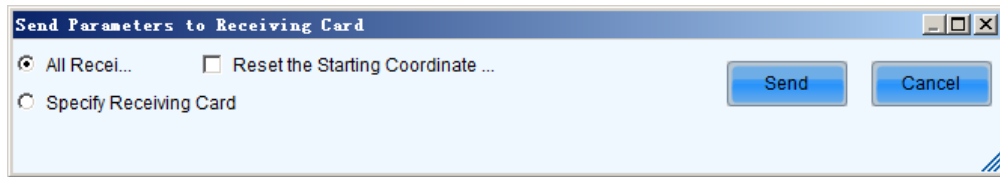
The steps of performance parameters adjustment are as follow.

- Step 1 Adjust the parameters in the Performance Setting panel (Figure 5-15) until the Maximum Width and Height shown in the Cabinet Info panel (Figure 5-14) are larger than the pixel array size of the cabinet. Then click the **Send to Receiving Card** button.



- Step 2 If all parameter settings are acceptable, the dialog as shown in Figure 5-21 will appear.

Figure 5-21 The dialog for specifying receiving cards to send the parameter settings to



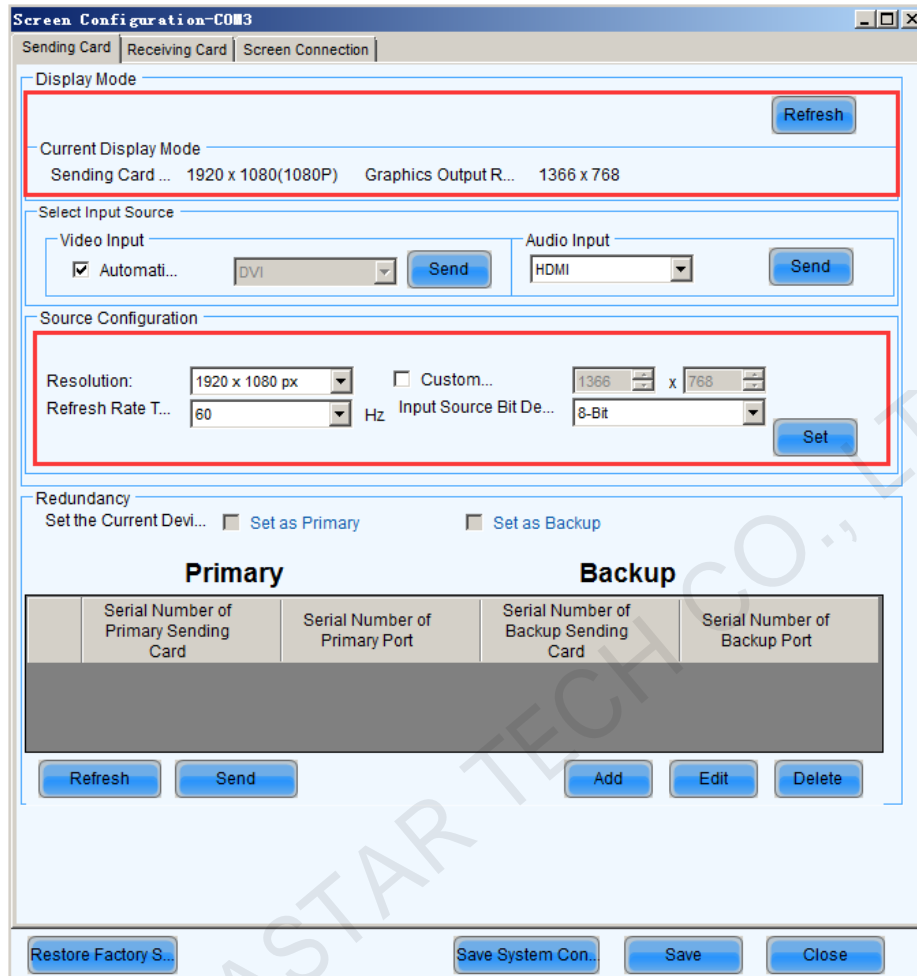
- **All Receiving Card**
When this option is selected, parameter settings will be sent to all receiving cards that are connected to the current sending card.
- **Reset the Starting Coordinate of Receiving Card**
This option is available when **All Receiving Card** is selected. When this option is checked, start positions of all relating receiving cards (receiving cards that are connected to the current sending card.) will be set as (0,0). Thus all relating receiving cards will show (on their pixel arrays) the upper left corner image.
- **Specify Receiving Card**
Send the performance parameters by topological diagram or physical address to the specified receiving cards.

5.1.6 Adjust Resolution and Refresh Rate

If the resolution or refresh rate of the input DVI video is different from that saved in the sending card which the DVI video is input into, the related LED display may not be able to work normally. For example, the image shown could be zoomed in or out, overlapped, or flashing. To avoid these problems, the resolutions and refreshed rates of the input AVI video and the sending card must be the same. Following are steps to adjust the sending card resolution and refresh rate for the case that it is inconvenient to change the AVI video resolution and refresh rate.

- Step 1 Open the Sending card page in the Screen Configuration window. Shown in [Figure 5-22](#) is the Sending card page. Adjust the parameters in the **Set the sending card display mode** panel as required.


Figure 5-22 The Sending card page



- **Sending Card Resolution**
This is the image resolution saved in the sending card.
- **Graphics Output Resolution**
This is the image resolution of the output AVI video of the computer graphic card.
- **Refresh**
Click this button to update the Sending card Resolution and the Graphics output resolution.
- **Resolution**
This is the resolution that is going to be set for the sending card. Select one from the drop-off list.
- **Refresh Rate Times**
This is the refresh rate that is going to be set for the sending card. Select one from the drop-off list.
- **Custom Resolution**
Check this option to customize the sending card resolution.
- **Input Source Bit Depth**
Data bits of the input source.

Step 2 In the **Source Configuration** area, set resolution and refresh rate.

- Step 3 Switch the graphic card mode from duplicate or extend to single display and then switch back. This operation is to avoid physical reconnecting DVI cable for the graphic card to update sending card info.
- Step 4 If refresh rate is changed, parameters settings on the Receiving Card page must be resent. If it is not sent, the receiving card may self-adapt to the refresh rate; when the refresh rate is too high and exceeds the on-load range, the receiving card will not self-adapt to the refresh rate, then the new refresh rate must be sent to the receiving card.

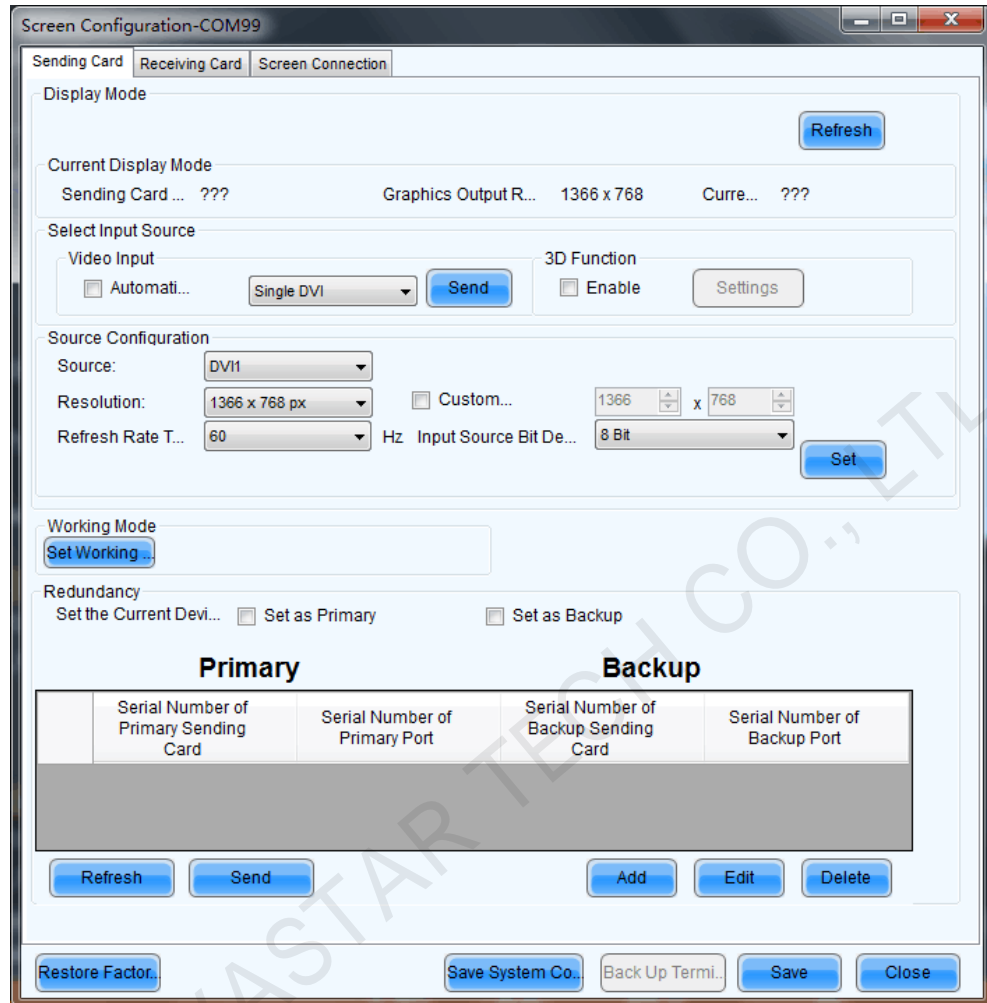
	<p>Note:</p> <ul style="list-style-type: none">• If the resolution of the final DVI video is different from that of the computer which is use to configure the Mars serial LED display control system, the sending card resolution must be set as that of the final DVI video when the configuration operation is finished.• If the refresh rate of the final DVI video is different from that of the computer which is use to configure the Mars serial LED display control system, the sending card refresh rate must be set as that of the final DVI video when the configuration operation is finished. And don't forget to resend the parameters settings on the Receiving Card page.
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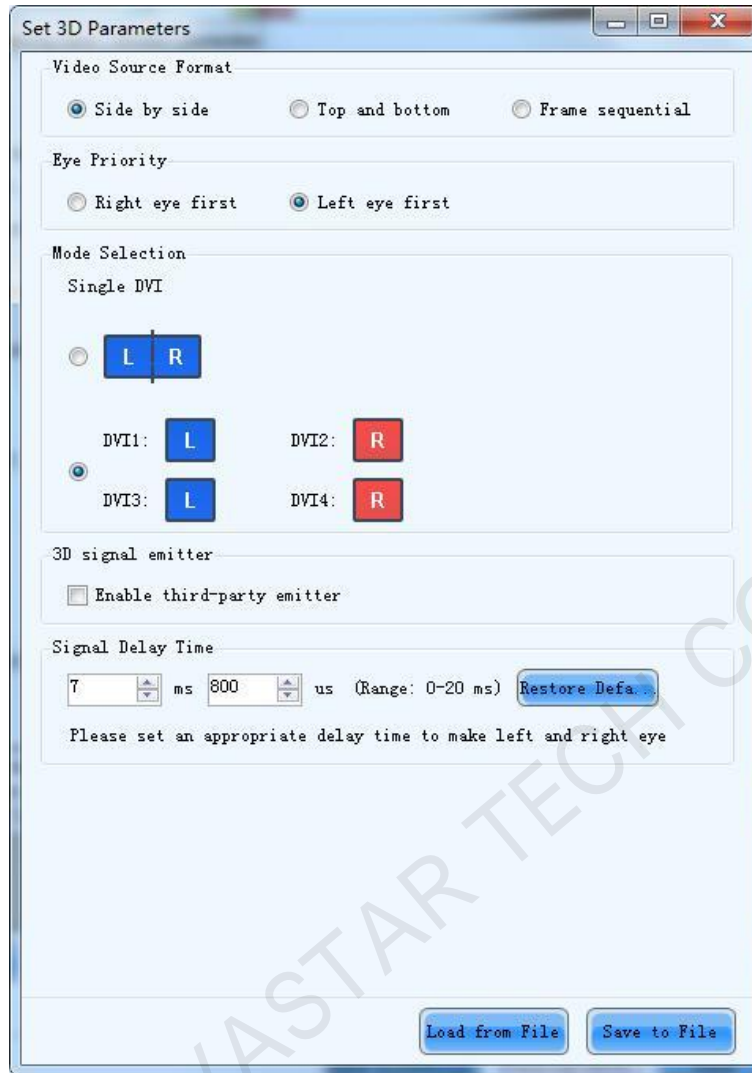
5.1.7 3D Function

Prerequisites: The independent controller connected to the system supports the 3D function.

- Step 1 In the **3D Function** area, select **Enable** and then click **Settings**.
- Step 2 Set the desired 3D parameters, or click **Load from File** to load an existing 3D configuration file.
- Step 3 Click **Send** to send the parameters to hardware.

Figure 5-23 Configuring 3D parameters





5.1.8 Working Mode Settings

Prerequisites: The independent controller connected to the system supports changing working mode.

- Step 1 Choose **Screen Configuration > Sending Card**. In the **Working Mode** area, click **Set Working Mode**.
- Step 2 On the **Set Working Mode** page, choose the working mode and sending card.
- Step 3 Click **OK**.

5.1.9 Low Latency Settings

Prerequisites: The independent controller connected to the system supports low latency.

Choose **Screen Configuration > Sending Card**. In the **Low Latency** area, select **Enable Low Latency**.

5.1.10 Redundancy Settings

The redundancy settings make the connection of relating the sending cards into a loop. In the case that some Ethernet cable within the loop is disconnected by accident, a slave device will take over the sending cards behind the disconnection point and keep the LED display working normally.

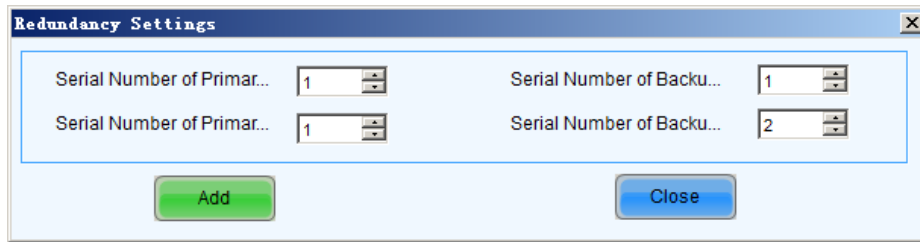
Primary		Backup	
Serial Number of Primary Sending Card	Serial Number of Primary Port	Serial Number of Backup Sending Card	Serial Number of Backup Port

- **Set the Current Device:** Set the current device as the primary or backup device.
- Master Device
 - **Master Sending Board Index:** this is the index of the sending card which is to be set as a master device.
 - **Master Port Index:** this is the index of the Ethernet port of a master device (sending card) that is used to output data.
- Slave Device
 - **Slave Sending Board Index:** this is the index of the sending card which is to be set as a slave device.
 - **Slave Port Index:** this is the index of the Ethernet port of a slave device (sending card) that is used to output data.
- Refresh
 - To update the current hot backup information.
- Send
 - To send the hot backup settings to hardware.
- Add
 - To add a new record into the hot backup info list.
- Edit
 - To edit a record in the hot backup info list.
- Delete
 - To delete a record in the hot backup info list.


Operation procedures

- Step 1 Click the **Add** button to open the dialog for adding a hot backup record. The dialog is as shown in [Figure 5-24](#).

Figure 5-24 The Hot Backup Setting dialog



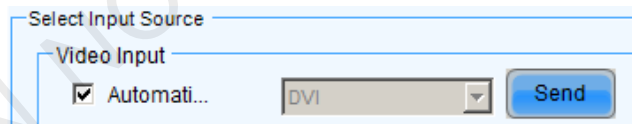
Step 2 Enter the indexes as required and click the **Add** button on the dialog.

	<p>Note:</p> <ul style="list-style-type: none">• Only for the sending cards that are in the same cascade chain can master-slave hot backup relation be set.• Ethernet ports of the same sending card can also be set as hot backup of each other. As in Figure 5-24, the Ethernet port 2 is the hot backup of the Ethernet port 1.• Hot backup can be set between the Ethernet ports of a sending card.• To set a backup device as a primary device, deselect Set as Backup and click Send to HW to modify the backup device information. Then select Set as Master and click Send.• The sending card that is used for LED display configuration cannot set as a slave device unless the LED display configuration information on it has been deleted.
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Step 3 Click **Send** button to send the hot backup settings to the hardware.

5.1.11 Inputs Settings

The system is capable of setting input videos switching, also supports SDI, Dual_DVI and HDMI video interfaces. Such settings could be configured only when the accessed sending card supports the video and audio.



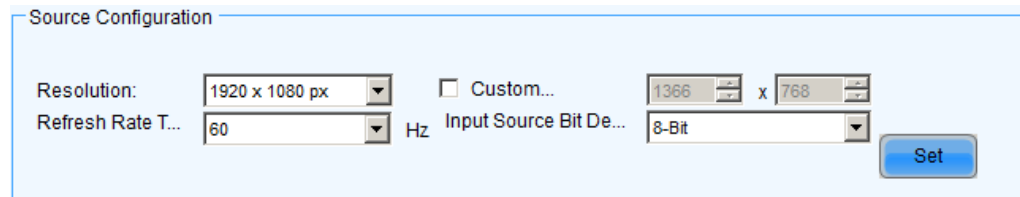
Select **Auto Select**, then the system will automatically select a video according to the accessed videos.

Click on **Sending**, then the system will send the configuration information to the sending card.

5.1.12 Source Settings

The system can configure the resolution, refresh rate and backup for the sending card accessed to Dual_DVI and HDMI connectors.

Figure 5-25 HDMI Settings





- **Source:** Select Dual_DVI or HDMI high-definition input.
- **Resolution:** Set the inputs resolution to a system-defined one or a customized one by entering the customized resolution in the pop-up check box after selecting **Customize a Resolution**.
- **Refresh rate:** Select the refresh rate of the inputs.
- **Source backup settings:** Click on **Settings** close to **Source Backup Settings** to respectively set backup connectors for SDI, Dual_DVI and HDMI. Only R5 is supported by now.

After setting the above options, click on the **Send** to send the parameters to the hardware.

5.1.13 Save Settings to Flash

Once data is saved to hardware, the saved data won't be lost even the hardware is powered off. And it displays normally after reconnect the power.

- To save the settings to hardware, click the **Save** button at the lower right corner of the **Screen Configuration** window.
- On receiving card page, a  button will appear by enter **admin** on the keyboard (It defaults to hide status to prevent random operation). Appropriate parameters can be saved to factory area before the cabinets leave factory. The parameters we usually adjust are of application area. If you are not satisfied with the parameters, click  to restore the parameters of factory area to application area.

Note: So far, only some receiving cards of the Armor series support this function.

5.1.14 Save/Load Configuration Files

There are four types of configuration files at present, the module configuration file, the receiving card configuration file, the LED display configuration file and the system configuration file.

- **Module Configuration File**
Saved in a module configuration file are the settings of modules. Module configuration files can be used for quick configuration of modules requiring the same kind of settings.
- **Receiving card Configuration File**
Saved in a receiving card configuration file are the settings of receiving cards. Receiving card configuration files can be used for quick configuration of cabinets requiring the same kind of settings.
- **LED Display Configuration File**

Saved in a LED display configuration file are the information of how receiving cards are put together to construct a LED display. The LED display configuration files can be used for quick construction of a LED display.

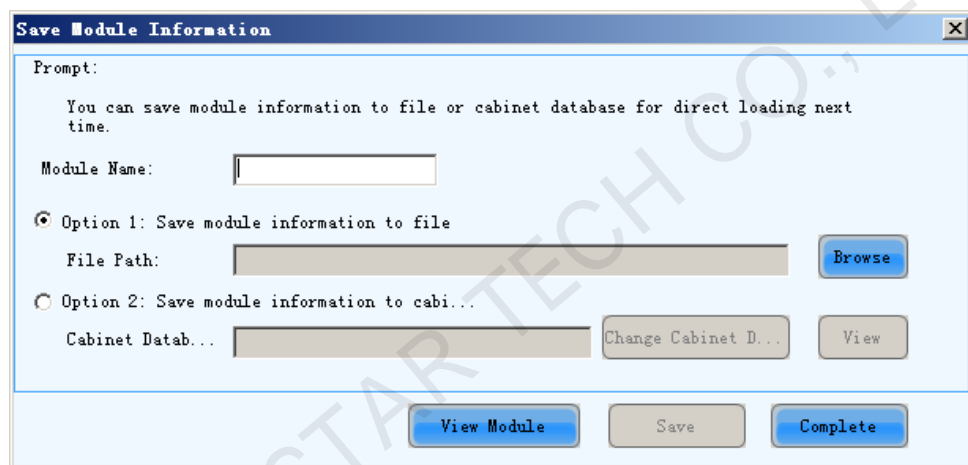
- System Configuration File
Saved in a system configuration file are the settings of a LED display system. It can be used to quickly recover a LED display system from error, or to quickly start a LED display.

Save a module configuration file

There are two ways to save a module configuration file:

- The first is to save it at the last step of smart setting.

Figure 5-26 The dialog for saving module setting to a module configuration file




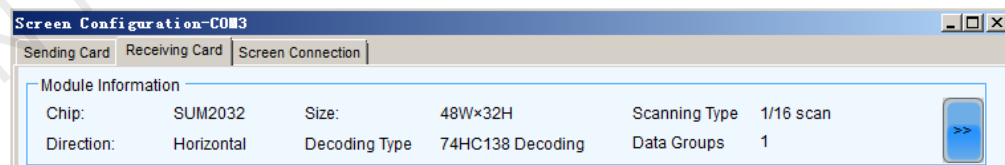
- The other way is to click  button in the **Module Information** panel of the **Receiving card** page.

Figure 5-27 The Module Info panel



Load a module configuration file

In smart setting step 3, select **Option 2: Load module from file** on the **Smart Setting** dialog and follow the instructions.

Save a receiving card configuration file

Click **Save to file** on the **Receiving card** page to save receiving card information as configuration file.

Load receiving card configuration files

To load a receiving card configuration file, click **Load from File** button to load receiving card information to the page.

Save screen configuration files

Click the **Save to File** button at the bottom of the page to save screen information to configuration file.

Load a LED display configuration file

To load a LED display configuration file, click the **Load from File** button at the bottom of the page to load screen information to the page.

Save system configuration files

To save settings to a system configuration file, click the **Save System Configuration File** button at the bottom of the **Screen Configuration** window and follow the instructions.

Load a system configuration file

Please refer to [5.1.1 Screen Configuration Using System Configuration Files](#) for details.

5.2 Adjust Brightness



Click **Brightness** on the main interface, and the **Brightness Adjustment** window pops up on which brightness, contrast, color temperature and color space can all be set.

There are two methods to adjust the brightness: manual adjustment and automatic adjustment.

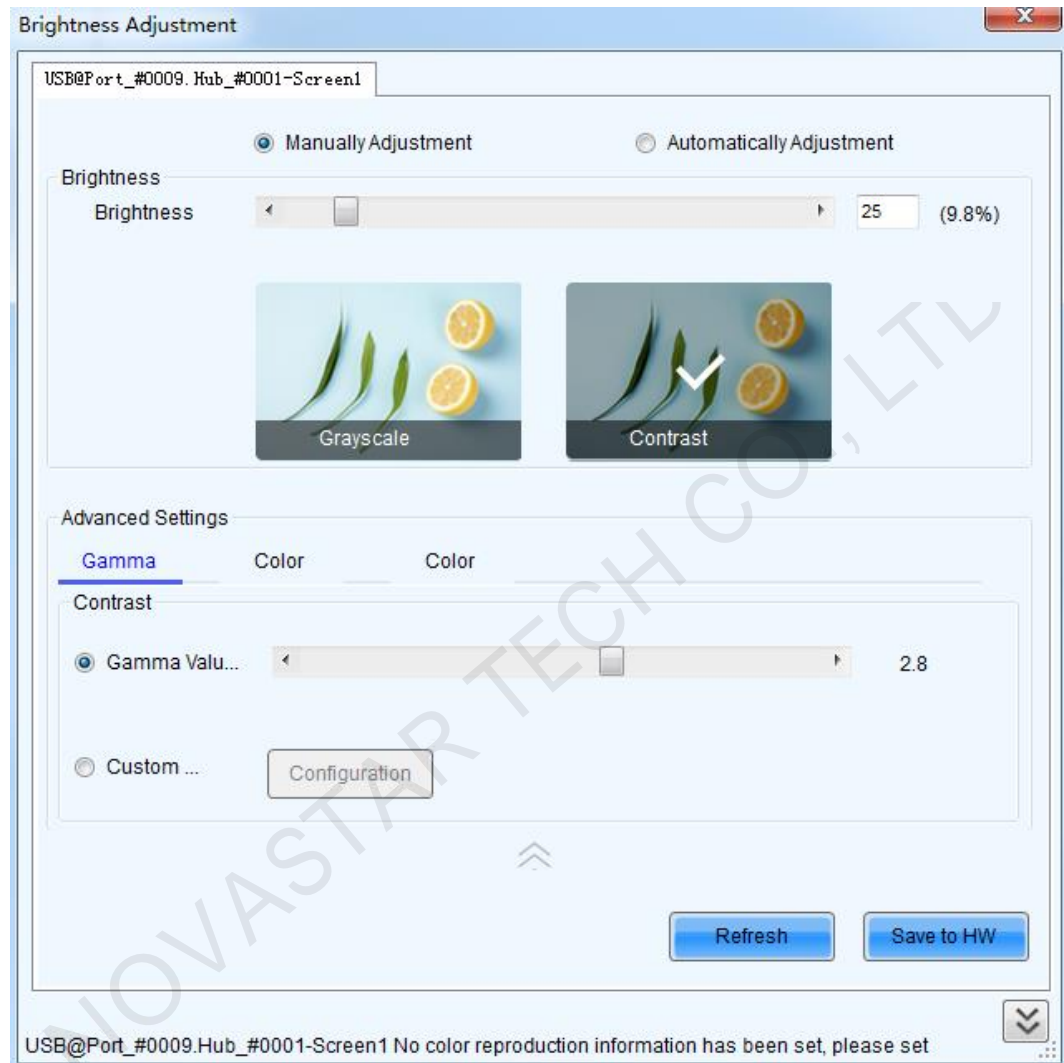


Notes:

- During surveillance operation, the software adjusts the LED display brightness in accordance with user configuration.
- When surveillance is interrupted or serial control pot is disconnected, the hardware will automatically take over brightness adjustment.
- Display combinations do not support hardware adjustment
- The prerequisite of hardware adjustment is: the light sensor must be connected to the first sending card of LED display, or other devices connected to this card.
- All devices in one serial port have the same hardware adjustment mechanism, and the latest adjustment parameters prevail.

5.2.1 Manual Adjustment

Figure 5-28 Manual adjustment



- Brightness
Set the brightness value.
- Advanced Settings
Adjust the Gamma, color temperature and color space.

5.2.2 Automatic Adjustment

The goal of automatic adjustment is to achieve automatic adjustment based on time. You can follow the wizard to set the parameters. There are two methods of adjustment, **Advanced Adjustment** and **Adjust by Light Sensor**.

- Step 1 Choose **Automatically Adjustment** and click **Wizard Settings**.
- Step 2 Choose **Advanced Adjustment** or **Adjust by Light Sensor**. Then, click **Next**.
- Step 3 Adjust the parameters on the displayed page. Then, click **Finish**.

Step 4 Click **Save**.

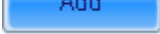
On the Brightness Adjustment page, click  and you can see current brightness.

5.2.2.1 Advanced Adjustment

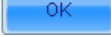
You can configure multiple time points, each point can be configured with specified brightness or environment brightness.

- **Specified brightness:** The brightness of LED display from certain time on designated by the user, the brightness is fixed.
- **Environment brightness:** The brightness of environment from certain time on designated by the user, the software will automatically adjust the LED display brightness in accordance with the parameters set by the users as well as environment brightness information collected by light sensors so that the LED display can exhibit proper brightness under different environment brightness.


Add specified brightness

Step 1 Click , Set the start time, type of adjustment and designated brightness.

Step 2 Click [More Settings](#), Choose whether to adjust color temperature, if it's needed to adjust color temperature, you can choose color temperature segment in the drop down list (color temperature table must be configured in advance, please see description of color temperature table in [5.7 Advanced Color Configuration](#)), check **Adjust Gamma**, drag scroll bar to adjust Gamma value.

Step 3 After parameter configuration is done, click , to add another designated brightness.

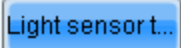
Add environment brightness


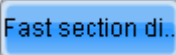
Step 1 Click , to set start time and type of adjustment.


Step 2 Click [More Settings](#), choose whether to adjust color temperature, if it is needed to adjust color temperature, you can choose color temperature segment in the drop down list (color temperature table must be configured in advance, please see description of color temperature table in [5.7 Advanced Color Configuration](#)), check **adjust Gamma**, drag scroll bar to adjust Gamma value.


Configure light sensors



Environment brightness is detected by light sensors, a system must be equipped with light sensors, and you must configure the light sensor before adding environment brightness.

- : Detect light sensors connected to sending cards and function card, the light sensors that connected to function card must be set as the external device.

- : Refresh current light sensor connection conditions to avoid new connection or disconnecting the light sensor during operation.
- **When light sensor fails, adjust the brightness to:** Enabled after being checked. If not enabled, when light sensor fails, the brightness will remain at the latest updated brightness value.
- : Divide the portion between the maximum environment brightness and minimum environment brightness into designated equal parts, the portion between the maximum and minimum LED display brightness is also divided into similar equal parts. The software will adjust the LED display brightness to corresponding section in accordance with the section of current environment brightness.

	<p>Note: NovaLCT first generates the environment brightness value from measurement results of all available light sensors according to the calculating type. And then NovaLCT uses the generated environment brightness to adjust the LED display brightness according to the parameter settings, such as brightness thresholds, segment numbers.</p>
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- **Night Mode**
Night mode is to control screen brightness at night. The night mode is required to be enabled to avoid abnormal screen brightness caused by light sensor that disturbed by external light or by abnormal collection environment brightness data.
In night mode, the system will adjust the screen brightness to the maximum brightness value in night mode while the screen brightness which is adjusted based on the environment data collected through the light sensor is greater than the set maximum brightness value in night mode.
1. Select the check box in front of **Opening** to start the night mode.
 2. Click  to add setting items of the night mode including **Start time**, **End time** and **Brightness maximum**.
 - Start time: Set the start time for the night mode.
 - End time: Set the end time for the night mode.
 - Brightness maximum: Set the maximum brightness value in night mode.

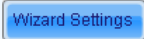
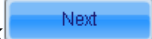
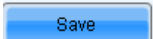
	<p>Note:</p> <ul style="list-style-type: none">• Maximum of 4 periods could be set for the night mode, and there cannot be any overlap between every two periods.• When the night mode is enabled, at least one period must be set.• When the start time and end time are set to the same time value, night mode is default as the only serving mode all the time.• The system does not support hardware-based adjustment.• A selected record could be modified by clicking the  icon.
---	--

3. Click **OK** to complete the night mode setting.

4. Click **Finish** to complete the light sensor setting.

5.2.2.2 Adjust by Light Sensor

One time point will be generated by NovaLCT automatically, and it will be configured with environment brightness by default.

- Step 1 Click , check **Adjust by Light Sensor**, then click .
- Step 2 If you have not finished configuration of light sensor, it is need to configure the light sensor then, the detailed operation, please refer to the step 3) in [5.2.2.1 Advanced Adjustment](#).
- Step 3 Add specified brightness, ambient brightness as required, or edit or delete the added settings.
- Step 4 All operations are finished, click .

5.2.2.3 Auto Brightness Time Interval

The following steps are to set the time interval for auto brightness.


- Step 1 Click right button on the circled panel icon, as shown in Figure 5-29.

Figure 5-29 Brightness software icon



- Step 2 Select **Brightness Advanced Settings** to open the advanced settings window.
- Step 3 Set the values for **Detect Period** and **Read times of light sensors**. **Detect Period** is the time period the light sensors measure the environment brightness. **Read times of light sensors** is the times that NovaLCT reads the measurement results of the light sensors. Thus the auto brightness time interval is the production of Detect Period and Read times of light sensors.

For example, if light sensors measure the environment brightness every 10 second (this is the Detect Period.) and NovaLCT reads the measurement results of the light sensors for 5 times (this is the Read times of light sensor.) before adjusting the LED display brightness, the auto brightness time interval will be 50 seconds.

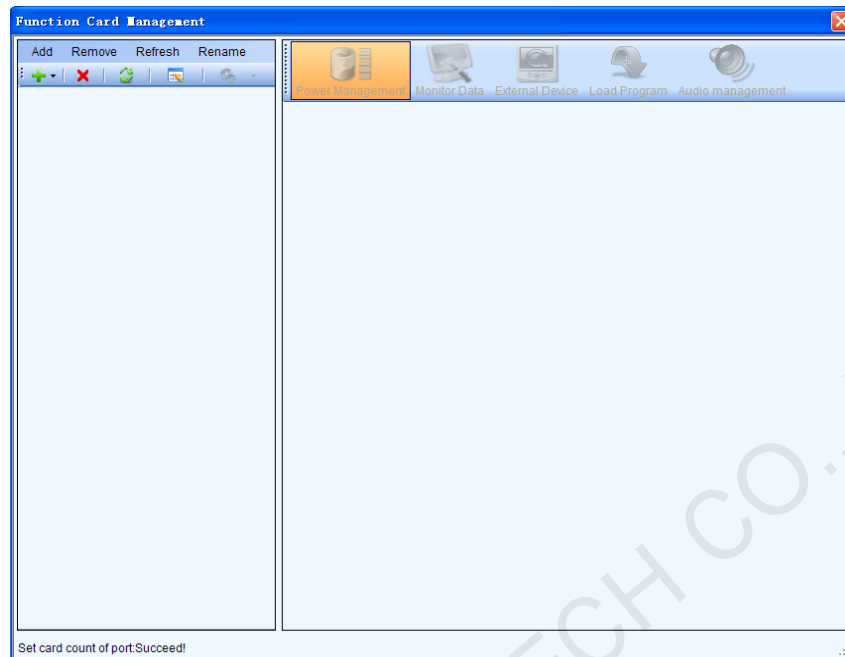
	<p>Note: The default values for Detect Period and Read times of light sensors are 60 seconds and 5 times respectively. Thus the auto brightness time interval is 300 seconds or 5 minutes by default.</p>
---	---

5.3 Multi-function Card Management

Management operations of the multi-function card, such as multi-function card configuration, program loading, external device configuration, monitored data updating and power supply management, will be given in this section.

Shown in [Figure 5-30](#) is the **Multi-function Card Management** page.

Figure 5-30 The Multi-function Card Management page



5.3.1 Multi-function Card Configuration

Use the menu or tool bar in the panel on the left of the multi-function Card Management page to configure the multi-function card.

- Add
 - **Serial Port Connection:** add a multi-function card which is connected to a serial port of the computer.
 - **Ethernet Port Connection:** add a multi-function card which is connected to an Ethernet port of the sending card.
- Remove

This is to remove the selected node. The selected node could be a multi-function card, Ethernet port, sending card or a serial port.
- Rename

This is to rename the selected multi-function card.
- Serial port Operation

The corresponding menu item and tool bar button are only available when the following requirements are satisfied: The selected node is a serial port; the device connected to the serial port does not match the device type of the serial port or the serial port is disconnected.

 - **Modify Serial Port:** set the selected serial port as one that no multi-function card has been configured for it.
 - **Replace Serial Port:** when the multi-function card of the selected node is connected to a serial port other than that of the selected node, click this button to replace the selected node serial port with the one that is connected with the multi-function card.

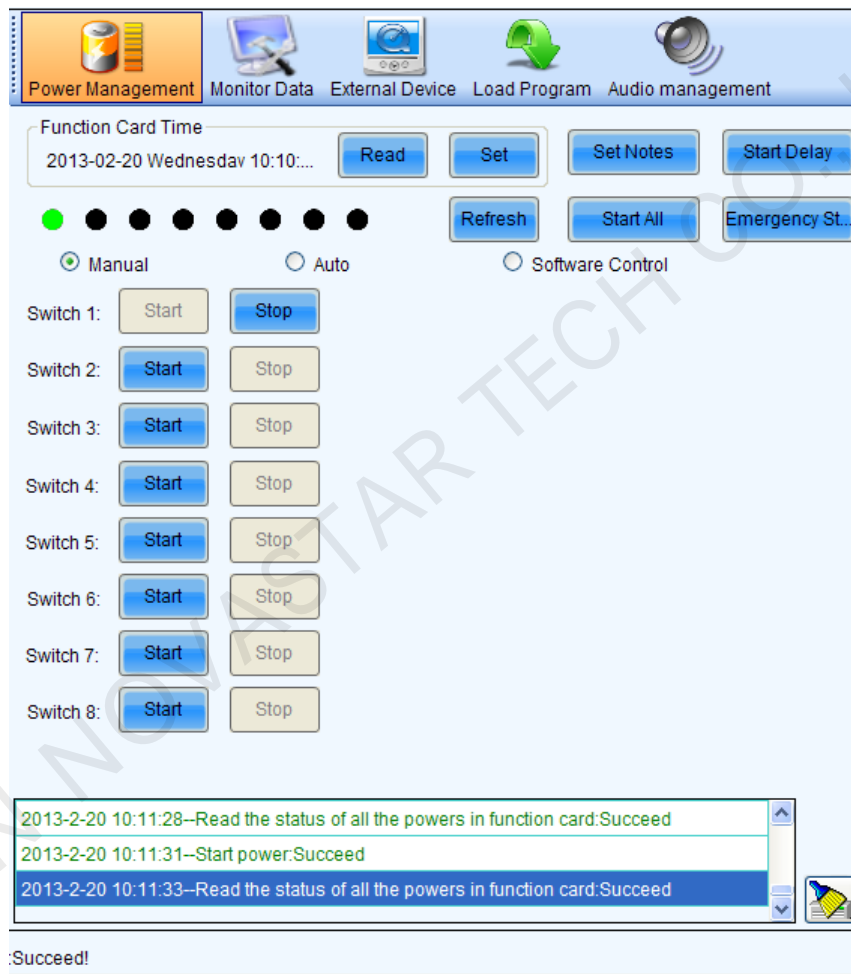
Note:

After the multi-function card configuration is done, all the multi-function cards will perform time synchronization automatically at 0 o'clock every day.

5.3.2 Power Management

Click the **Power Management** button on the **Multi-function Card Management** page to open the page for power management. The Power Management page is shown in [Figure 5-31](#).

Figure 5-31 The page for power management



- Read
Read the time from the multi-function card and show in this panel.
- Set
Set the multi-function card time as that of the computer.
- Set Notes
Set note for each of the power supply of the current multi-function card.
- Start Delay
Set the delay time for starting power. If the delay time is successfully set, the stating of each of the power supply control by the multi-function card will be

delay for the delay time. For example, if the delay time is set as 2 seconds, then each power supply will delay 2 seconds when starts.


- Refresh
This button is to refresh the power management information, including the power control mode (manual, auto or software control), the power supply status (start or stop), the multi-function card time and the delay time.
- Start All
This button is to start all power supplies controlled by the multi-function card.
- Emergency Stop
Click this button to stop all power supplied controlled by the multi-function card. For power supplies under auto control, their schedules will be disabled when the emergency stop operation is executed. The schedules won't be enabled until **Start All** button is clicked.
- Manual
This is to set the power control into manual control mode. Use the Start button or the Stop button to start or stop the corresponding power.
- Automatic Control
This is to set the power control into auto control mode. The hardware system will start or stop the power supplies according to the schedule automatically. The schedule can be set and send to the hardware through NovaLCT.
- Software Control
In this mode, NovaLCT controls the power supplies according to the schedule set for the power supplies.

5.3.2.1 Manual Power Control

Select the Manual option to set the power supply control mode in to manual mode. And the power supplies of the multi-function card can be controlled through the corresponding Start button or Stop button.

5.3.2.2 Automatic Power Control

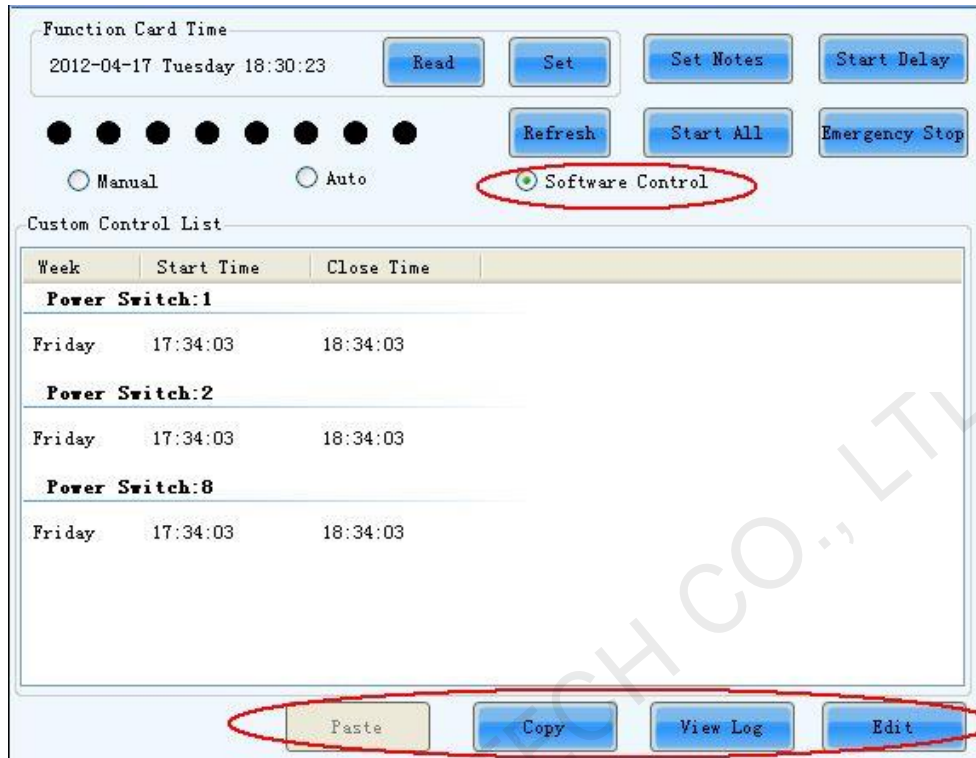
If the power control mode is set to auto mode, please set the automatic control time according to actual needs and then click **Send**.

	<p>Note:</p> <ul style="list-style-type: none">• In Auto mode, the schedule will be disabled if the Emergency Stop button is clicked. The schedule won't be enabled until the Start All button is clicked.• The time standard for automatic power control is the multi-function card time. Check the multi-function card time before setting the schedule for auto power control. To check the multi-function card time, click Read button in the Multi-Function Card Time panel. To set the multi-function card time, click Set button and the multi-function card time will be set the same as that of the computer.
---	---

5.3.2.3 Software Power Control


The page for software power control is as shown in [Figure 5-32](#).

Figure 5-32 The page for software power control



- Copy
To copy the power control schedule of the current multi-function card so it can be applied to other multi-function cards by pasting.
- Paste
To paste the copied power control schedule to the current multi-function card.
- View Log
View the custom power supply control log of the multi-function card.
To check the power control log, select the date of the log to be checked in the box labeled **Select the Log File** and select the multi-function card to be checked from the multi-function card list (the **Address** list) at the left of the page. The detail of power supply control will be shown in the panel at the right of the page.
- Edit
Click this button to open the page for editing the power supply control schedule.
- Delete
Click this button to delete the selected items in the Custom Edit Area.
- Clear
Click this button to clear all existing settings.
- Power Switch
Listed in the panel are the power supplies controlled by the multi-function card.
- Date
Select the days for power control in this panel.
- Time
Set the time for start and stop the power in this panel.

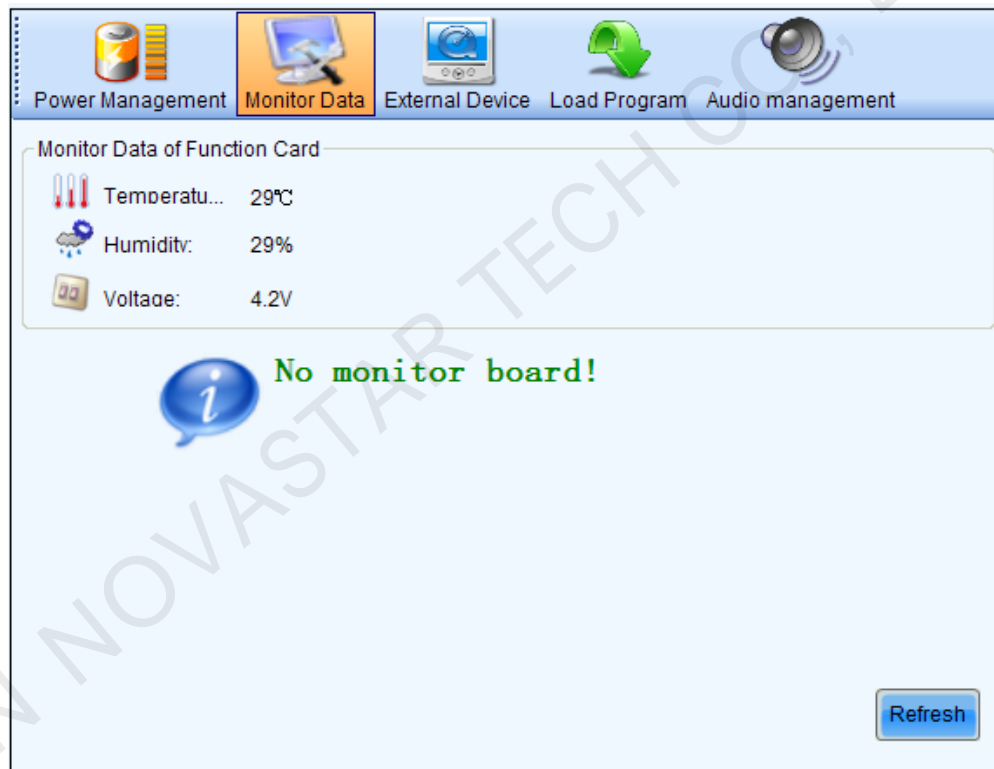
- Add
Click this button to add the settings in the Custom Edit Area to the Custom Control List of Power.

	Note: The time standard for the software control mode is the time of the computer on which NovaLCT is running.
---	--

5.3.3 Monitor Data

Click **Monitor Data** button on the **Multi-function Card Management** page to open the page for system monitoring. Shown in [Figure 5-33](#) is the page for system monitoring.

Figure 5-33 The page for system monitoring

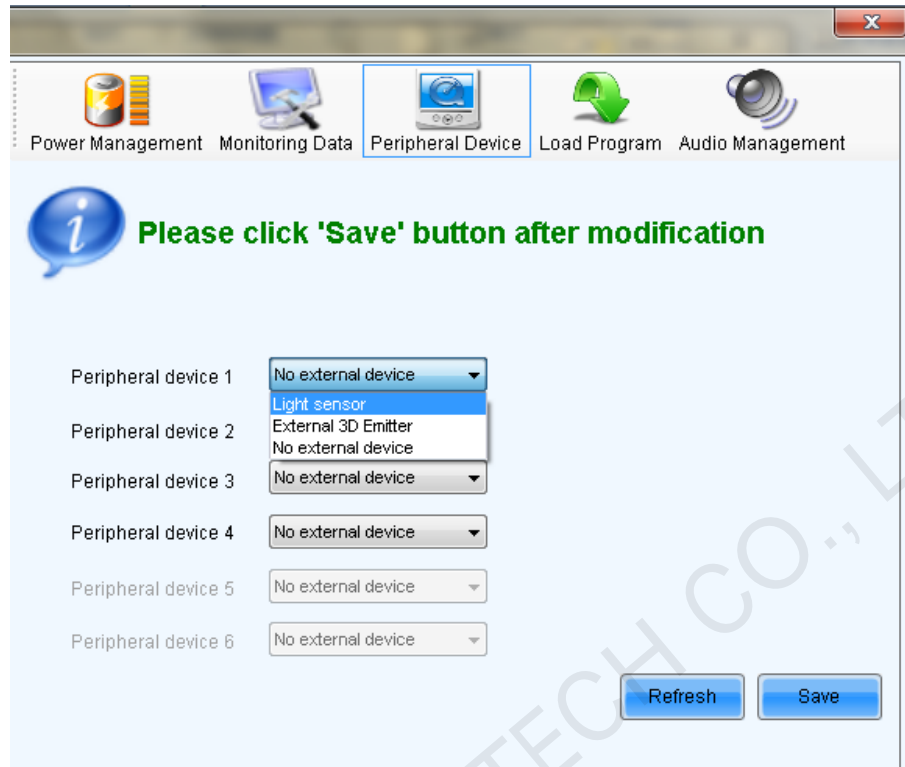


Refresh: Click this button to acquire the monitored data from the current multi-function card and the monitor board that connected to the current multi-function card.

5.3.4 External Device

Click the **External Device** button on the **Multi-function Card Management** page to open the page for external devices management. Shown in [Figure 5-34](#) is the page of External Device.

Figure 5-34 The page for external devices management

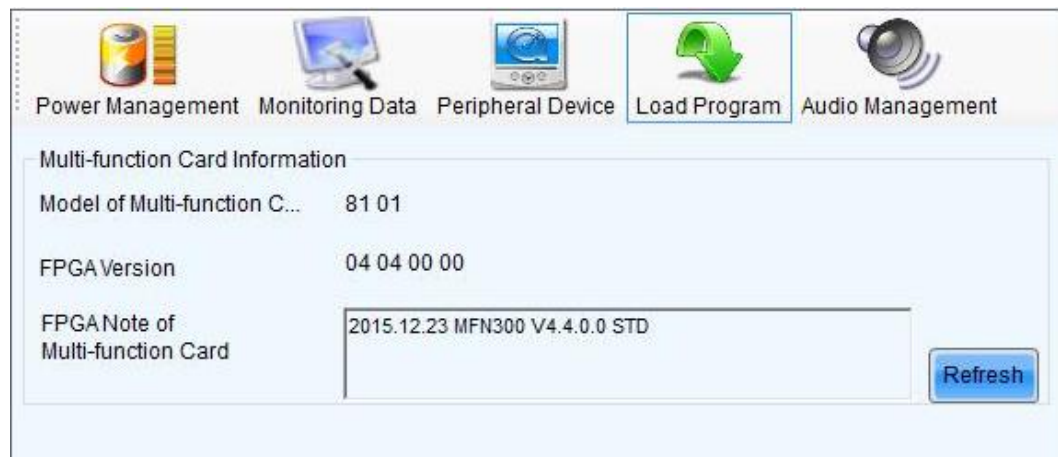


- Refresh
This is to refresh the information of the external devices.
- Save
Click this button to save the external device type settings to a file. The **Save** button must be clicked after any modifying of the external device type settings.

5.3.5 Load Program

Click the **Load Program** button on the **Multi-function Card Management** page to open the page for loading program to the hardware. Shown in [Figure 5-35](#) is the page of program loading.

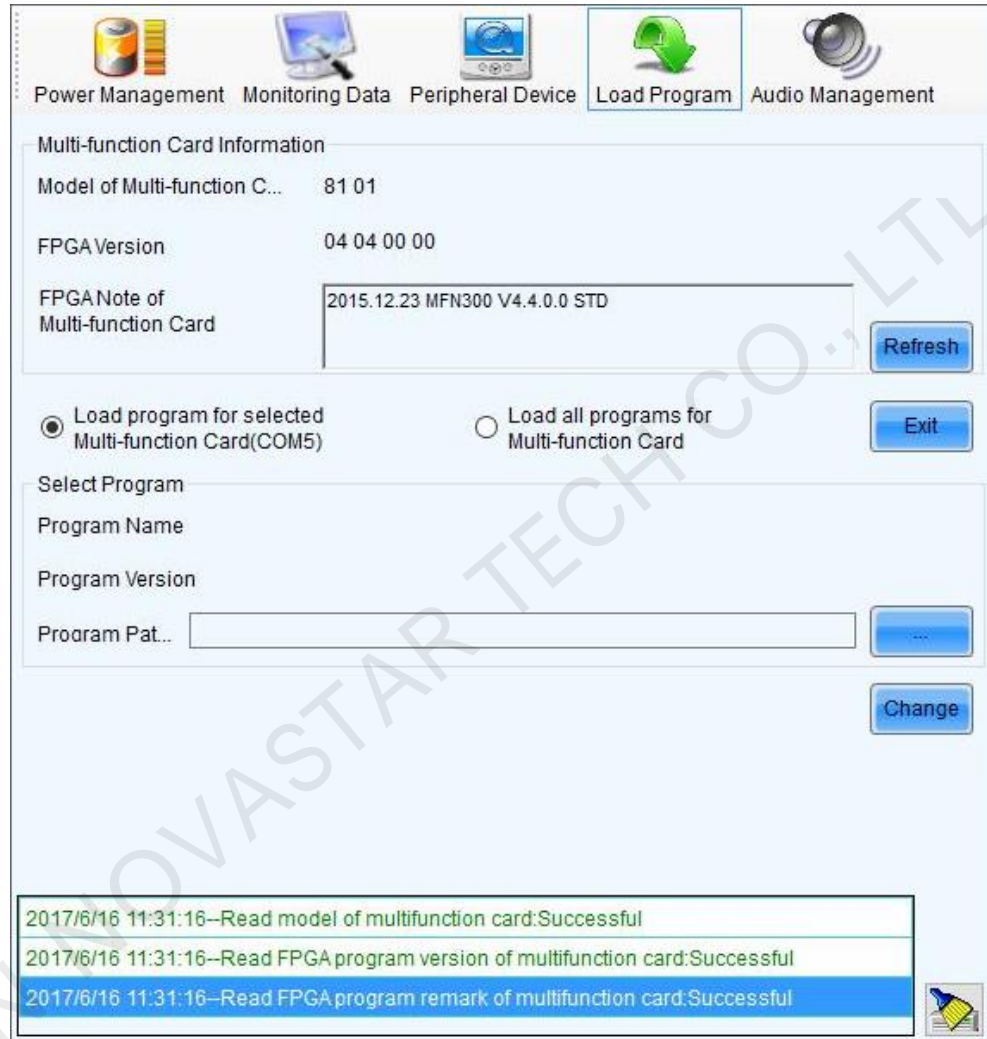
Figure 5-35 The page for program loading




Refresh: Click this button to acquire the version information of the current multi-function card.

Type in admin directly to access the options for program loading. Shown in [Figure 5-36](#) is the page with the program loading options.

Figure 5-36 The page with program loading options



- Exit
Click this button to go back to the page shown in [Figure 5-35](#).
- Load program for selected multi-function card
Select this option to load program to the current multi-function card.
- Load program for all multi-function card
Select this option to load program to all multi-function cards.
- Program Path
Select the program to be loaded here.
- Change
Click this button to load the selected program to the current multi-function card or all multi-function cards.

	<p>Note:</p> <ul style="list-style-type: none">• There isn't any place to view the typing when typing the pass code. Just type in the pass code directly and the page will be shown.• Just type in the pass code again if the one input before is wrong.• It not recommended changing the program unless there are problems with the multi-function cards.
---	---

5.3.6 Audio Management

Click **Audio Management** to set the audio channel connected to the multi-function card.

If an independent audio channel is connected, select **Independent Channel** and click **Set**. If an HDMI audio channel is connected, select **HDMI Channel** and click **Set**.

After the hardware device is replaced, click **Refresh** to read the audio channel connected to the current multi-function card.

5.4 Manage the LED Displays

To make brightness control and monitoring easier, multiple LED displays can be combined together. The combined is called a combination display.

Select **Settings > Multiple-screen Management** to open the **Configuration of Combined Screen** window.

Number of Combined Screen: This is the number of combination displays to be configured.

Operation procedures

Step 1 Set the **Number of Combined Screen** as required and click **Configuration**.

Step 2 Set the name of current combined screen.

Step 3 Set the **Number of Screen** as required in the combination display page and click **Configuration**. If **Screen Count** is 3, there will be 3 colored rectangles labeled 1, 2 and 3 respectively in the sketch map.

Step 4 Right click on a screen to enter the **Currently operating screen information** page.

Step 5 Select a communication port and associated screen.

Step 6 Click **OK**.

- Serial ports

This is the serial port that the target LED display is connected to the computer.

- The screen lists

This is the index of the target LED display in the screen list of the specified serial port.

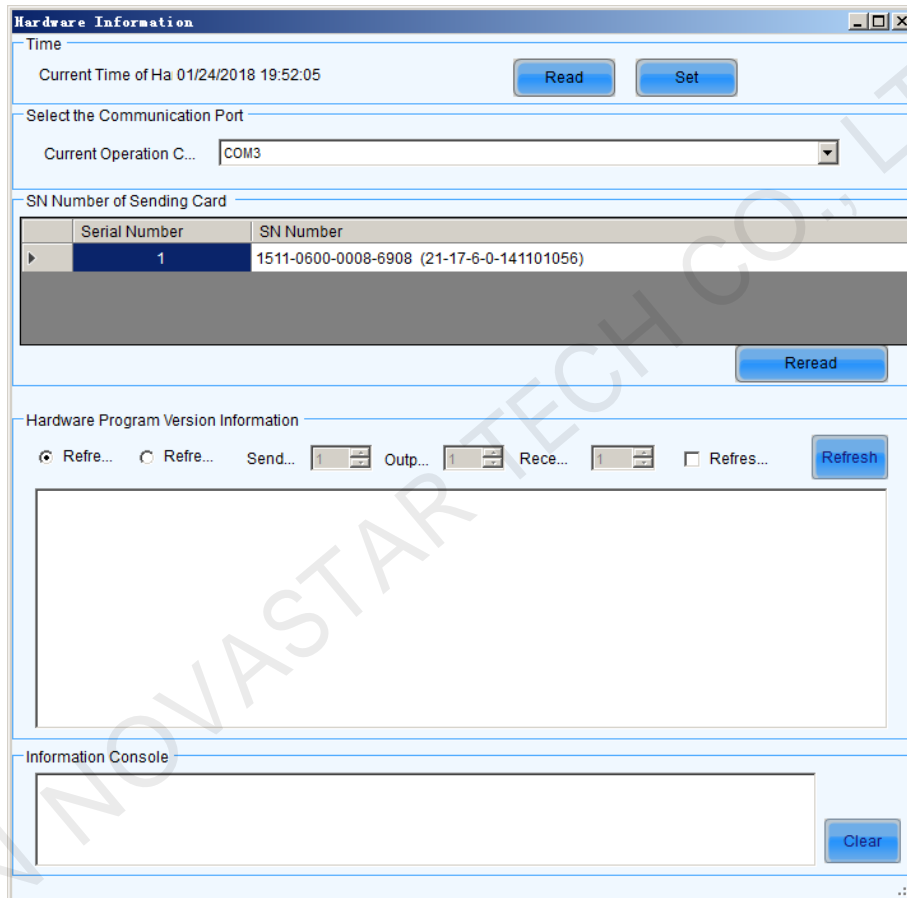
Step 7 Do the same for the other displays of the combination display.

The layout of the displays in the combination display can also be arranged. Use the mouse to drag the displays. The same layout will also be used in the monitoring pages.


5.5 Check Hardware Information

Select **Settings > Hardware Information** to enter the **Hardware Information** page.

Figure 5-37 The Hardware Information page



- **Current Time of Hardware**
This is the date and time of the current synchronous system. Click **Read** button to update the hardware time shown in the **Time** panel. Click **Set** button to set the time of the current synchronous system as that of the computer.

	<p>Note: The date information has been set for the synchronous system when produced. Only time (hour, minute and second) is set here for the synchronous system.</p>
---	---

- **Current Operation Communication Port**
If more than one synchronous system is connected to the computer, set the communication port through which the synchronous system to be configured.
- **SN Number of Sending Card**

Listed are the SNs of all sending cards of the current communication port. To update the listed SNs, click **Reread**.

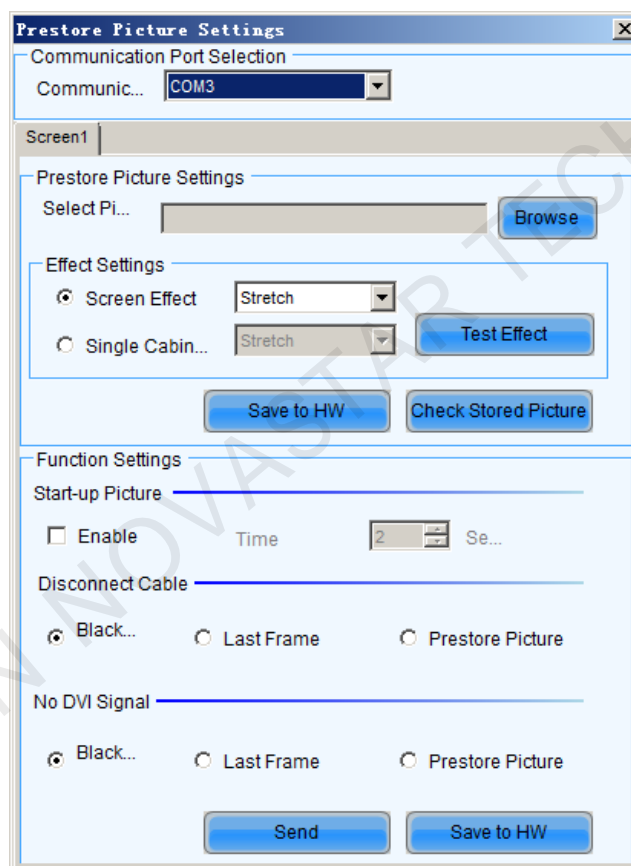
- Hardware Program Version Information
Displays the program version information of the sending card MCU, sending card FPGA, and receiving card FPGA.

5.6 Prestore Screen

User can store a picture as the screen's prestore screen in the **Prestore Picture Settings** window, and then use as boot logo, cable disconnected logo, and no DVI signal logo.

Select **Settings > Prestore Screen**, as shown in [Figure 5-38](#).

Figure 5-38 Prestore Picture Settings window



Prestore Picture Setting

- Select Picture: Select the picture's path of Prestore Screen.
- Screen Effect: The selected picture will be stretched, tiled or centered to the screen. (Each cabinet will show part of this picture, and they matching to be the whole picture)
- Single Cabinet Effect: The selected picture will be stretched, tiled or centered to each cabinet of the screen. (Each cabinet will show this picture in its own region).

- Test Effect: Show the selected picture on the screen. (This operation will not save the picture to the hardware.)
- Save to HW: User can click this button to save the picture as Prestore Screen to the hardware if he is satisfied with the test effect.
- Check Stored Picture: In order to check the stored effect, click this button to show the Prestore Screen which was stored in the hardware on the screen.

Function Settings

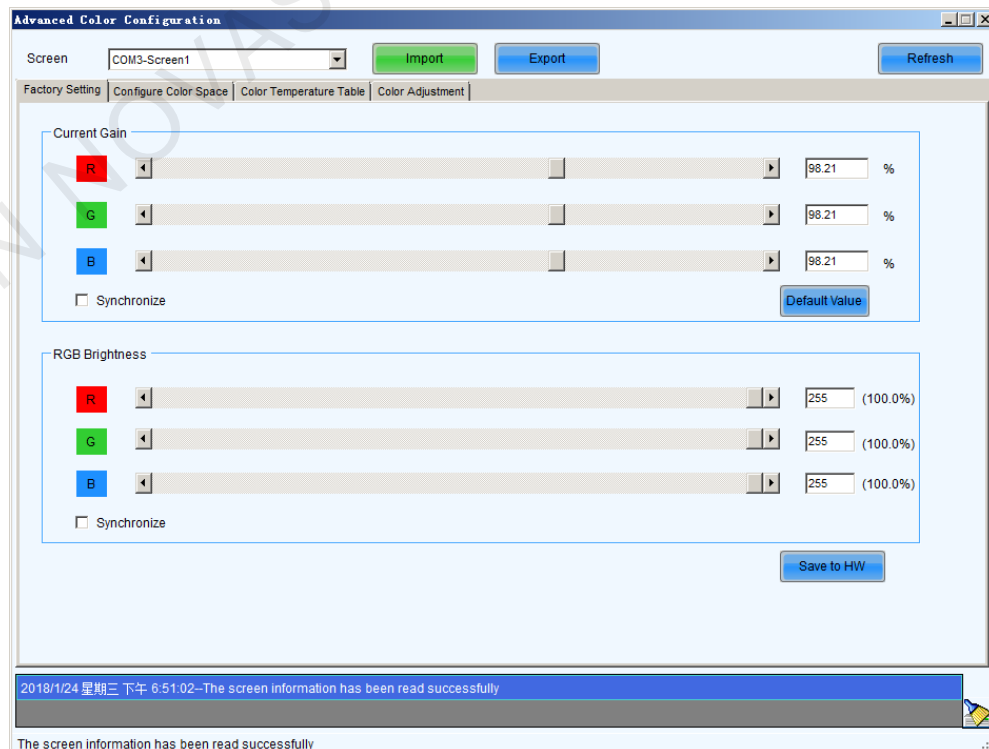
- Start-up Picture: User can set whether enable boot screen or not and the boot screen time when power on. The Prestore Screen is used as the boot screen.
- Disconnect Cable: User can select the display frame when cable disconnect.
- No DVI Signal: User can select the display frame when there is no DVI signal.
- Send: Send the settings to the hardware. (If Save to Hardware is not clicked, the settings will lost after power off.)
- Save to HW: Save current settings to hardware, then the settings will not lost after power off.

5.7 Advanced Color Configuration

Advanced color configuration includes factory setting, configure color space, color temperature table and color adjustment. The target color space plan and color temperature table configured here can be called directed when adjusting brightness.

Choose **Settings > Advanced Color Configuration**, as shown in [Figure 5-39](#).

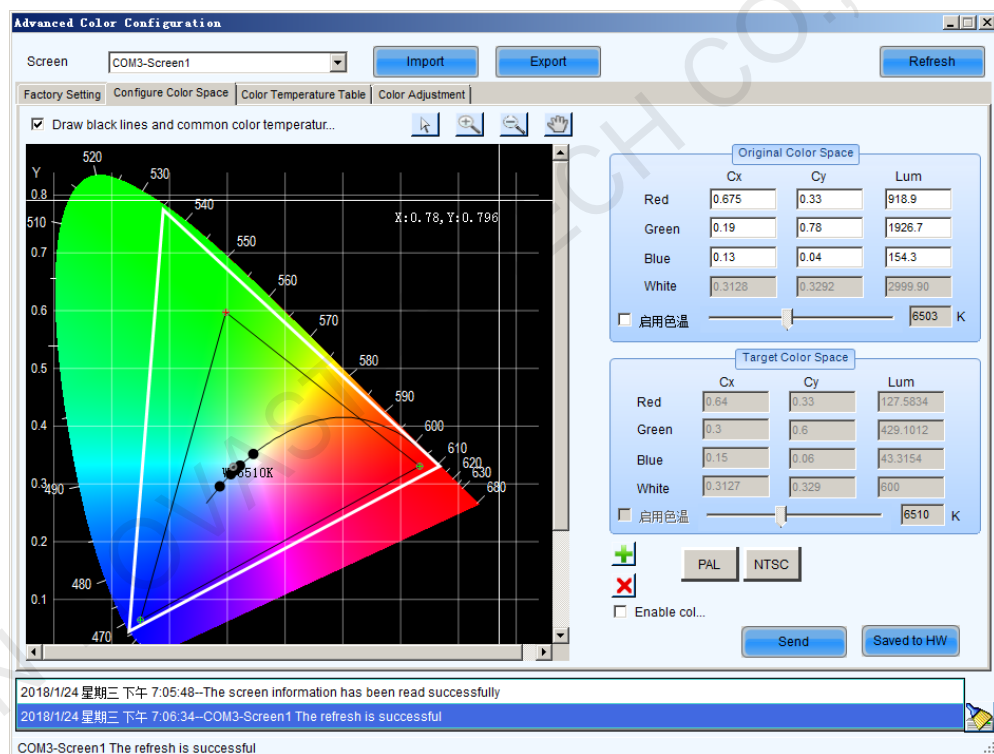
Figure 5-39 Advanced color configuration






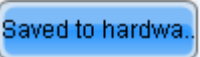
Factory Setting

- **Current Gain:** Some chips support current gain control.
- **Default Value**: Default Value: click to restore the default values.
- **RGB Brightness:** adjusts brightness of R/G/B colors respectively, or check **synchronization** to adjust the three colors synchronously.
- **Send to HW**: Save the current gain and brightness to hardware.
- **Import**: Import local color configuration file.
- **Export**: Export current color configuration and save on local disk.





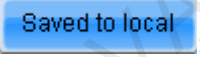
Color space configuration



- **Draw black lines and common color temperature points:** When this option is selected, a black line (color temperature curve) and common color temperature points (solid dots) are shown.
- **Original color space:** It is suggested to use a light gun to measure current CIE coordinates and brightness and fill out properly, use original color space as basis for adjusting color temperature.
- **Target color space:** The black triangle in the color space on left side of the interface is target color space, drag your mouse to change four-color target pixel. It is also allowed to directly change all coefficients of the target color space, when adjusting the target color space, preview the adjustment results on the LED screen until satisfaction.

- PAL/NTSC: Standard system, click the button with your mouse, the target space will be set to either PAL or NTSC system.
- Enable color space adjustment: After being checked, the target color space values can be applied to the entire LED display.
-  : Add color space information, save current color space as a customized color space information to be called at any time in the future.
-  : Delete selected customized color space information. Select customized color space information to be deleted, click this button, the color space information will be deleted.
-  : Send current calibrated color space and target space to LED display.
-  : Save current calibrated color space and target space to hardware.

Color temperature table

-  : Add color temperature segments.
-  : Compile selected color temperature segment.
-  : Delete selected color temperature segment.
-  : Clear all color temperature segment.
-  : Save the color temperature table to local space.

Color Adjustment

Adjust hue, contrast and saturation of the LED display.

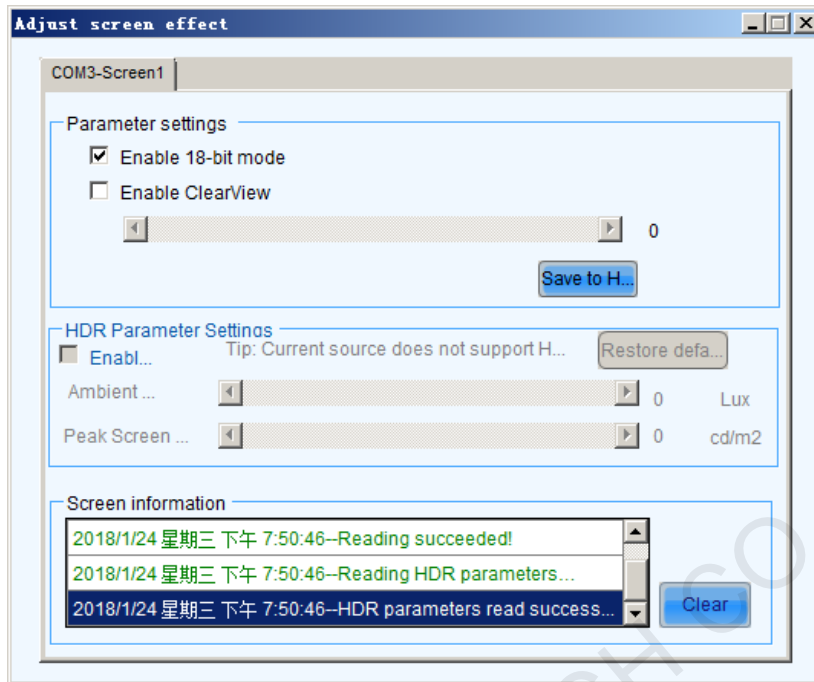
This function is only supported NovaStar Pro HD for the moment.

5.8 Adjust Screen Effect

Enable 18-bit mode and **Enable ClearView** are used to control the display effect, creating finer images.

Select **Settings > Adjust screen effect**, to enter the corresponding interface, as shown in [Figure 5-40](#).

Figure 5-40 Screen effect adjustment



- **Enable 18-bit mode:** This avoids gray loss problem and improves LED display gray scale by 4 times, bringing better and finer display effects.
- **Enable ClearView:** Automatically adjust the texture, dimensions and contrast of images in various areas, improving image display details.

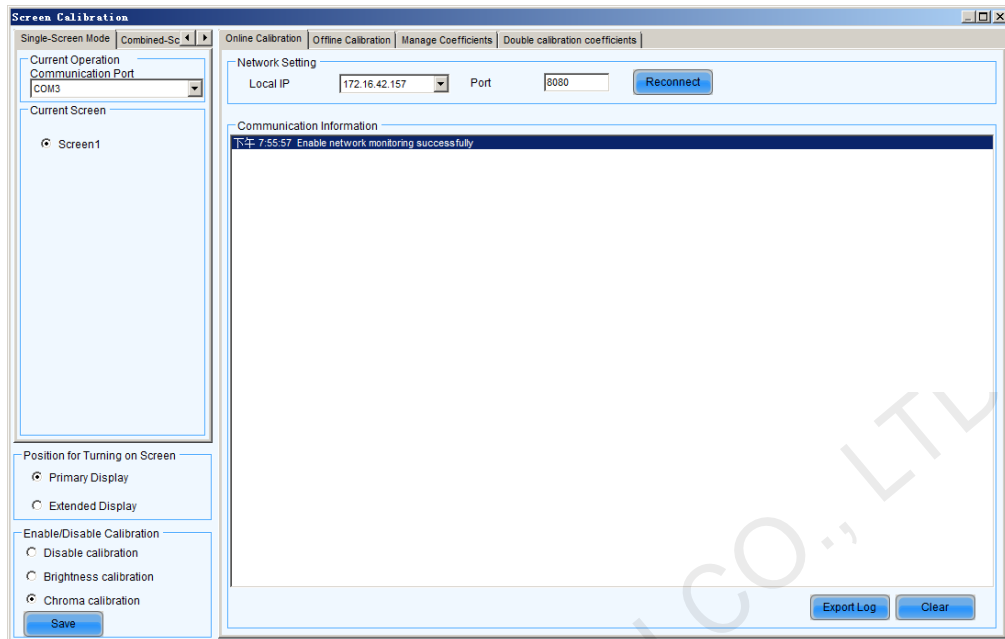
5.9 Brightness and Color Calibration

5.9.1 Online Calibration

Online calibration is that NovaCLB (calibration software) connect NovaLCT through network for calibration of LED displays.

It supports single-screen mode and combined-screen mode.

Figure 5-41 The page for online calibration

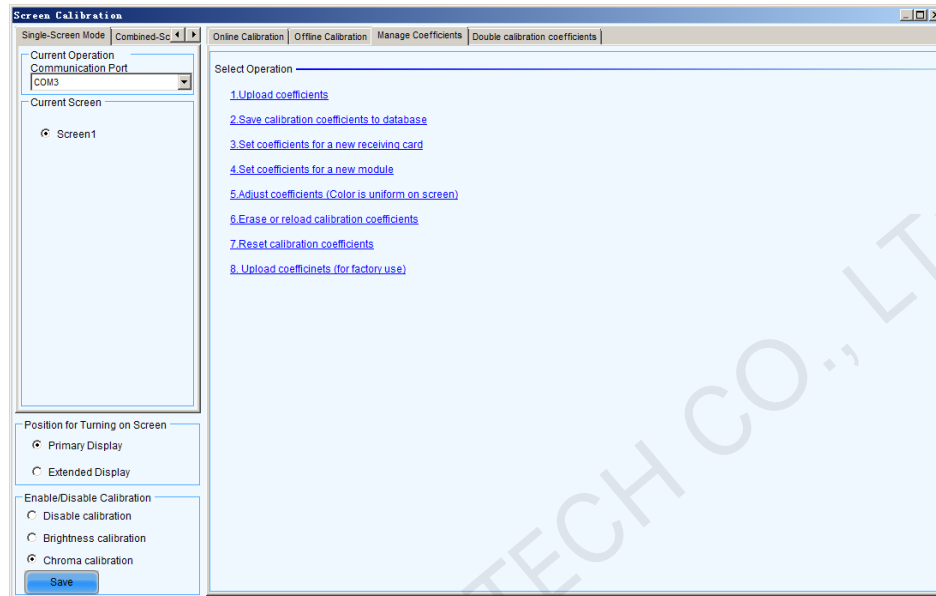


- **Current Serial Port**
This is the serial port through which the LED display to be calibrated is connected to the computer.
- **Current Screen**
The LED displays connected to the computer will be list in this panel. Select the LED display to be calibrated from the list.
- **Local IP**
This is the IP address that NovaLCT listens to. It is actually an IP of the computer on which NovaLCT is running.
- **Port**
This is the port that NovaLCT listens to.
- **Reconnect**
Click this button to terminate the current listening process and start a new listen process using the settings of Local IP and Port.
- **Communication Log**
Records of the communication between NovaCLB and NovaLCT are listed is this panel.
- **Enable Calibration**
This option is to enable or disable LED display calibration using calibration coefficients.
- **Save button in the Enable/Disable Calibration panel**
Click this button to save the calibration switch status (enable or disable) to the hardware.
- **Save button in the communication log panel**
Click this button to save the communication log to a text file.

5.9.2 Coefficients Management

This page is to adjust the calibration coefficients for better calibration performance. The **Manage Coefficients** page is shown in [Figure 5-42](#).

Figure 5-42 The Manage Coefficients page



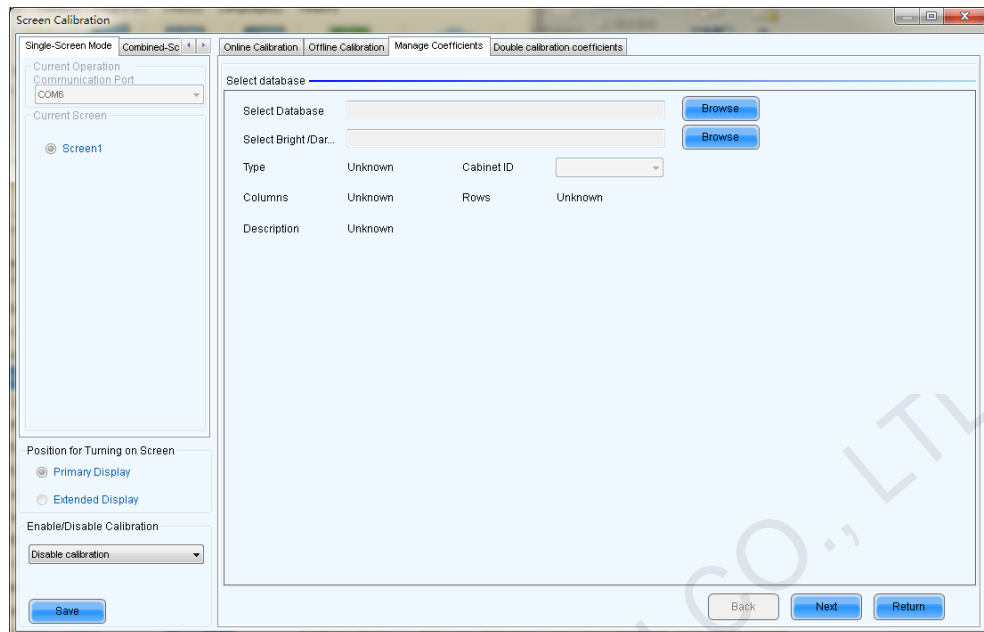
- **Upload Coefficients**
Upload a calibration coefficients database to the LED display.
- **Save coefficients to database**
This operation is to read back the calibration coefficients from the LED display and save them to a database file.
- **Set coefficients for a new receiving card**
This option is to set the calibration coefficients for a newly placed receiving card in the LED display.
- **Set coefficients for a new module**
This option is to set the calibration coefficients for a newly placed module in the LED display.
- **Adjust Coefficients**
This option is to adjust the calibration coefficients of the selected LED display area for better performance.
- **Erase or reload Coefficients**
This option is to erase or reload the calibration coefficients of the selected LED display.

5.9.2.1 Upload Coefficients

This is to upload the calibration coefficients and Adjust lines coefficients to the LED display thus the LED display control system can use the coefficients to improve the image quality of the display.

- Step 1 Browse the directory and choose the files of calibration database and dark or bright lines.

Figure 5-43 The page for upload coefficients step 1



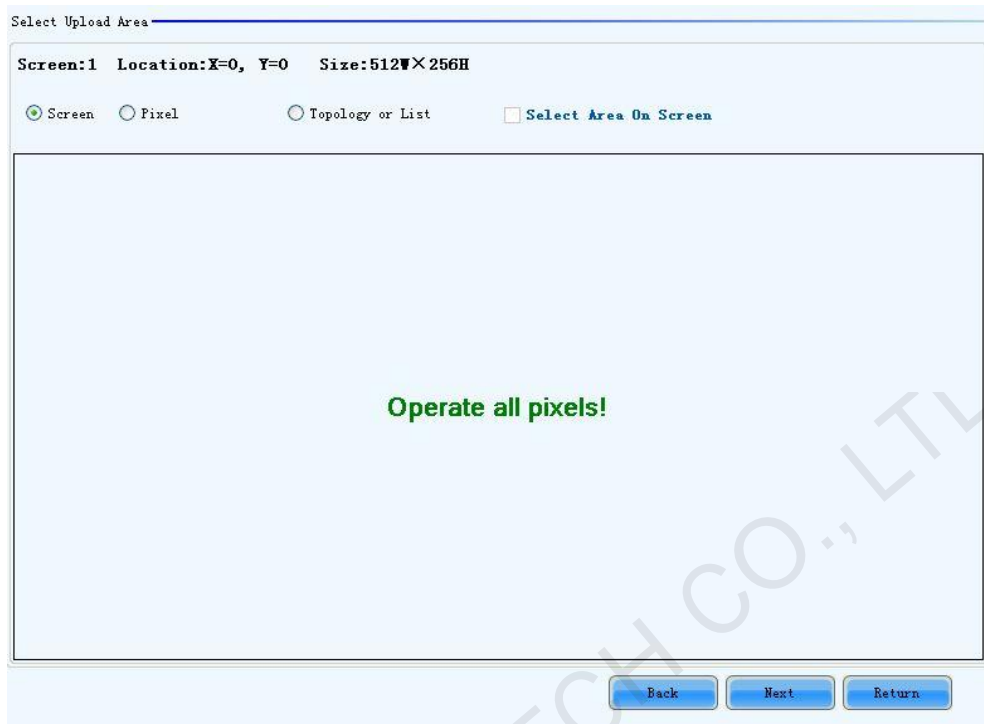
- **Browse**
Click this button to select the calibration coefficients database file to be uploaded.
- **Type**
The type of the selected calibration coefficients database is shown here. There are two database types, screen database and cabinet database. A screen database contains calibration coefficients for a whole display while a cabinet database contains calibration coefficients for one or multiple cabinets.
- **Cabinet ID**
The cabinet ID(s) will be shown here if the selected is a cabinet calibration coefficient database
- **Columns**
This is the column number of the calibration coefficient array of the selected database.
- **Rows**
This is the row number of the calibration coefficient array of the selected database.

Step 2 Click **Next** button to open the page for Step 2 after all settings.

This step is to specify the LED display area for which the calibration coefficients are to be uploaded. There are three options, Screen, Pixel, Topology or List.

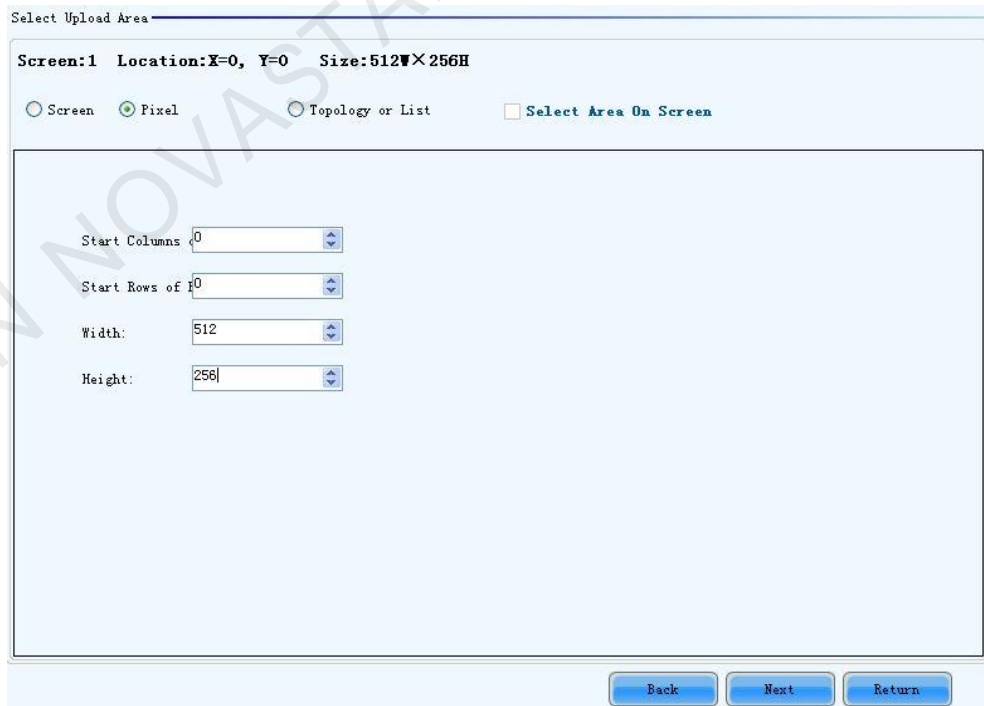
- Screen

Figure 5-44 The page for uploading calibration coefficients in Screen way



- Pixel

Figure 5-45 The page for uploading calibration coefficients in Pixel way



- Topology or List

Figure 5-46 The page for uploading calibration coefficients in Topology or List way



- **Screen**
If this option is selected, calibration coefficients for the whole display will be uploaded.
- **Pixel**
Select this option to upload calibration coefficients to the specified pixel area.
- **Topology or List**
Selected this option to upload calibration coefficients to the cabinets selected in the cabinet array sketch map or the cabinet list. (If the current LED display is a standard display, the sketch map of the cabinet array will be shown after this option is selected. Otherwise, if the current is a complex display, the show is the cabinet list.)

Step 3 Select **Fast Upload** or **Stable Upload**, and click **Upload**.

Figure 5-47 The upload calibration coefficients Step 3 page



- **Fast Upload**
The uploading speed will be set as maximum thus the time required for uploading is minimized if this option is selected.
- **Stable Upload**
The uploading process is more stable and reliable for this option. But the time required is longer than the Fast Upload option.
- **Upload**
Click this button to upload the selected calibration coefficients to the hardware.
- **Save**
Save the selected calibration coefficients to hardware (FLASH). The saved data won't be lost even the system is powered off.

5.9.2.2 Save Coefficients to Database

This operation is to read back the calibration coefficients from the current LED display and save them to a database file.

- Step 1 The calibration coefficients read back can be saved to an existing database or a new database. Shown in [Figure 5-48](#) and [Figure 5-49](#) are the pages for saving coefficients to an existing database and a new database respectively.

Figure 5-48 The page for saving calibration coefficients to an existing database

Select Database

Save to an Existing Database Save to a New Database

Select Database:

Type: Unknown Existing Cabinet ID:

Columns: Unknown Rows: Unknown


Discription: Unknown

Open

Click this button to open an existing database to save the read back calibration coefficients. The new saved coefficients will replace the old ones according to the position. If the coefficients array size of the opened database is smaller than that of the current display, the save operation will be failed. If the opened is a cabinet database, the ID list of the existing cabinets of the database will be shown.

Figure 5-49 The page for saving calibration coefficients to a new database

- **Screen-Database**
Select this option if it is to save the calibration coefficients to a new screen database.
- **Cabinet-Database**
Select this option if it is to save the calibration coefficients to a new cabinet database.
- **Create**
Click this button to create a new screen database or a cabinet database according to the settings.

	<p>Note:</p> <ul style="list-style-type: none">• Screen database: In a screen database, the saved are the calibration coefficients and the positions of they are to be uploaded to in the LED lights array of the whole display. In the uploading procedure, the coefficients are uploaded according to the positions set for them. Thus if the position of a cabinet is changed, the coefficients for this cabinet will not be correctly uploaded.• Cabinet database: In a cabinet database, the calibration coefficients are arranged in the form of cabinets. The coefficients for the same cabinets are grouped together and labeled with the cabinet ID. Thus even the place of a cabinet has been changed, the corresponding coefficients can also be correctly uploaded to the cabinet.
---	--

Step 2 Select the display area for which the calibration coefficients are to be saved to a database.

Figure 5-50 The page for specifying the display area for coefficients saving



- **Screen**
Check this option if the calibration coefficients for the whole display are to be saved. If the database for saving the coefficients is a cabinet database, this option will be unavailable.
- **Pixel**
Check this option to select the pixel area for which the calibration are to be saved. If the database for saving the coefficients is a cabinet database, this option will be unavailable.
- **Topology or List**
Check this option to select the cabinets for which the calibration coefficients are to be saved. Note that if the database for saving the coefficients is a cabinet database, one cabinet should be selected at one time for coefficients saving.
- **Save**
Click this button to save the calibration coefficients of the selected display area to the specified database. If the database for saving the coefficients is a cabinet database, a dialog will appear for users to input the cabinet ID.
- **Maintain (Only full-screen support):**
The software saves by cabinet, supports maintaining, namely when network or other problems occur and cause saving suspended, select maintain to continue saving from the cabinet having error.

5.9.2.3 Set coefficients for a new receiving card

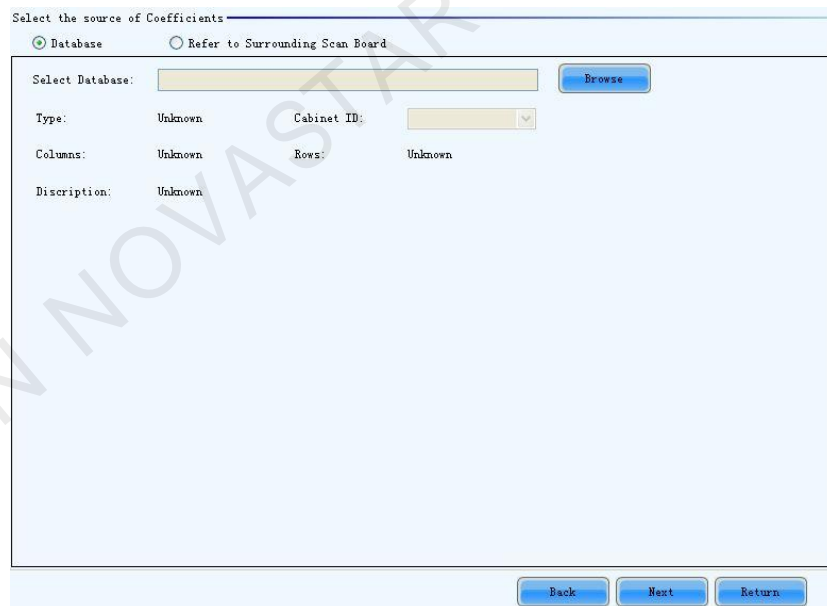
Step 1 Specify the LED display area that the new receiving card works for. Shown in [Figure 5-51](#) is the page for specifying the area.

Figure 5-51 The page for specifying the working area of the new receiving card



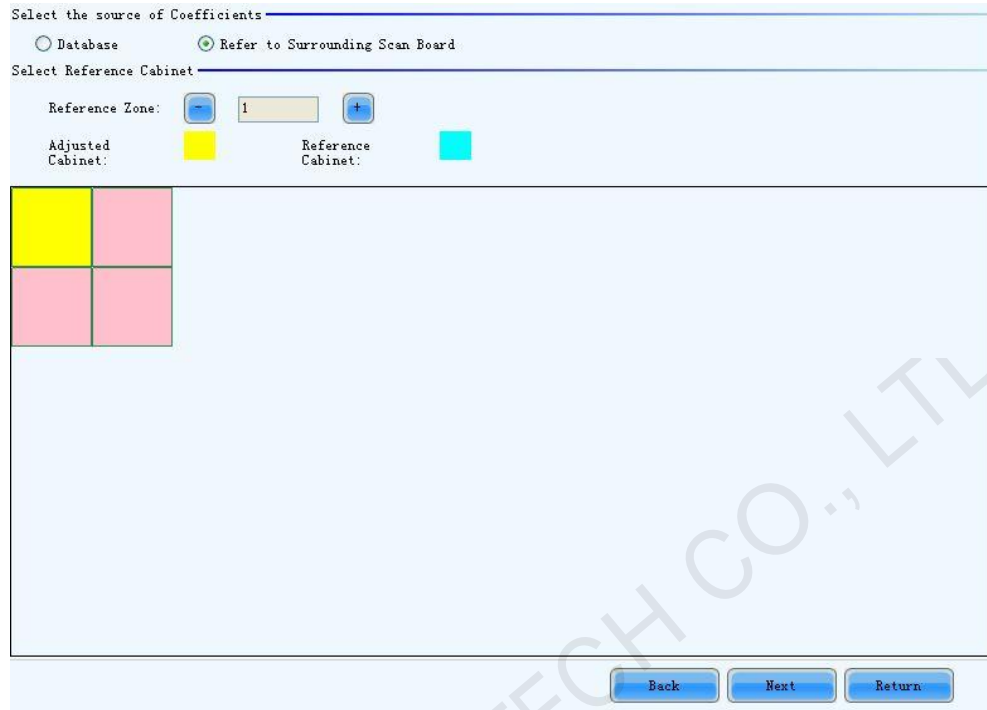
Step 2 Select the calibration coefficient source. The coefficients could be from a database (the **Database** option) or generated according to those of the surrounding receiving cards (the **Refer to Surrounding Scan Board** option).

Figure 5-52 The page for getting calibration coefficients from a database



- **Browse**
Click this button to select the database that the calibration coefficients for the new receiving card are from. If the selected is a cabinet database, the cabinet ID should also be specified from the Cabinet ID drop list.
- **Cabinet ID**
If the selected database is a cabinet database, the IDs of the cabinets of which the calibration coefficients are contained in the database will be list in the drop list. If the selected database is a screen database, the list will be unavailable.

Figure 5-53 The page for generating coefficients for the new receiving card according to those of its surrounding receiving cards

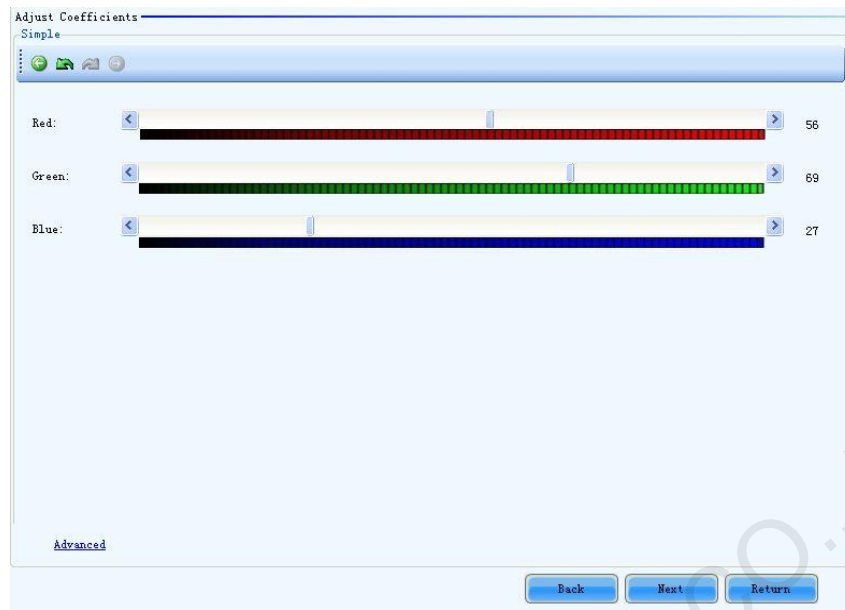


Note:

- One or more surrounding cabinets can be selected for generating the calibration coefficients for the new receiving card.
- The calibration coefficients are generated according to those of the selected surrounding cabinets and make the cabinet driven by the new receiving card similar to its surrounding cabinets in brightness, hue and saturation. The generated calibration coefficients are just substitution of those from NovaCLB and are not as good as those from NovaCLB in performance.

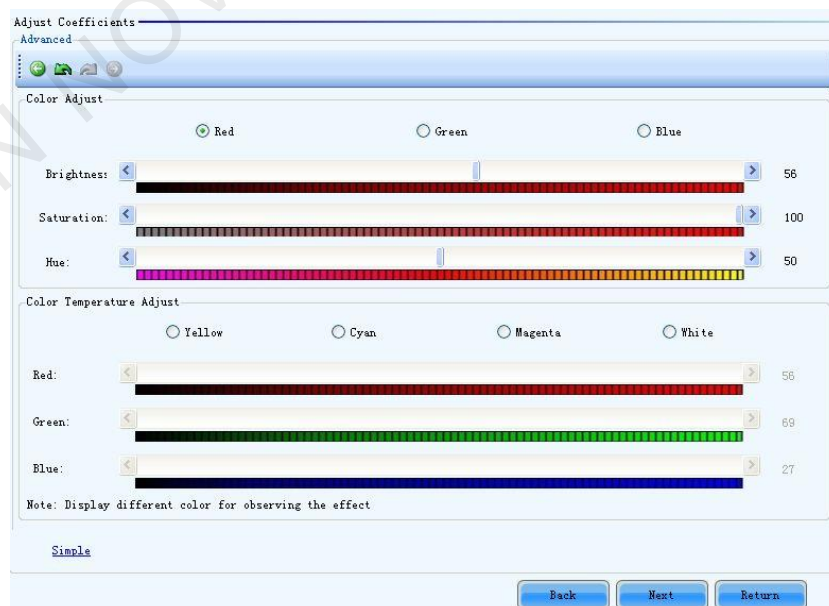
Step 3 If the calibration coefficients from Step 2 are not satisfying, they can be adjusted. There are two type of adjustment, Simple and Advanced.

Figure 5-54 The Simple adjustment page



- Red
Use the slide bar to adjust the red brightness of the calibration coefficients.
- Green
Use the slide bar to adjust the green brightness of the calibration coefficients.
- Blue
Use the slide bar to adjust the blue brightness of the calibration coefficients.
- Advanced
Click this item to switch to the advanced adjustment page.


Figure 5-55 The Advanced adjustment page



- Color Adjustment

The brightness, hue and saturation of red, green and blue can be adjusted in the **Color Adjust** panel.

- Color Temperature Adjustment
Use the slide bars to adjust the red, green and blue components for yellow, cyan, magenta and white in the Color Temperature Adjust panel.
- Simple
The color bar under each side bar indicates the color to be shown when adjusting.

	<p>Note:</p> <ul style="list-style-type: none">• If the cabinet driven by the new receiving card is only different from the surrounding cabinets in brightness, simple adjustment is sufficient.• If the cabinet driven by the new receiving card is different from the surrounding cabinets in color, adjust the brightness, saturation and hue through the advanced adjustment page for better image quality.• Use the test tools in Plug In Tool >Test Tool to require the LED display to show the color that is being adjusted.
---	---

Step 4 Save the calibration coefficients to the hardware (FLASH) so they won't be lost when the LED display is powered off.

Figure 5-56 The page for saving calibration coefficients to the hardware



Save

Save the coefficients to the hardware.

5.9.2.4 Set coefficients for a new module

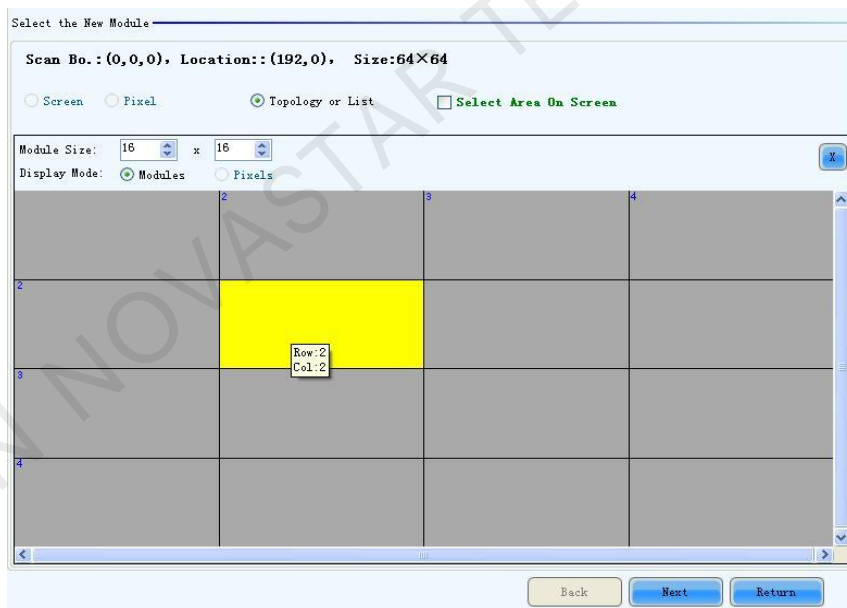
Step 1 Specify the cabinet which the new module is in.

Figure 5-57 The page for specifying the cabinet which the new module is in



Step 2 Double click the selected cabinet, and select the new module.

Figure 5-58 The page for specifying the new module

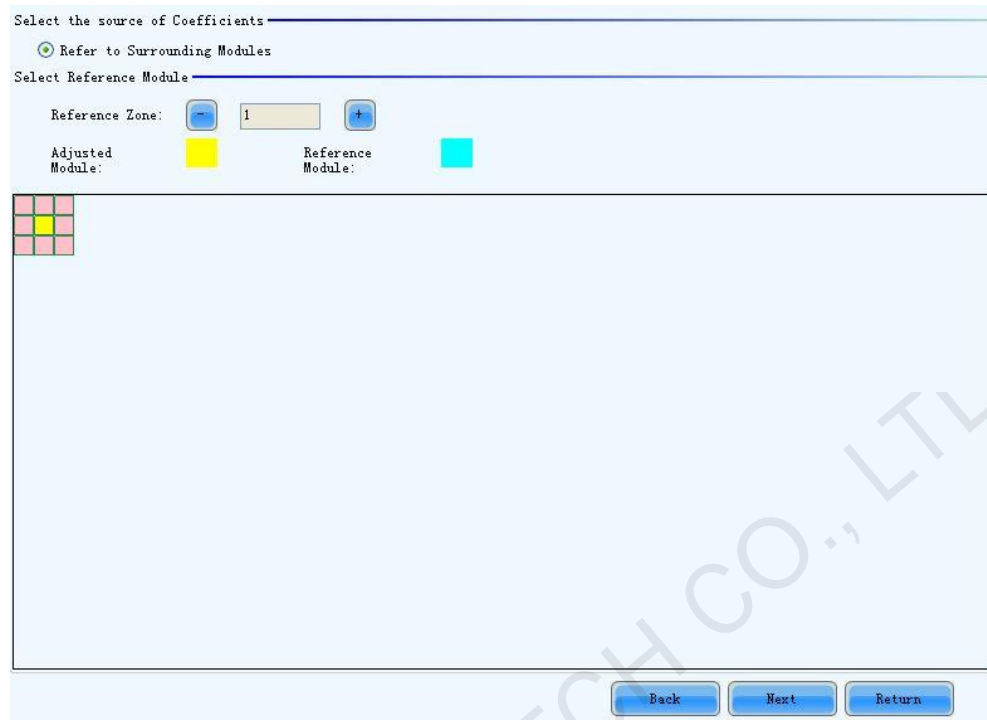



Module Size

Set the pixel array size of a module here. NovaLCT divides a cabinet into modules according to the module pixel array size and the cabinet pixel array size.

Step 3 Select the calibration coefficients source. Calibration coefficients generated according to those of the surrounding modules are used for the new module because the coefficients saved in the receiving card or the database are not suitable for the new module.

Figure 5-59 The page for selecting the calibration coefficients source



	<p>Note:</p> <ul style="list-style-type: none">• One or more surrounding modules can be selected for generating the calibration coefficients for the new module.• The calibration coefficients are generated according to those of the selected surrounding modules and make the pixel array driven by the new module card similar to its surrounding in brightness, hue and saturation. The generated calibration coefficients are just substitution of those from NovaCLB and are not as good as those from NovaCLB in performance.
---	---

5.9.2.5 Adjust Coefficients

If some parts of the LED display are different from the rest in color, the color of these areas can be adjusted by modifying the corresponding calibration coefficients.

Step 1 Select the areas to be adjusted.

Figure 5-60 The page for selecting the area to be adjusted




Step 2 Select the adjustment type. If Adjust Own Effect option is selected, the color adjustment of selected area is independent to the other areas of the LED display. If **Effect As Other Selected Area** option is selected, the color of the selected area will be adjusted according to the reference area color. The selected area color will look similar to the reference area color after the adjustment operation.

Figure 5-61 The page for Adjust Own Effect option



Figure 5-62 The page for Effect As Other Selected Area



 Note:

- If **Adjust Own Effect** option is selected, NovaLCT will acquire the calibration coefficients of the selected area for the hardware. Adjustment on these coefficients is independent to the other area of the LED display.
- If **Effect As Other Selected Area** is selected, NovaLCT will adjust the calibration coefficients of the selected area according to those of the reference areas and make the selected area looks similar to the reference areas in color. The nearer the reference areas are to the area being adjusted, the better the adjustment result will be.

Step 3 Click the **Save** button to save the adjusted calibration coefficients to the hardware. The save coefficients won't be lost even the system is powered off.

Figure 5-63 The page to save the calibration coefficients



Apply The Effect To Other Area


The adjustment operations in Step 2 and Step 3 can also be applied to other areas that need the same adjustment.

Figure 5-64 The page for Apply The Effect To Other area



Apply

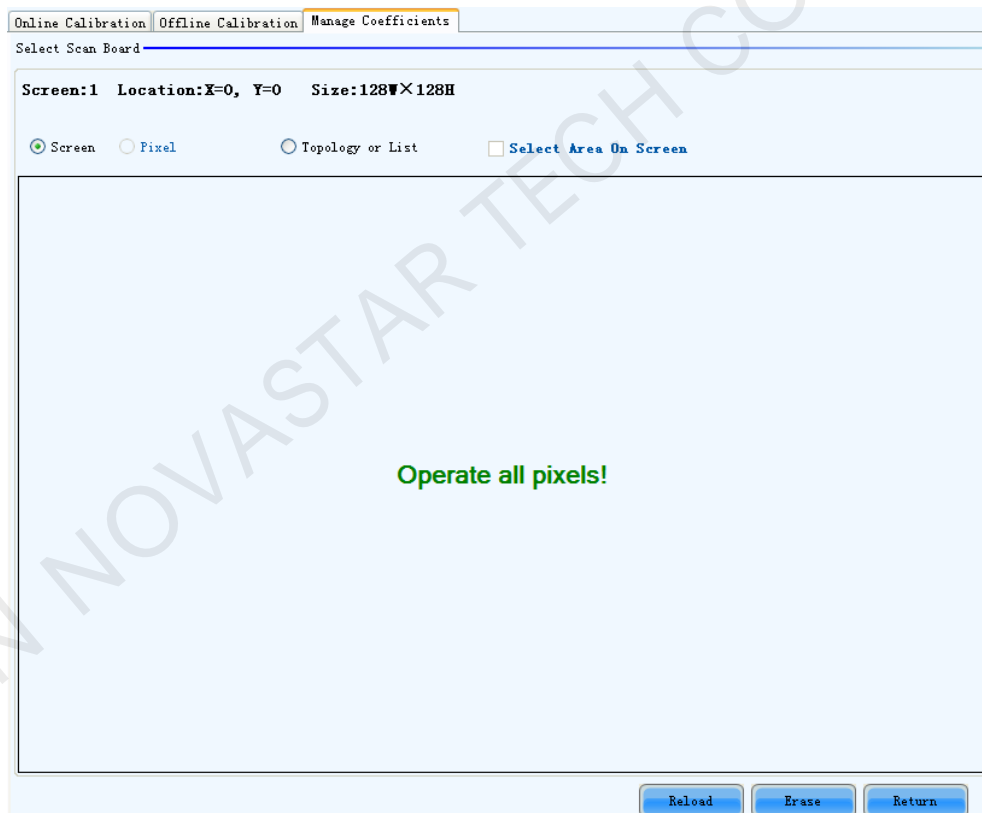
Apply adjustment operations to the selected area.

	<p>Note:</p> <ul style="list-style-type: none">• If the adjustment operations are to be applied to another area, the problem of this area should be similar to the area selected in Step 1. Otherwise, don't apply the operations to this area.• If the adjustment result of the new area is satisfying after applying the operations, click Save button again to save the adjusted calibration coefficients to the hardware.
---	--


5.9.2.6 Erase or Reload Coefficients

- Erase coefficients: erasing calibration coefficients of the whole display or any cabinets.
- Reload coefficients: reload the calibration coefficients lastly saved in hardware.

Figure 5-65 The page for erasing calibration coefficients



- Screen
Select this option to erase all calibration coefficients for the whole display.
- Topology or List
Select this option to select the cabinets from the cabinet array sketch or the cabinet list of which the calibration coefficients are to be erased.

	<p>Note:</p> <p>The calibration coefficients will be their default values after the erase operation. Make a copy of the calibration coefficients (save to a database</p>
---	---

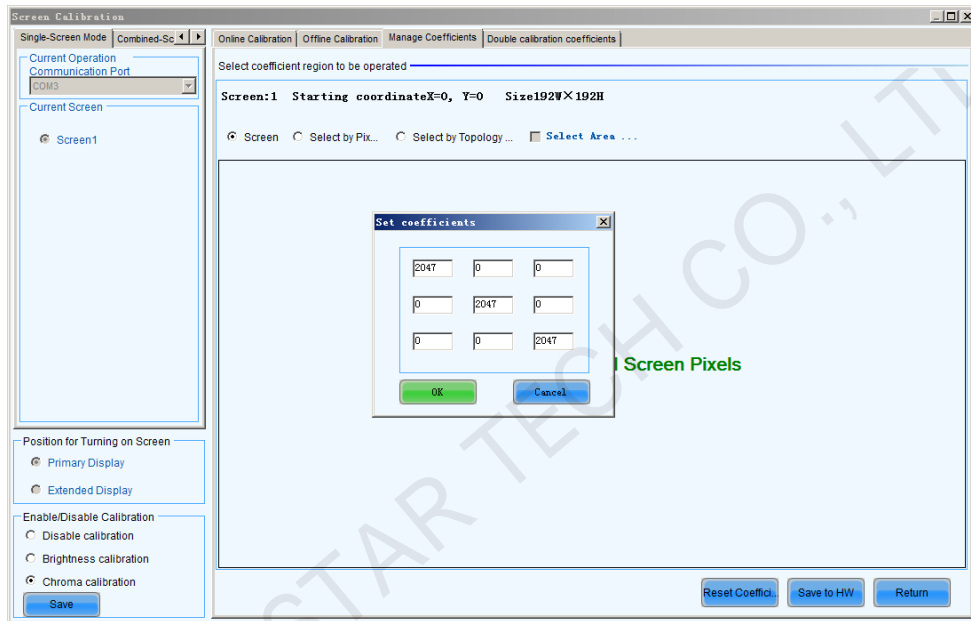
file) for safety.

5.9.2.7 Resetting Calibration Coefficients

Set the calibration coefficients again for the screen or a specified area according to the module size or pixels.

After all the coefficients are reset, click **Save to HW** so that the coefficients can take effect.

Figure 5-66 Resetting calibration coefficients



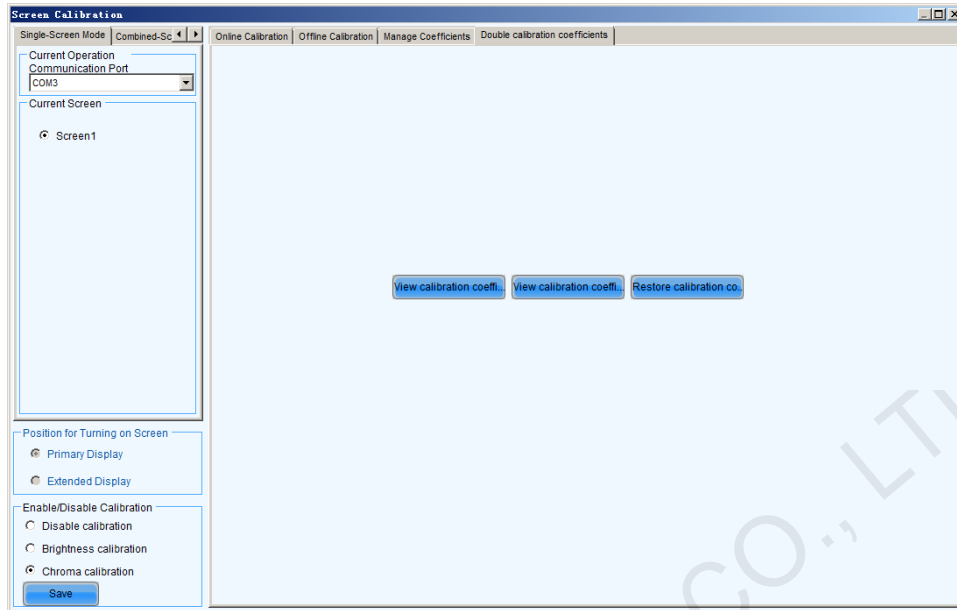
5.9.3 Double Calibration Coefficients

Only the receiving card of A4/A5 support the function for the moment.

Calibration coefficients can be stored to factory area. Normal calibration data are stored in application area. If you are not satisfied with the calibration coefficients of application area, the data of factory area can be restored to application area.

Save coefficients to fa... button, which is usually in hide status to prevent random operations, cannot be displayed until entering “**admin**” on the keyboard.

Figure 5-67 Double calibration coefficients



5.10 Screen Control


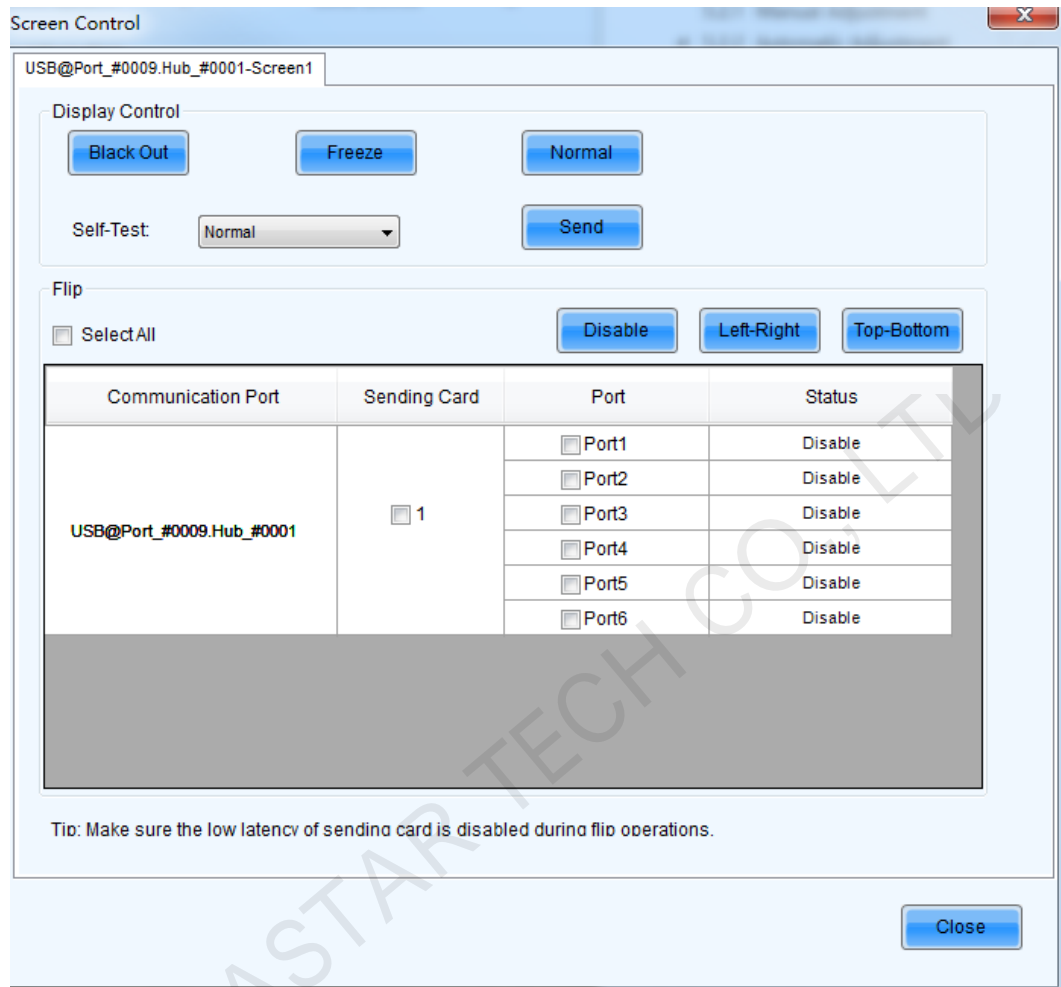
Start NovaLCT and click  to enter the **Screen Control** window.

Figure 5-68 The Screen Control window



- **Black Out**
Show nothing on the LED display.
- **Freeze**
Always show the current image frame of the LED display.
- **Normal**
Switch the LED display back to normal from Black Out or Freeze.
- **Self Test**
Show the test images generated by the receiving card for LED displays aging test or error detecting.

When the MCTRL660 PRO device is connected, the Flip function is available. You can select a flipping option for the image of the Ethernet port connected to the corresponding sending card. The option can be **Disable**, **Left-Right**, or **Top-Bottom**.

5.11 Hardware Monitoring

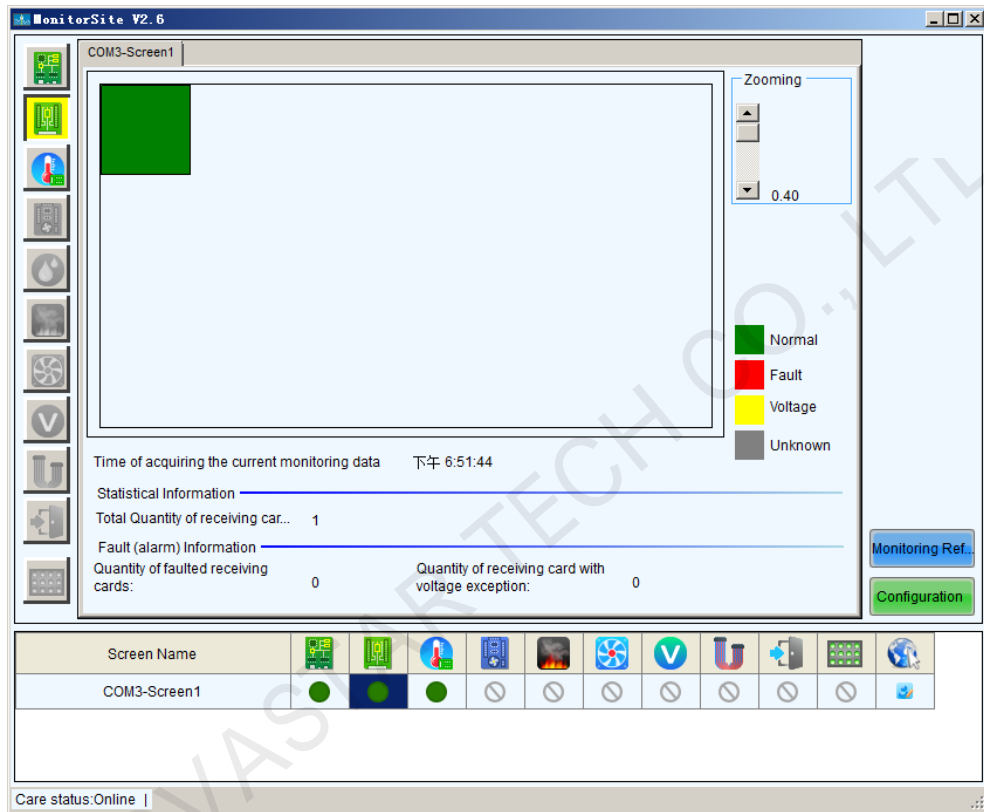
NovaLCT supports monitoring status of sending cards, receiving cards and monitoring cards, as well as temperature, humidity, smoke, fan, power supply, ribbon

cable, cabinet door and smart module. NovaLCT is applicable to both ordinary screen and combined screen.



Click **Monitor** to enter the monitoring interface, as shown in [Figure 5-69](#).

Figure 5-69 The Monitor page



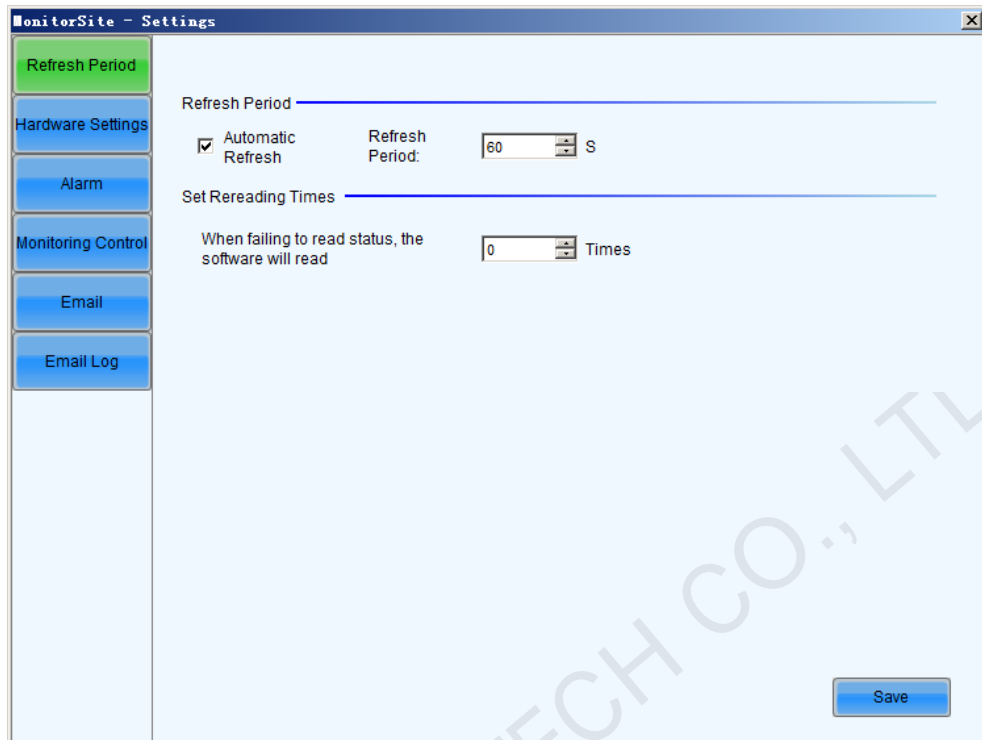
- **Monitoring Refresh**
This button is used to update the monitored data.
- **Configuration**
This button is used to edit the contents to be monitored and set rules for alarm.

5.11.1 Refresh Period

Modify refresh period and reread times when reading the status failed at the refresh period interface, wherein the period is the period of refreshing the monitoring data.

If all screens are registered to the NovaCare server, check “Automatic Refresh” to perform remote monitoring.

Figure 5-70 Refresh period

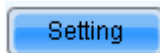
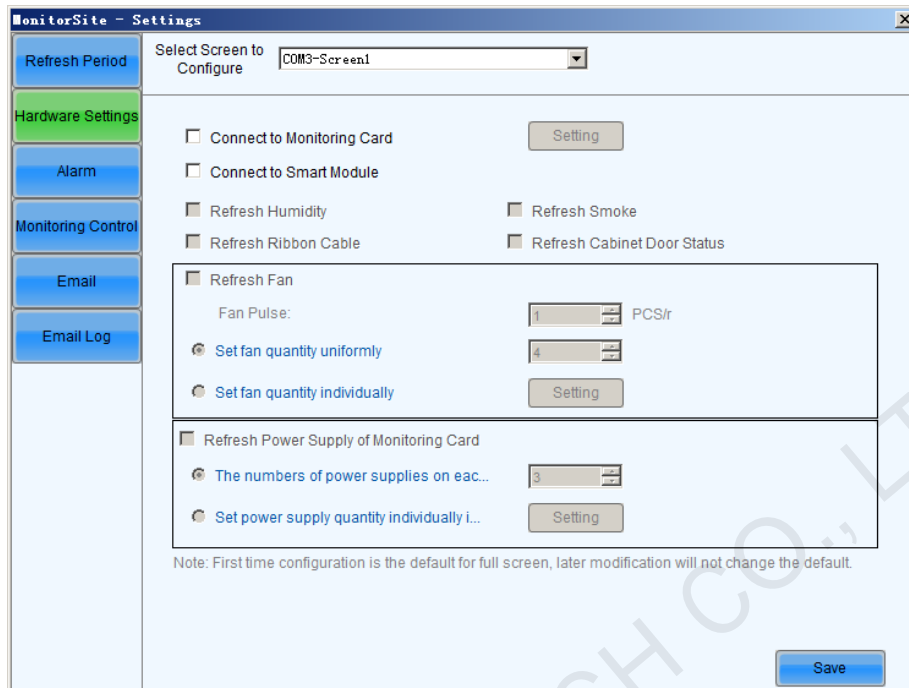


- Auto Refresh
If this option is check, NovaLCT will automatically check the status and parameters being monitored and update the monitored data periodically according to the period setting.
- Retry times after read status failed
This parameter determines how many times NovaLCT will retry to check the status and parameters being monitored when it fails in doing so.

5.11.2 Hardware Configuration

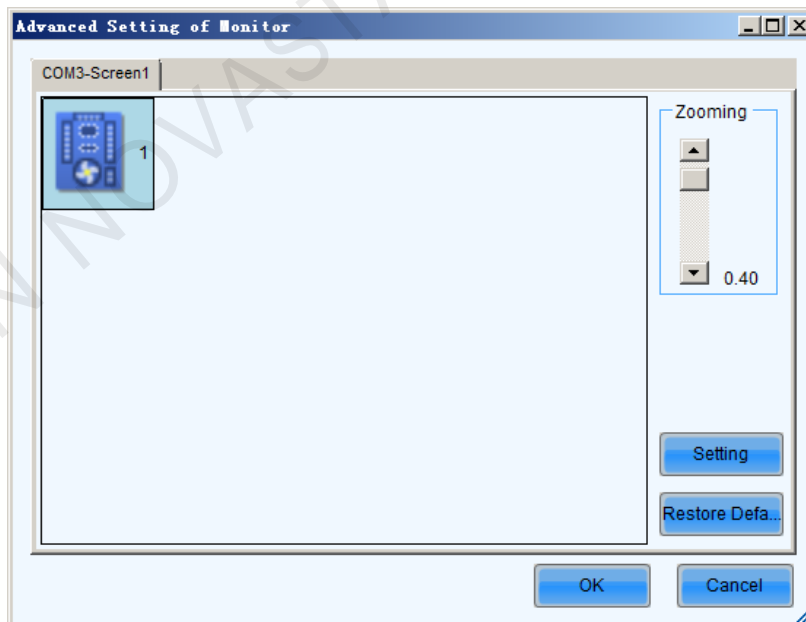
The hardware configuration interface provides all hardware monitoring related setting options. The monitoring functions can only be realized by using the monitoring card, so **Connect to Monitoring Card** option should be selected before the refresh-related options are set.

Figure 5-71 Hardware configuration



: Click to enter the advanced setting of monitor, as shown in the figure below.

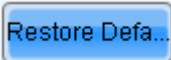
Figure 5-72 Advanced settings of monitoring



Each receiving card is connected with one monitoring card by default. Click



to pop up with the interface below. Please set the number of receiving cards (0 or 1) according to the actual situation.

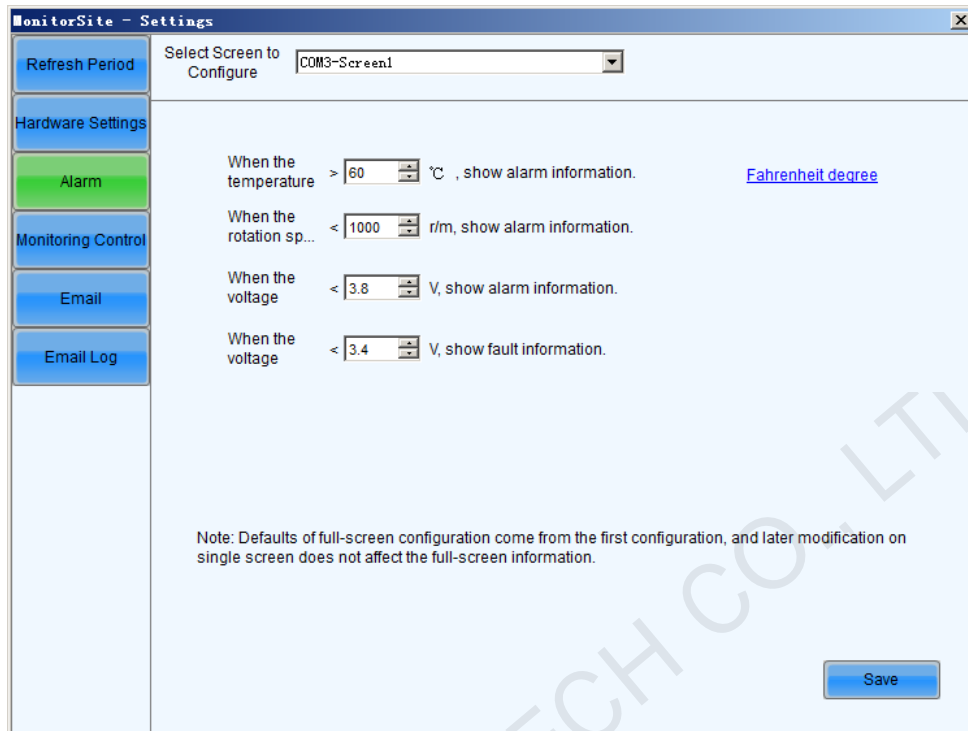
Click  to restore the default values immediately.

- **Connect to Monitoring Card**
If this option is selected, the monitoring data of the monitoring card will be displayed. The **Connect to Monitoring Card** and **Connect to Smart Module** options cannot be selected at the same time.
- **Connect to Smart Module**
If this option is selected, the monitoring data of the smart module will be displayed. The **Connect to Monitoring Card** and **Connect to Smart Module** options cannot be selected at the same time.
- **Refresh Humidity**
If this option is selected, the humidity within the cabinets will be under monitoring.
- **Refresh Smoke**
If this option is selected, the smoke within the cabinets will be under monitoring.
- **Refresh Ribbon Cable**
If this option is selected, the status of the ribbon cable will be under monitoring.
- **Refresh status of Cabinet-Door**
If this option is selected, the open/close status of the cabinet doors will be under monitoring.
- **Refresh Fan**
If this option is selected, the fans status will be under monitoring.
 - **Set fan quantity uniformly:** If for every cabinet, the number of fans to be monitored is the same, select this option and set the fan number in the box to the right of this option.
 - **Set fan quantity individually:** If the numbers of fans to be monitored are different from one cabinet to another, select this option and click the **Setting** button to set the fan numbers for each cabinet.
- **The numbers of power supplies on each monitoring card are equal to each other**
If this option is selected, the power supplies on the monitor board will be under monitoring.
 - **Every monitoring card has the same number of power supply:** If for every monitor board, the number of power supplies to be monitored is the same, select this option and set the power supplies number in the box to the right of this option.
 - **Set power supply quantity individually is separately set on every monitoring card:** If the numbers of power supplies to be monitored are different from one monitor board to another, select this option and click the **Setting** button to set the power supplies numbers for each cabinet.

5.11.3 Alarm Configuration

Display alarm or fault information when setting the temperature, humidity, fan speed and voltage critical value.

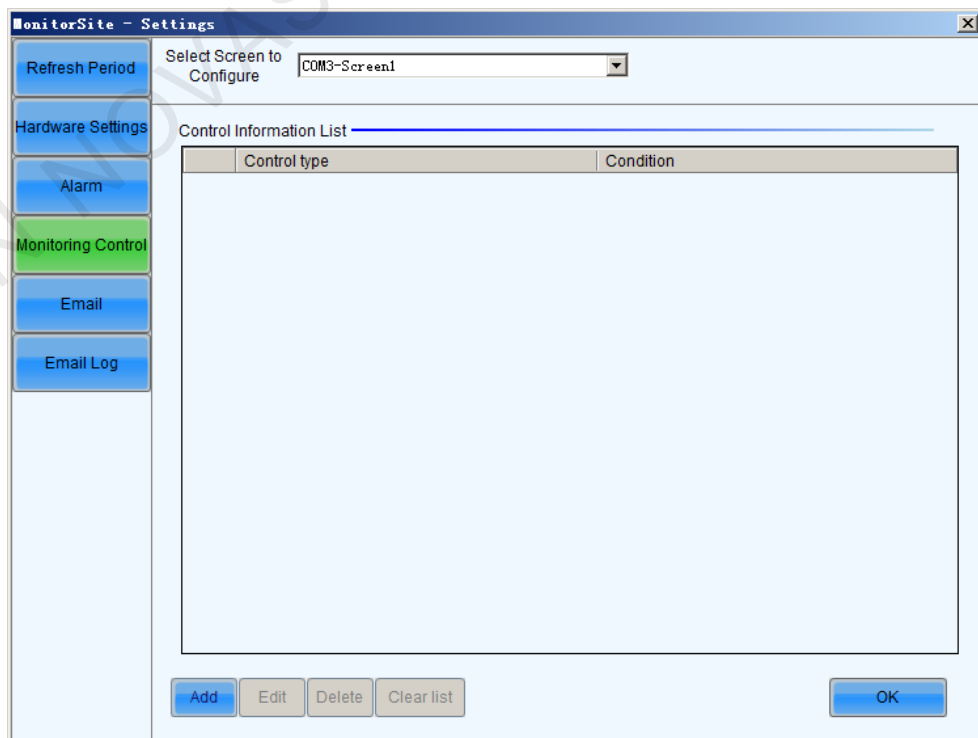
Figure 5-73 Data alarm configuration




5.11.4 Control Configuration

Set the rules for auto temperature and smog control.

Figure 5-74 Control configuration



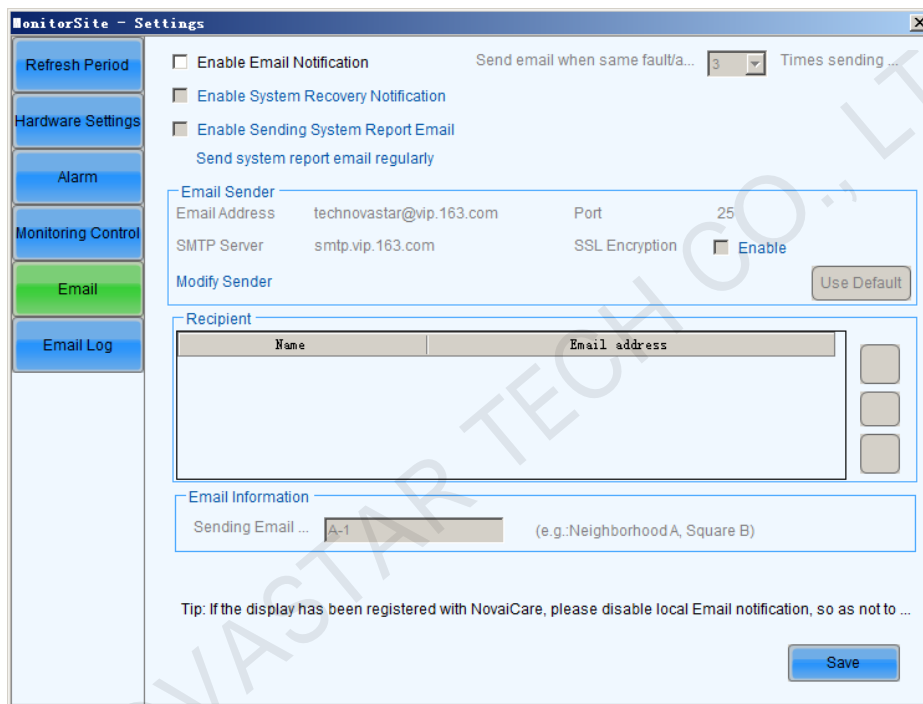
Click  to add control information.




5.11.5 Email Setting

Operation procedures

Select the **Enable Email Notification** option to show the related configuration items as shown in [Figure 5-75](#).

Figure 5-75 Email setting



-  : Add the receiver.
-  : Edit the receiver.
-  : Delete the receiver.

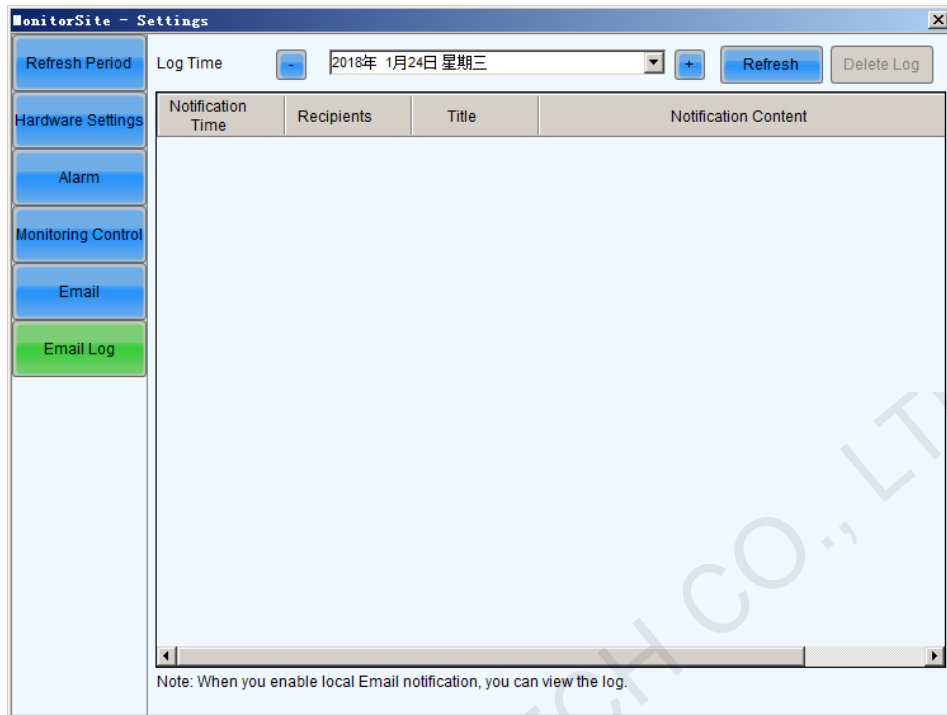
If email notification is desired, information related to the email sender, receiver and email is required to be set. If **Enable Sending System Report Email** is selected, click **Send system report email regularly** to set a sending date.

5.11.6 Email Log

If the **Enable Email Notification** option is selected, you can click **Email Log** to view the email notification log history as shown in the following figure.


You can search the logs by time and delete the undesired ones.

Figure 5-76 The History window for notification emails checking



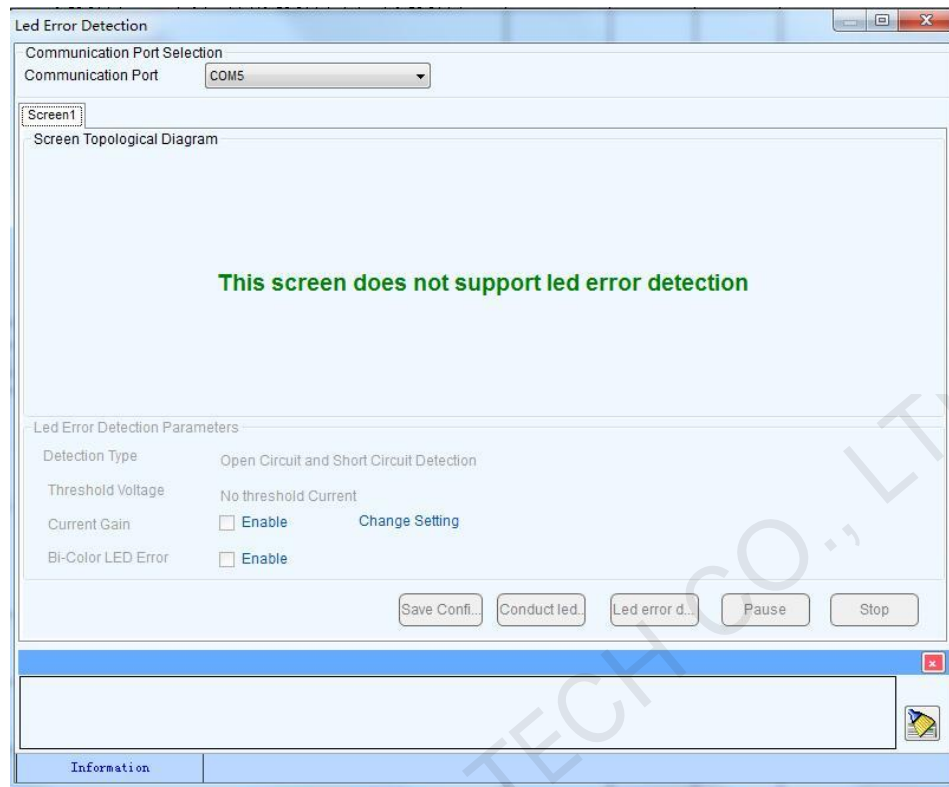
5.12 Led Error Detection

The LED lights status checking function, also known as Led Error Detection, is to check the working status of each LED light on a LED display. NovaLCT can detect and locate LED lights that are in open circuit or short circuit status.

	<p>Note:</p> <ul style="list-style-type: none">• Led Error Detection is only available for LED displays of which the LED lights driver chips support LED lights open/short circuit status checking. So far, Led Error Detection function is available on multiple driver chips, such as MBI5036, MBI5034, MBI5040, DM13H and MBI5030.• Monitor boards are required for Led Error Detection.
---	---

Step 1 Choose **Tools > Led Error Detection**. If the driver chip does not support Led Error Detection function, the interface is shown in [Figure 5-77](#).


Figure 5-77 The Led Error Detection window



- Communication Port
Select the communication port connected to the screen that requires LED error detection.
- Led Error Detection Parameters
 - **Detection Type:** This is the LED lights status type can be checked.
 - **Threshold Current:** Set the current threshold for Led Error Detection here by selecting an index.
 - **Current Gain:** Current gain can be enabled/disabled here. To modify the current gain settings, click the **Change Setting** item.
 - **Dual-Color LED Error Detection:** After this option is selected, faulted blue LEDs will not be detected.
- Detect Screen
Click this button to perform Led Error Detection on the whole display.
- Detect Selected
Click this button to perform Led Error Detection on (the pixel array of) the selected receiving cards.
- Pause
Click this button to pause the ongoing Led Error Detection operation.
- Stop
Click this button to stop the ongoing Led Error Detection operation.
- Zoom
Drag the slide bar to zoom in or out of the LED display sketch map.
- Notification panel

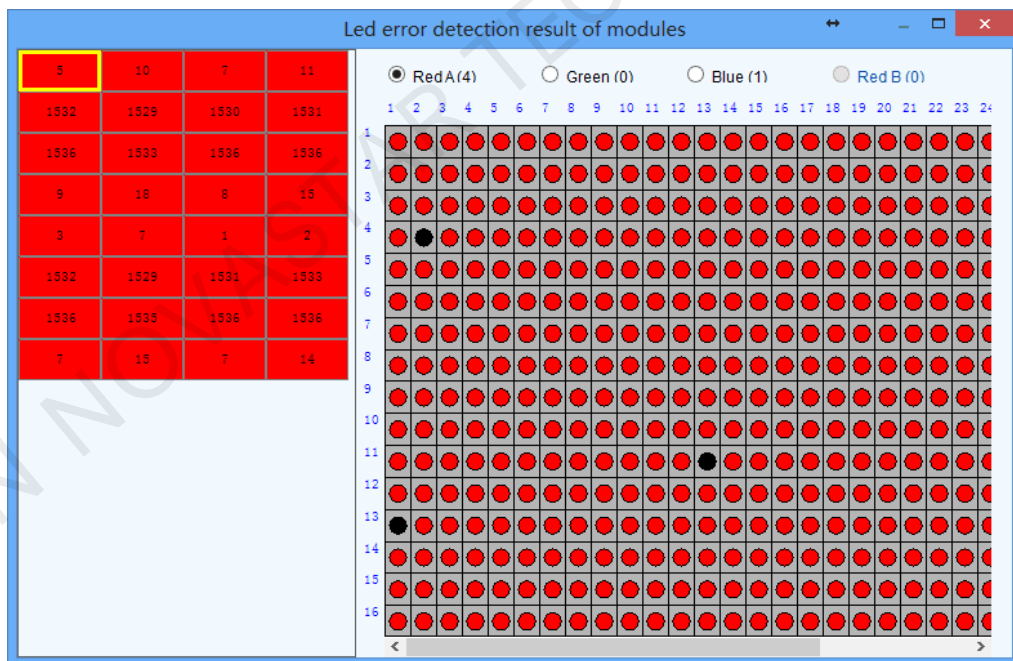
The information of the ongoing Led Error Detection operation will be shown in this panel.

- Colors of the LED display sketch map
 - **Gray:** The Led Error Detection operation result is unknown. It may be due to hardware communication failure or receiving card setting error.
 - **Red:** Error LED lights detected. The number shown is the number of the error LED lights.
 - **Green:** No error LED lights detected.
 - **Yellow:** The receiving card (cabinet) does not connected with a monitor card.

	<p>Note:</p> <p>Put the curse on the sketch map of a cabinet to show its information. Module specifications have effect on the Led Error Detection result. Please set the Led Error Detection parameters according to the module type.</p>
---	---

Step 2 Double-click on the red cabinet to pop up the interface of Led error detection result of modules to show the module and pixel topological diagrams of this cabinet.

Figure 5-78 The Led Error Detection Result of Modules



Shown on the left of [Figure 5-78](#) is the module array of the cabinet and on the right the pixel array of the selected module in the module array.

- Red A
 - This is the number of the error red LED lights of the selected module. Select this item to view the locations of the error lights in the pixel array sketch. The black points in the array are the error lights.
- Green

This is the number of the error green LED lights of the selected module. Select this item to view the locations of the error lights in the pixel array sketch.

- Blue

This is the number of the error blue LED lights of the selected module. Select this item to view the locations of the error lights in the pixel array sketch.

- Red B

This is the number of the error virtual red LED lights of the selected module. Select this item to view the locations of the error lights in the pixel array sketch.

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6 Cloud Monitoring




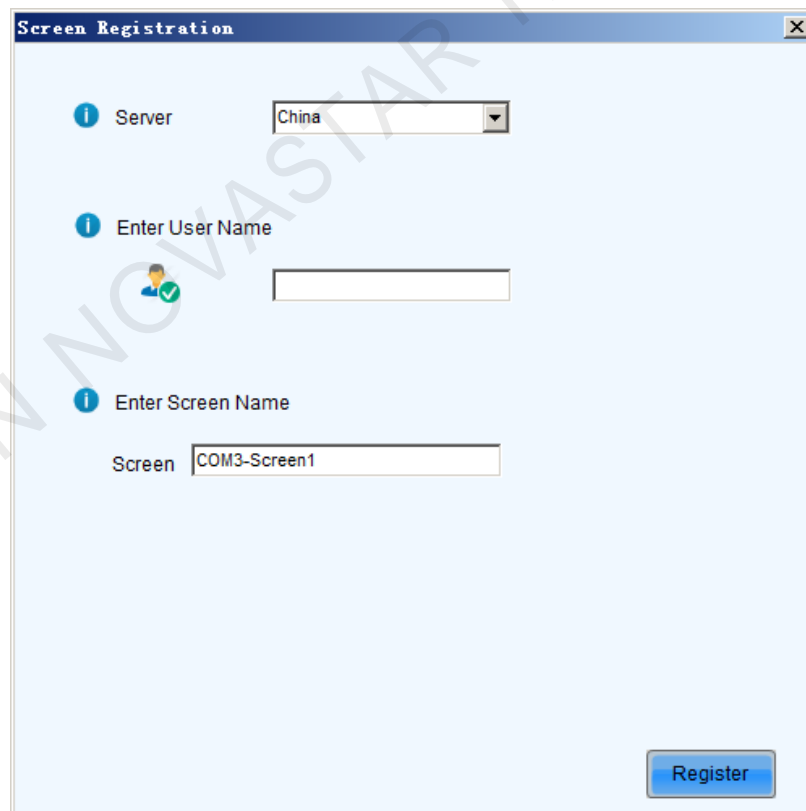
Click on  Cloud Monitoring , register the display screen to the user, may be one or more will control the display screen connected with the computer, click on  , fill in the name of the display screen, registered account name, click on  , the default will register all display screen to the user will all display.

Figure 6-1 Screen Register



The screenshot shows a 'Screen Registration' dialog box with the following fields and controls:

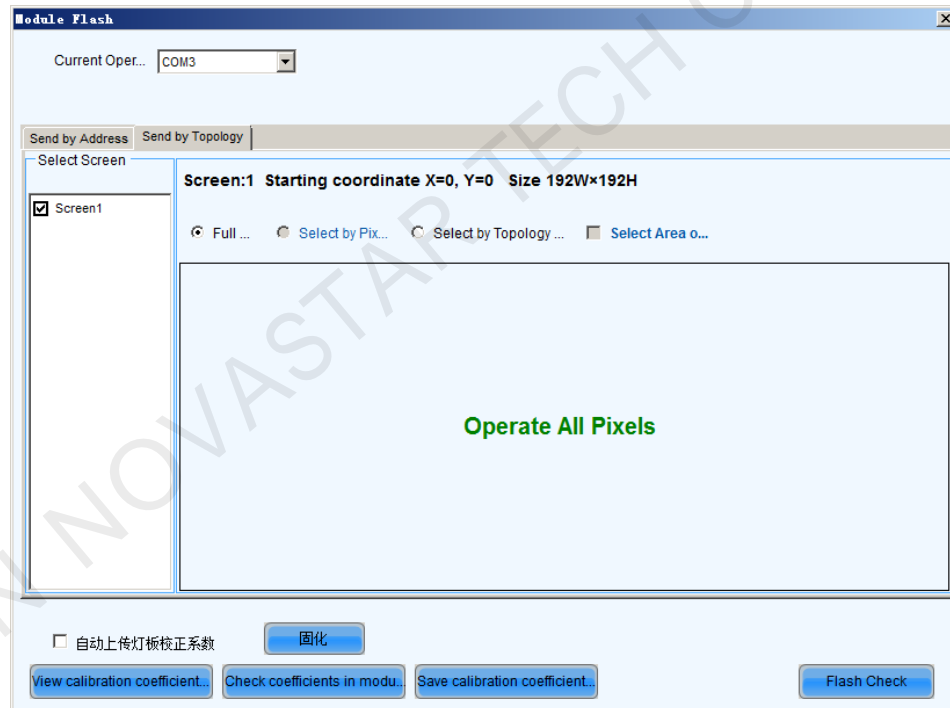
- Server:** A dropdown menu currently showing 'China'.
- Enter User Name:** An empty text input field.
- Enter Screen Name:** A text input field containing the text 'COM3-Screen1'.
- Register:** A blue button at the bottom right of the dialog.

- Enter Screen Name: Give a distinguishable name for the screen.
- Enter User Name: Account name registered on the server, under which the screen will be registered.

7 Memory on Module Manage

Select **Settings > Module Flash**, and open the **Module Flash** operation interface, as shown in [Figure 7-1](#).

Figure 7-1 Module Flash operation interface

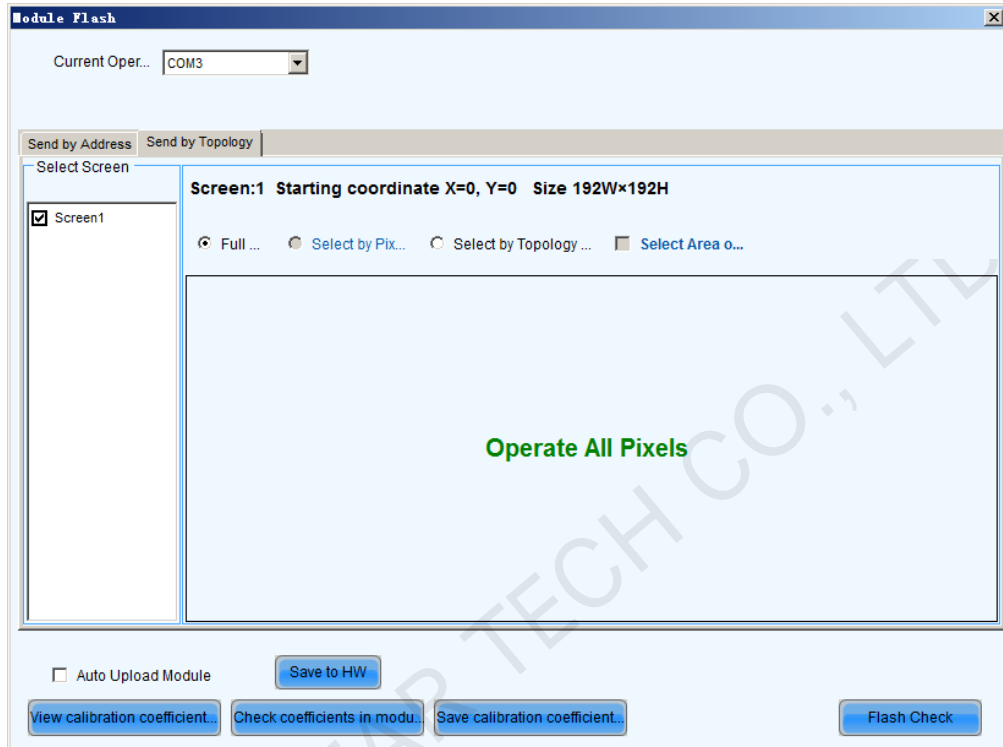


- Current Operating Serial port: Serial port of currently connected sending equipment.
- Send by Address: Double-click the corresponding table, and set the physical address; the description is shown as follows.

Sending#	Port	Scan board	Means
1	*	*	Means all the Scan boards of the first sending card.
1	1	*	Means all the scan boards of the first port in the first sending card.

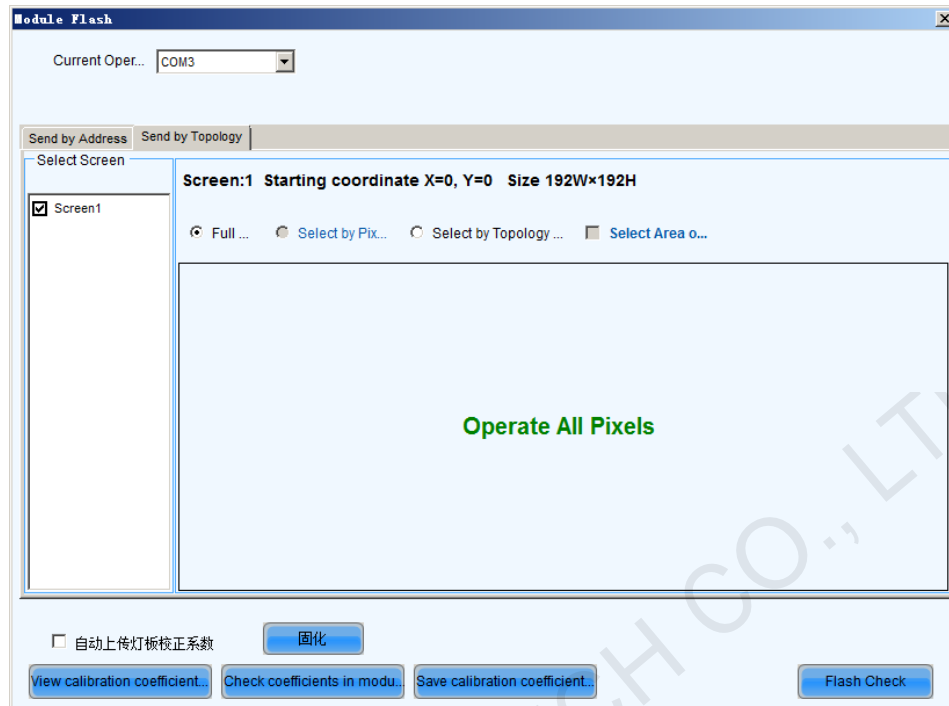
1	1	1	Means the first scan board of the first port in the first sending card.
---	---	---	---

Figure 7-2 Send by address



Send by topology: Select the receiving card in accordance with the topology; select the full screen (i.e., all connected receiving card), or select one or more receiving cards in accordance with the arrangement diagram.

Figure 7-3 Send by Topology



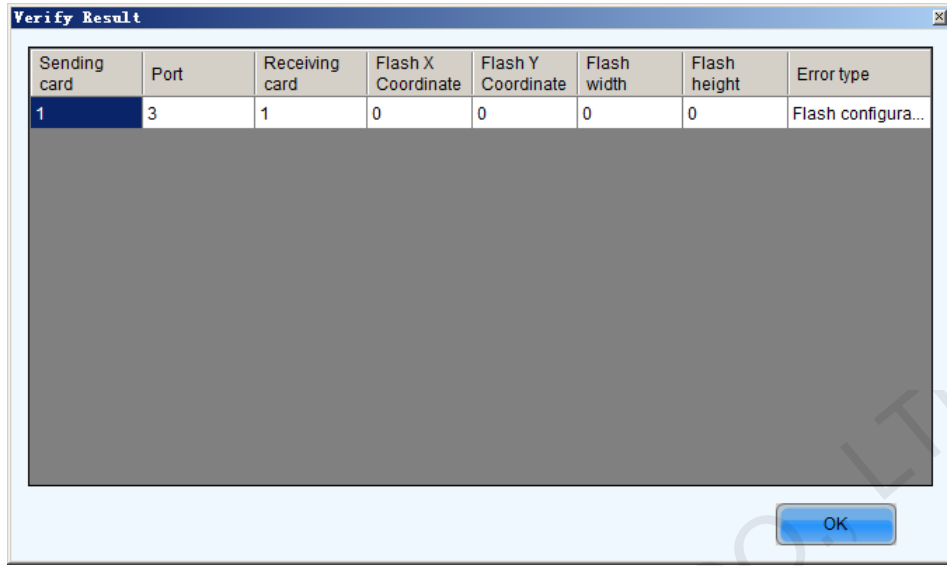
- Check coefficients in Scan Board: Check the effect of calibration coefficient saved in receiving card at LED screen.
- Check coefficients in Modules: Check the effect of calibration coefficient saved in module Flash at LED screen.
- Save coefficients on Scan Board: Save the calibration coefficient currently being checked to receiving card.
- Save coefficients to Modules: Save the calibration coefficient currently being checked to module Flash.
- Flash test: test whether Flash is normal.

Types of error in Flash test and its reasons

- Hardware failure
 - It may be caused by the screen inconsistent with the actual situation.
 - It may be caused by the configuration of arrangement diagram inconsistent with the actual situation.
- Communication error: it may be caused by a hardware connection error.
- Abnormal Flash arrangement: no configuration of Flash arrangement, or no hardware.

Flash arrangement embodies physical connections of all Flashes, and it needs to be configured in the "Display Configuration". Please see the specific operation.

Figure 7-4 Flash check



Sending card	Port	Receiving card	Flash X Coordinate	Flash Y Coordinate	Flash width	Flash height	Error type
1	3	1	0	0	0	0	Flash configura...

OK

8 Receiving Card Relay

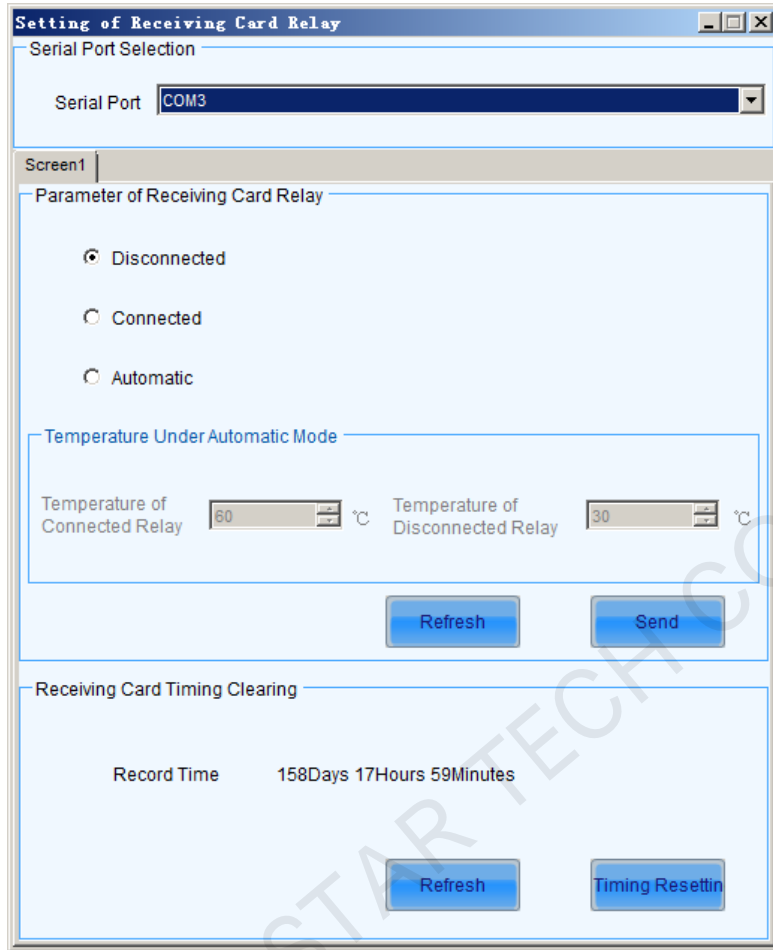
For the receiving card supporting the relay module, the parameters of relay can be set here.

The relay can be set to be disconnected, closed or automatic. When the relay is set to be automatic, the temperature of closing and the temperature of disconnecting shall be designated.

Timing of receiving card is the accumulated using time of the receiving card; when **Timing Resetting**, the time will be recorded from 0.

After finishing the setting, click **Send** to send the parameters to the receiving card.

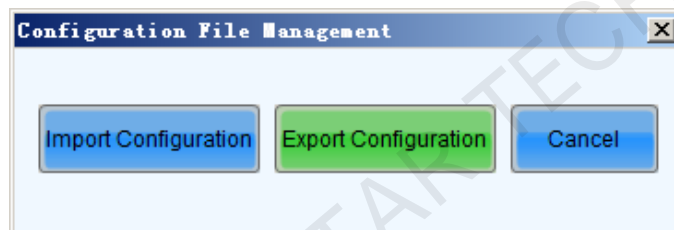
Figure 8-1 Setting of receiving card relay



9 Configuration Information Management

Click **Settings > Configure Information Management** to conduct configuration file management.

Figure 9-1 Configuration file management



- Import Configuration Files: Import previously saved configuration files.
- Export Configuration Files: Export all the configuration files in the configuration process, and save in the computer in .zip format.
- Cancel: Exit the configuration file management.

10 Multi-Batch Adjustment

Quickly adjust the chromaticity of each batch of cabinet to achieve the effect of reference model.

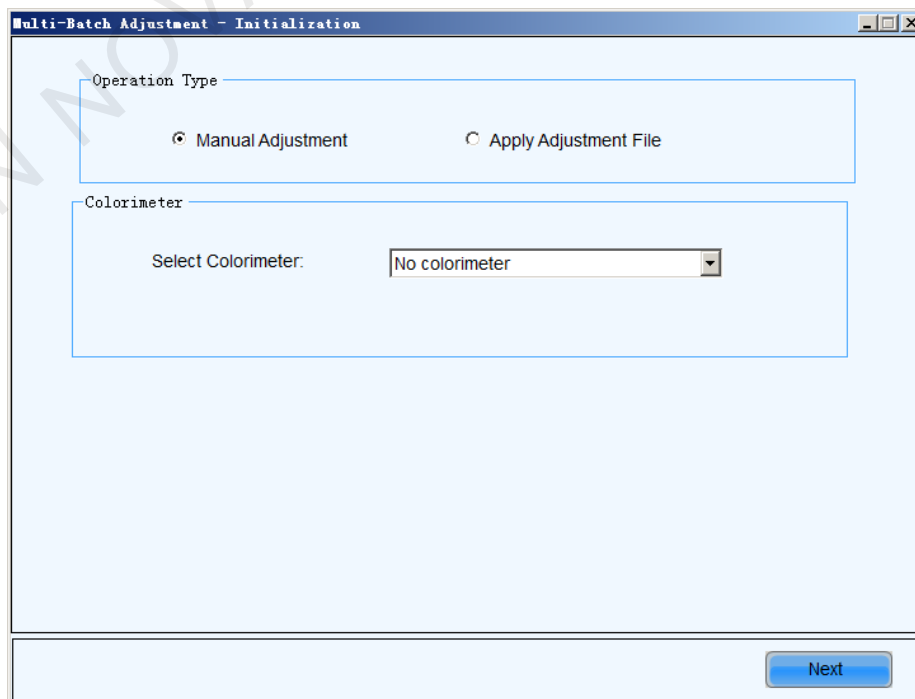
After adjusting well, save the adjustment parameter into a file; next time, load the file to finish adjustment quickly without manual adjustment.

In the main interface, click **Tools > Multi-batch Adjustment**, start multi-batch adjustment. The operation steps are as follows:

10.1 Manual Adjustment

Check **Manual Adjustment**, as shown in [Figure 10-1](#). Select a colorimeter connected to the system. If there is not colorimeter, tick **No colorimeter** and then click **Next**.

Figure 10-1 Select colorimeter information



Set sample batches



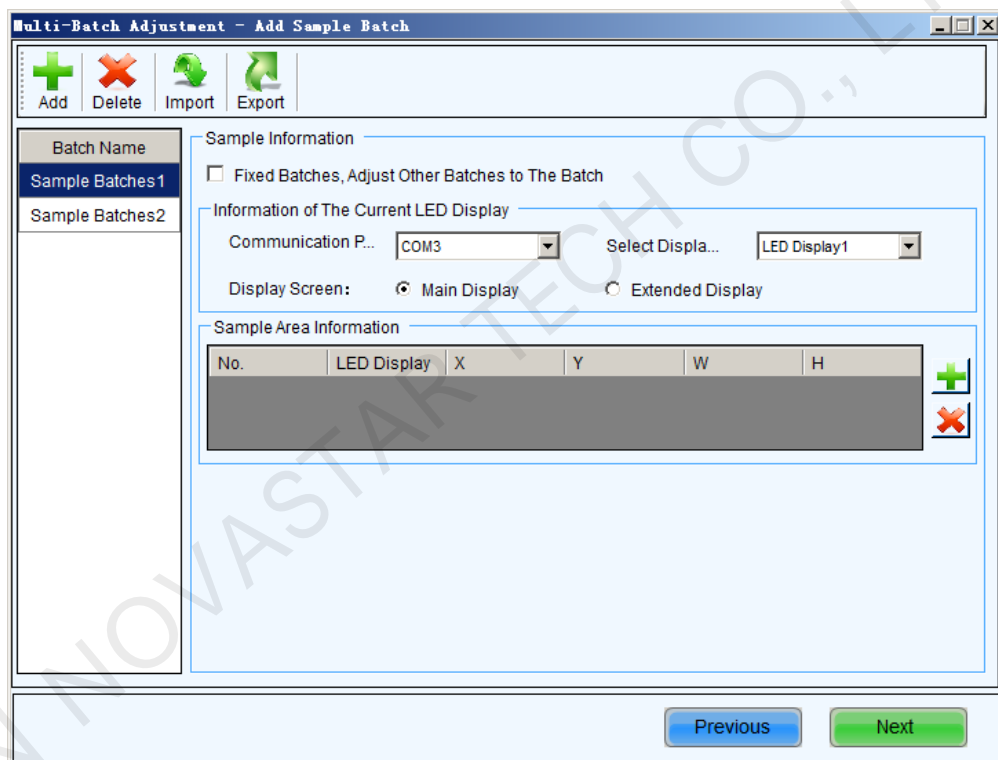
- Step 1 Select screen, click  to add a batch, right click the batch to rename it. And then click  to add the sample area (when selecting in accordance with pixels area, if there is a red box, it shows that it is out of range).
- Step 2 If one selects a batch and tick **Fixed Batches > Adjust Other Batches to The Bath**, then this batch will be used as a reference batch, which could not be modified further. If do not tick, it can be modified in the next step.
- Step 3 Click **Next** once setting is completed.

Figure 10-2 Add Sample Batch

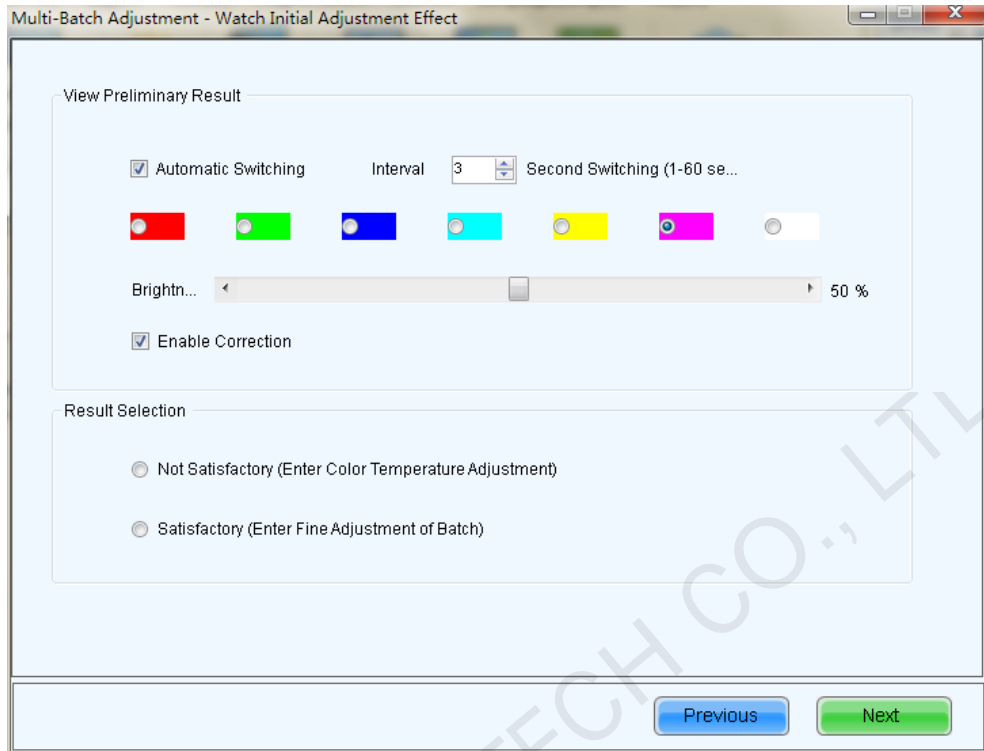


Rename: right click on the name of the batch and then click **Rename** to modify the batch name in the pop-up interface.

Measurement Value of Colorimeter: Display only there is colorimeter, it is needed to fill in the measurement value of the colorimeter.

- Step 4 When there is a colorimeter and the effect of initial adjustment is perfect, there is no need to make fine adjustment. Operation will directly into Step 5 (adjustment) if no colorimeter.

Figure 10-3 View the effect of initial adjustment

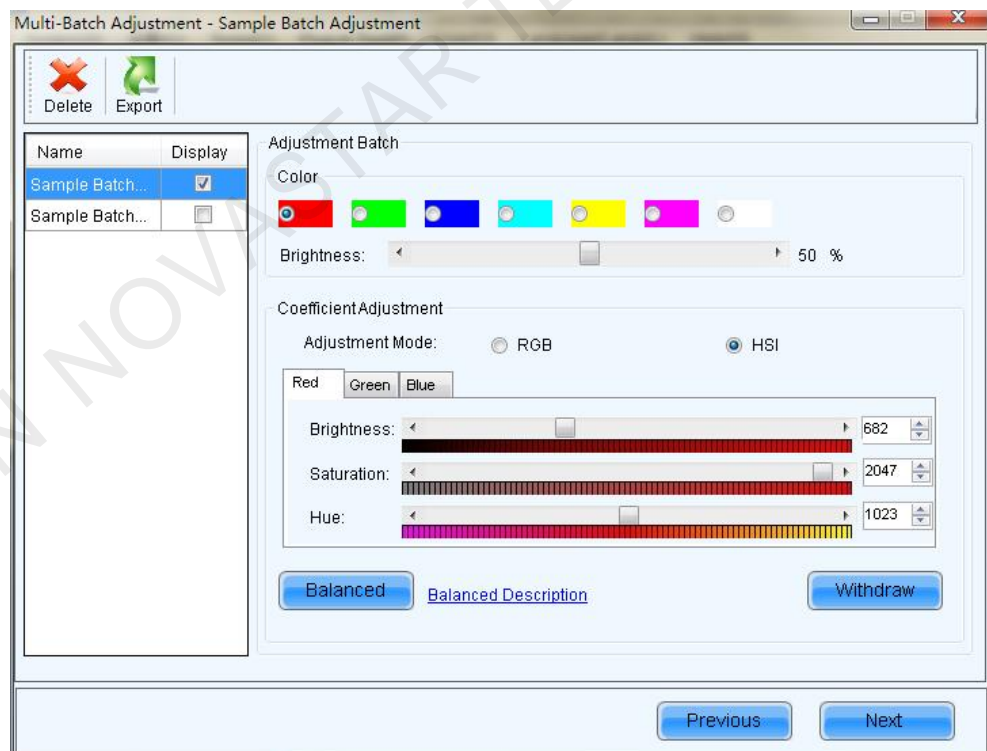
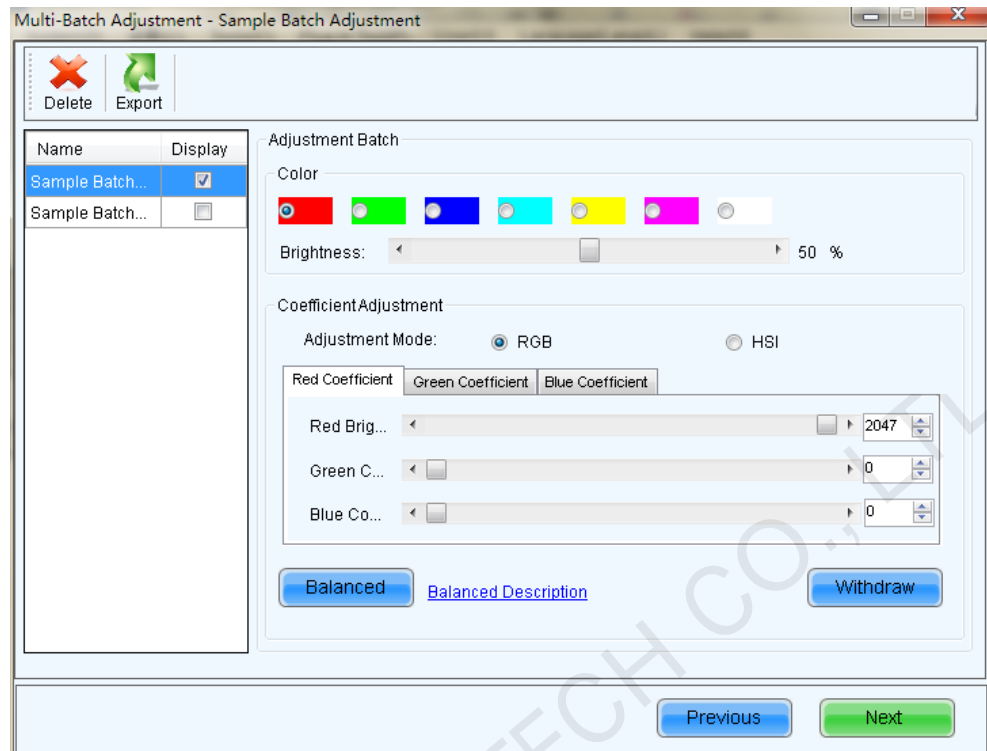


Step 5 Adjustment.

View the effect of initial adjustment; it can automatically switch each color, or be manually switched; at the same time, the brightness can be set manually.

If you are not satisfied with the effect, the coefficient can be adjusted, there are two ways for adjustment, and they are RGB and HSI.

Figure 10-4 Coefficient Adjustment

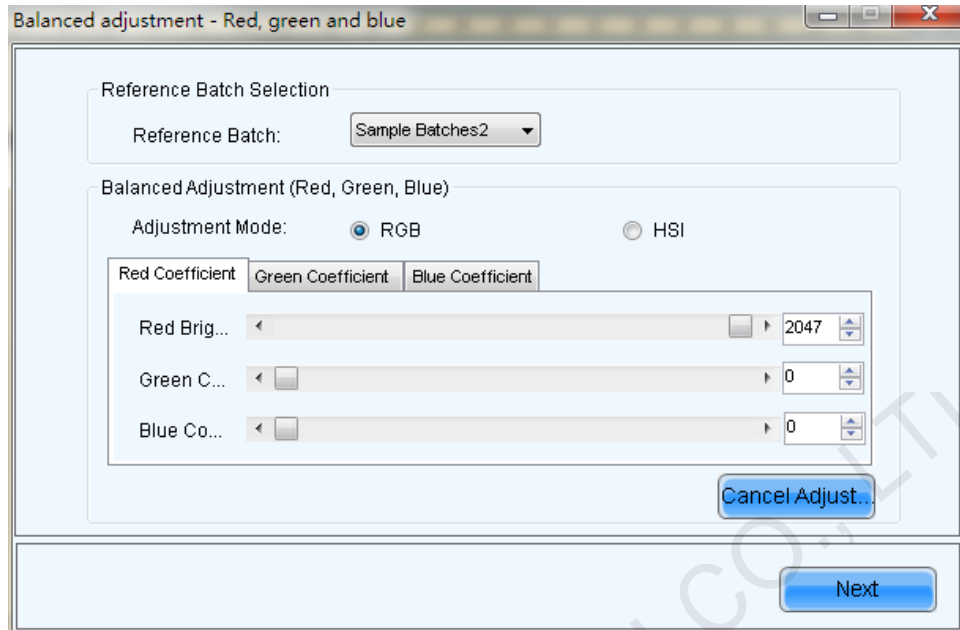


Balanced : Please click [Balanced Description](#) to view the details.

Operation steps are as follows:

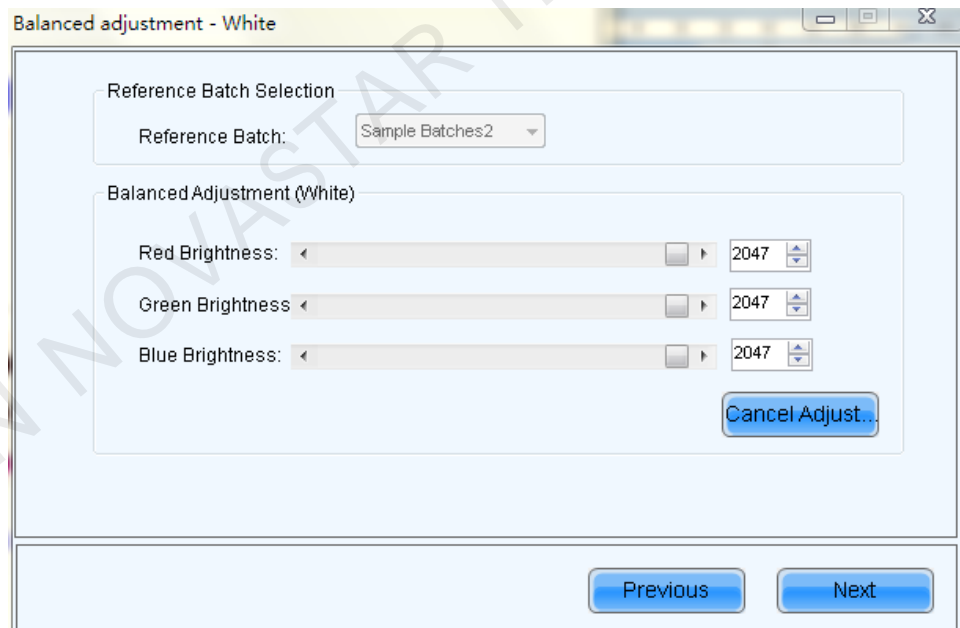
1. Regulate the optimum results of red, green and blue.

Figure 10-5 Balanced Adjustment (Red, Green, Blue)




2. Regulate the optimum results of white.

Figure 10-6 Balanced Adjustment (White)



3. Judge the test results with human eye assistance.

Tick "Auto Balancing", Click  to start the automatic balance adjustment.

After once balance is finished, the software will indicate whether or not satisfied, if you are satisfied, you can click to continue the next balanced matching, not satisfied, click to end balancing match.

Tips: If no value change lever when adjusting white balance can't be started. Do not tick "Auto Balancing", you can manually adjust the coefficient of red, green and blue.

Figure 10-7 Auto Balancing

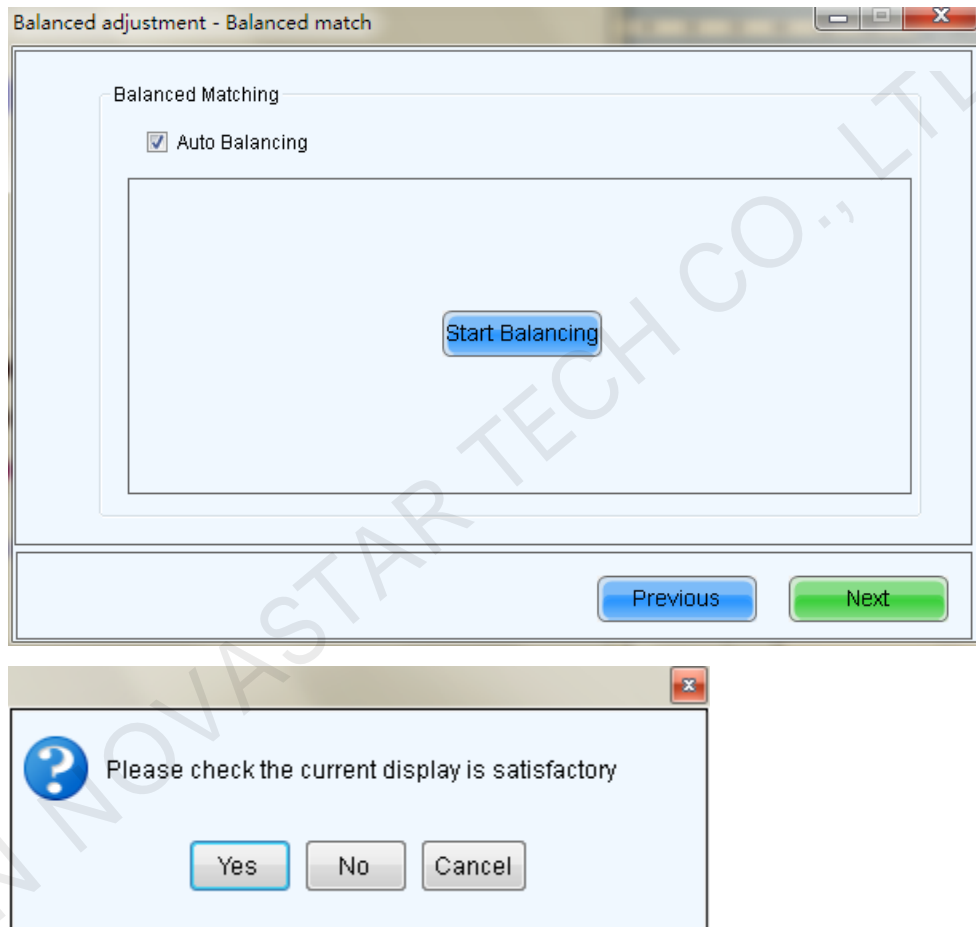
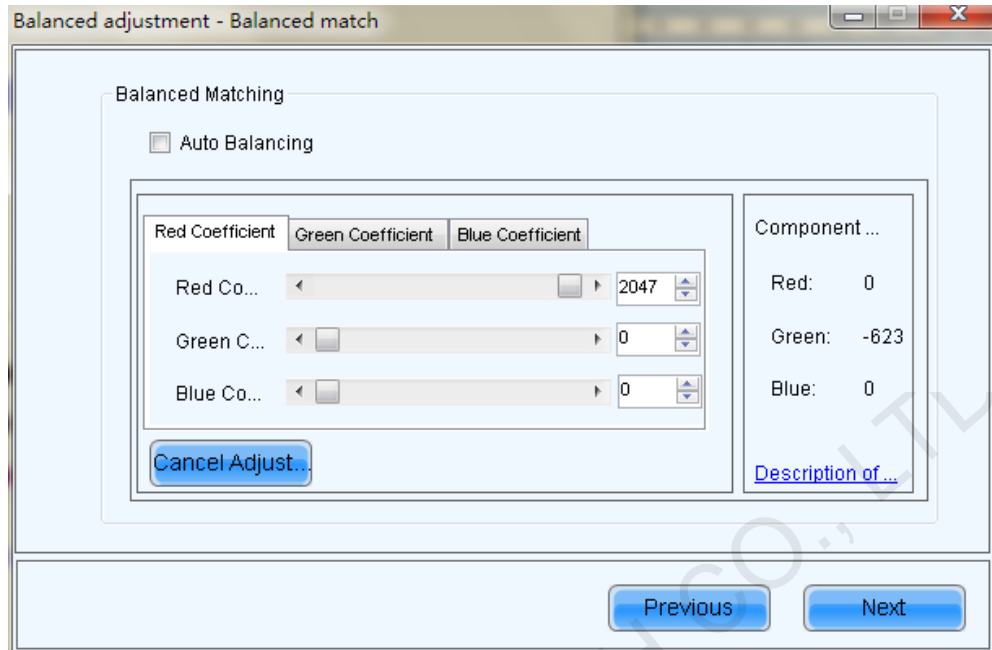
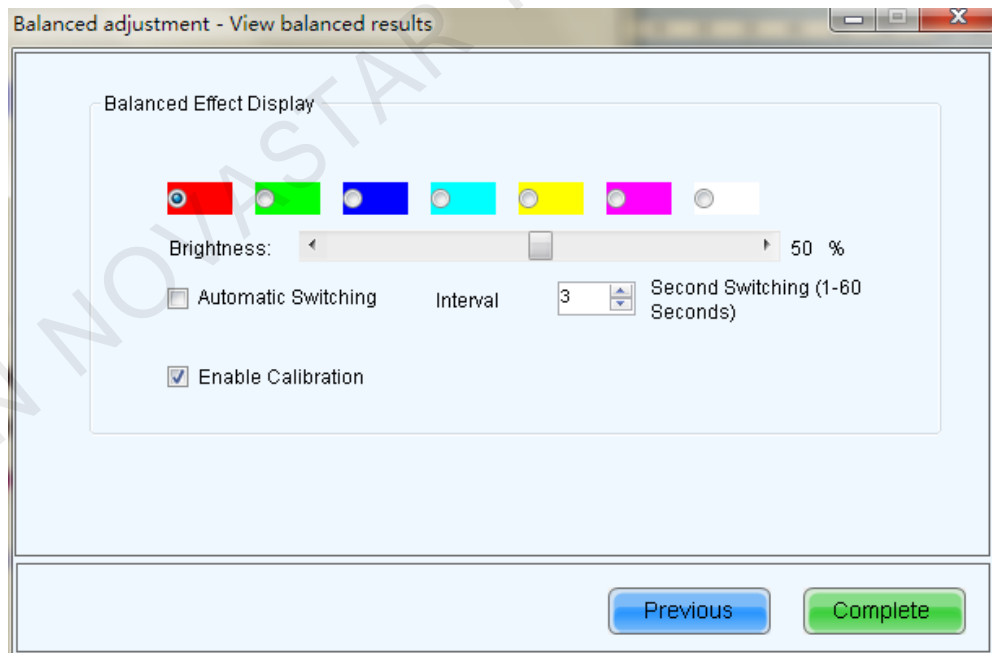


Figure 10-8 Manual Balancing



4. View the equilibrium results.

Figure 10-9 View the equilibrium results

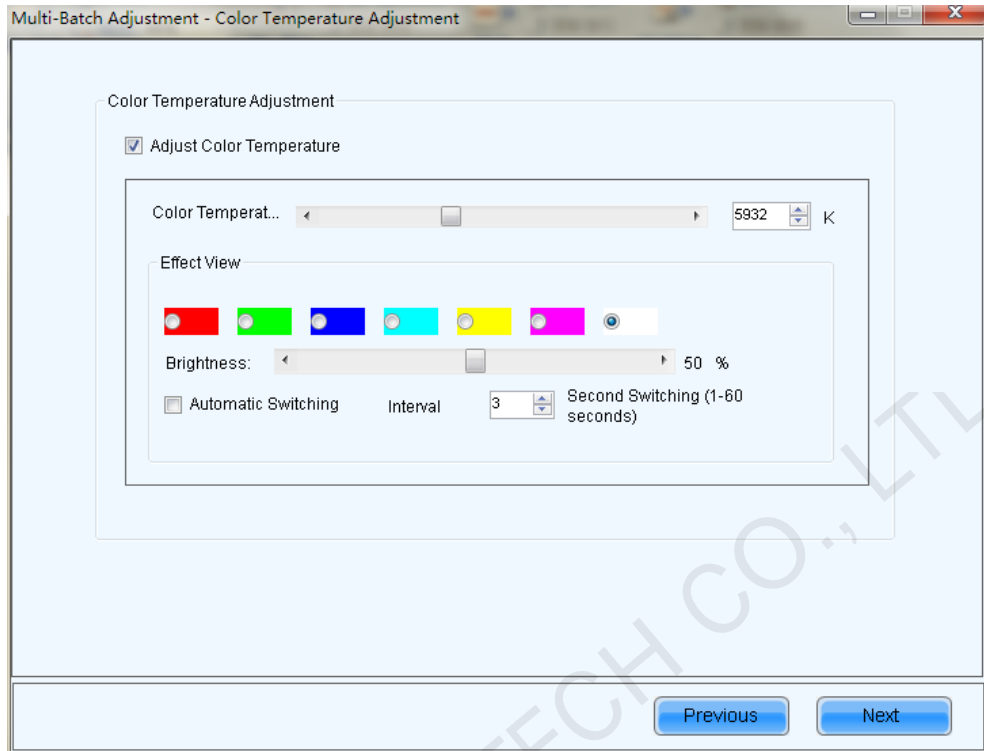


[Cancel Adjust...](#)

: Withdraw all adjustments.

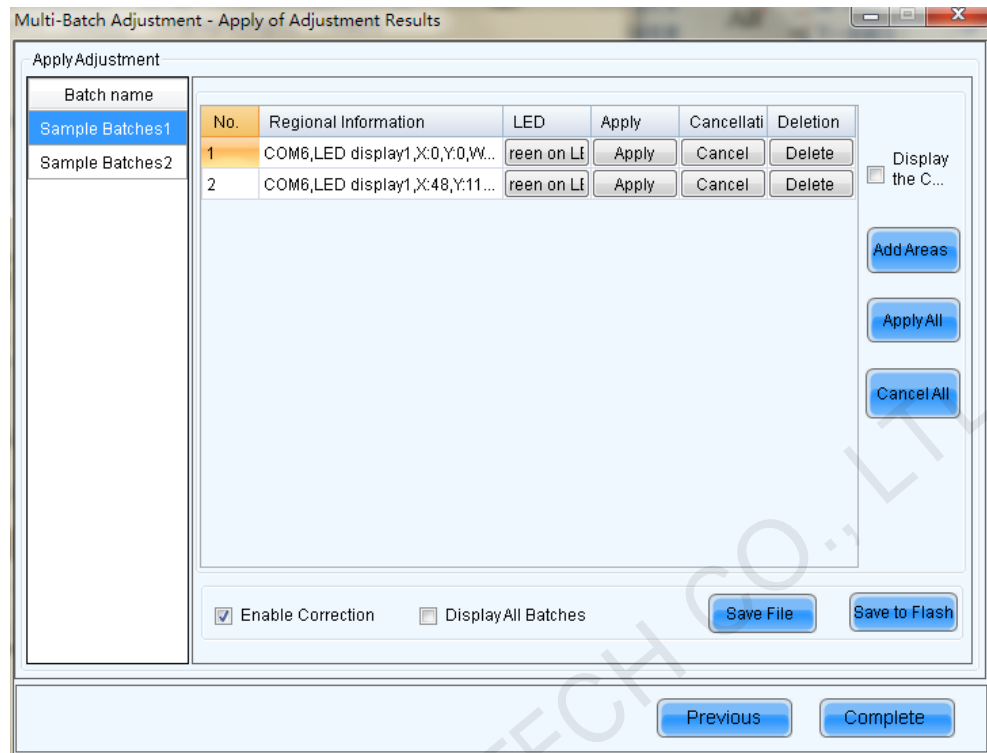
Step 6 Adjust the Color temperature of all Batch.

Figure 10-10 Color Temperature Adjustment




Step 7 Select the batch, and then add one or more unadjusted areas with the same batch on the screen; click on the **reen on Lt** (Display screen on LED display) to see the effect on the screen, and click **Apply** to apply the adjustment effect to this area.

Figure 10-11 Adjust application of effect



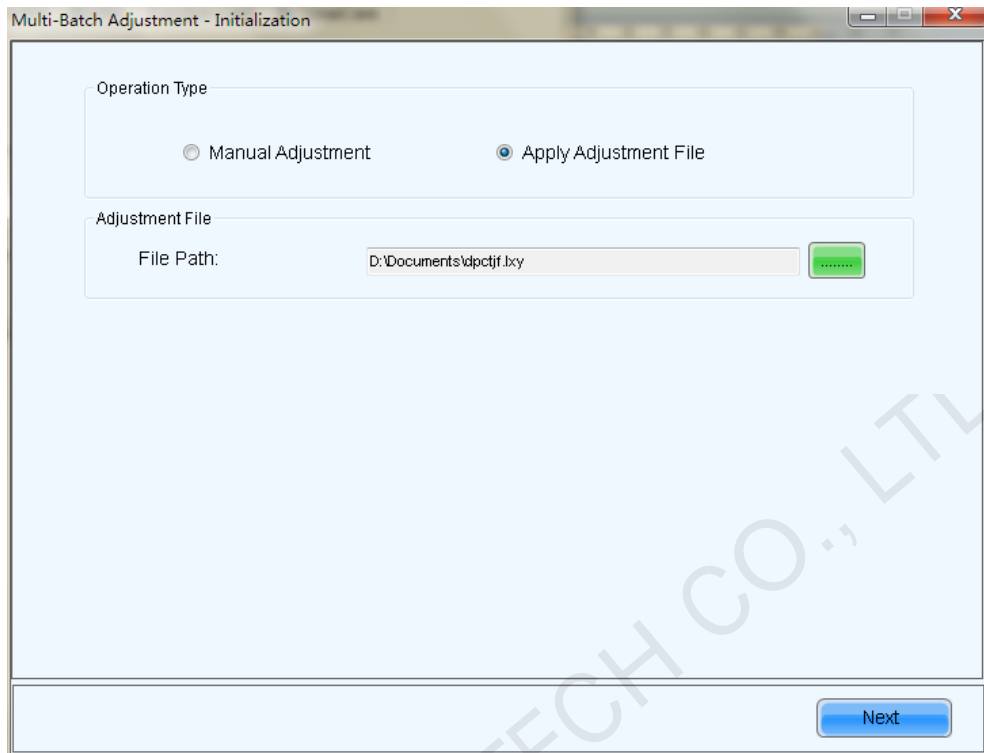
Step 8 Save the file.

Click , and save the adjustment parameter into .lxy file; next time, directly import the file for adjusting the cabinet of the same batch, and it can also be imported for cabinet correction.

10.2 Applications Adjustment File

Directly load the adjustment file previously saved, as shown in [Figure 10-12](#).

Figure 10-12 Applications Adjustment File

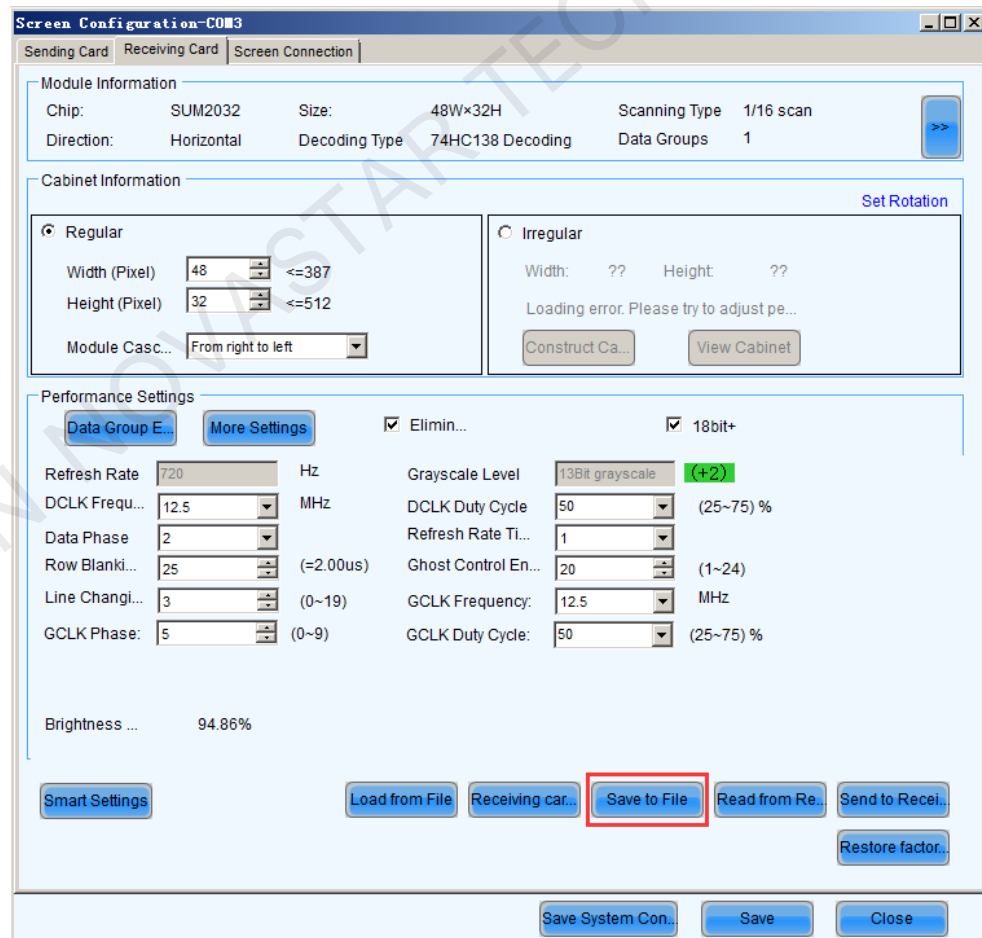


11 Loading Configuration File

Users can quickly configure a screen by importing cabinet configuration files.

To configure multiple cabinets with same specification, screen configuration can be done on site if there are no cabinet configuration files. Then click **Save to File** as shown in Figure 11-1.

Figure 11-1 Save configuration file



The steps for loading configuration file are shown as below:

- Step 1 Click the **Tools > Controller Cabinet Configuration File Import** on the main interface.
- Step 2 The following figures i.e. [Figure 11-2](#) and [Figure 11-3](#) show the common controller and the configuration file loading interface of Pro. The **Rename** function has been added for Pro.

Figure 11-2 Send Board load Configuration File

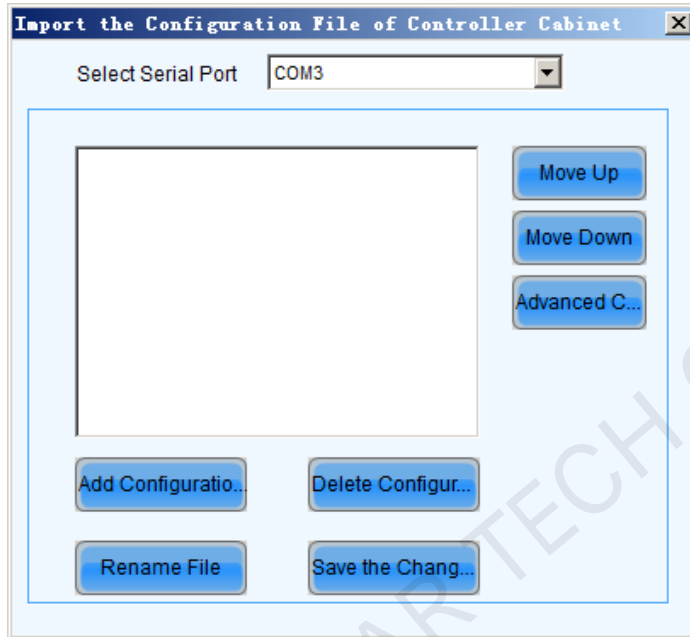
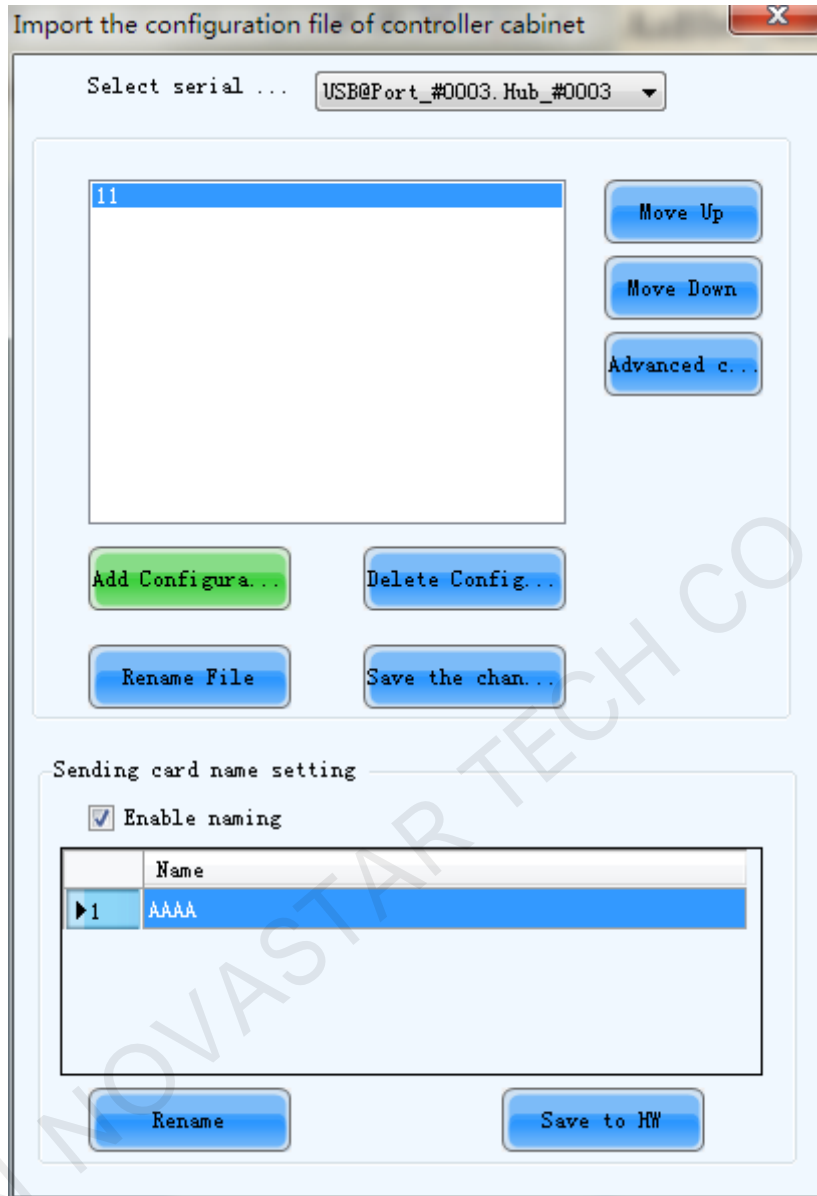
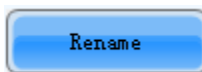
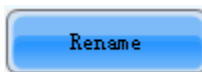


Figure 11-3 NovaPro load Configuration File



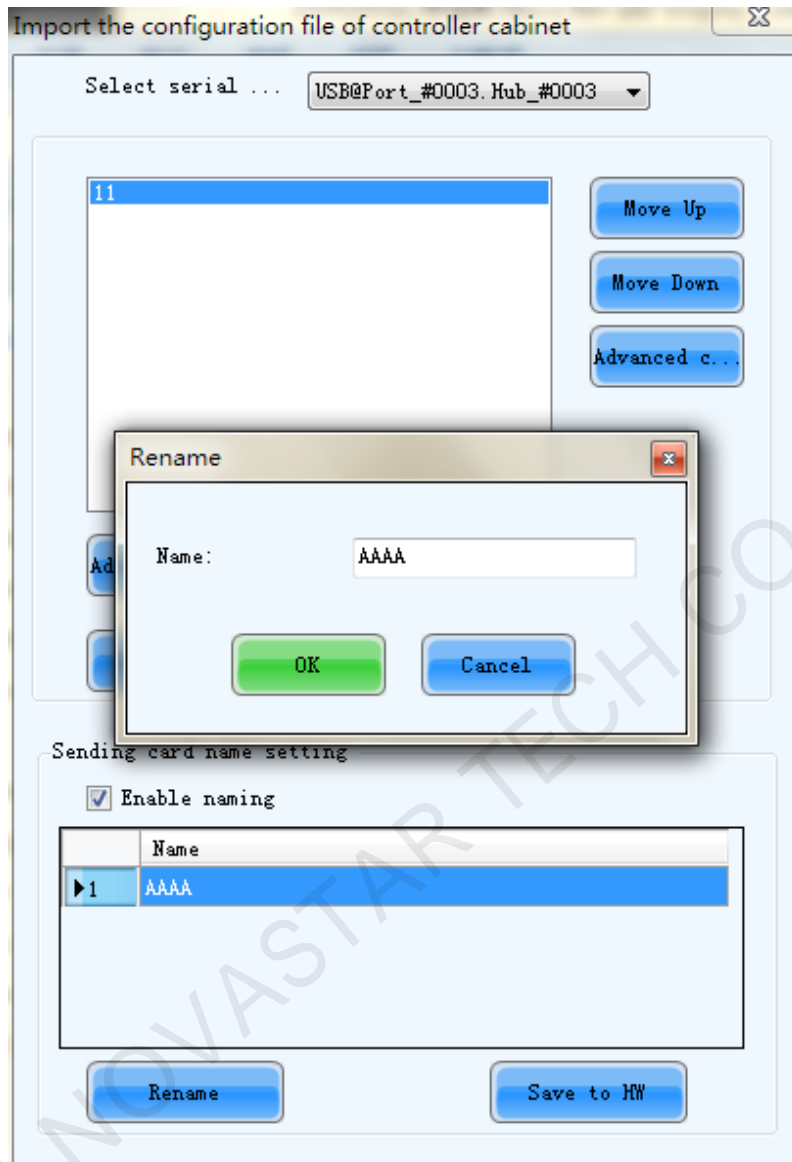
Name setting of Sending card:



Select Pro, and then click , change the name of the sending card in the popped up renaming window. Click **OK** after the name is changed.

Note: The new name is only available after the **Enable naming** is ticked.

Figure 11-4 Naming setting of sending card



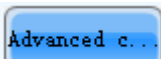
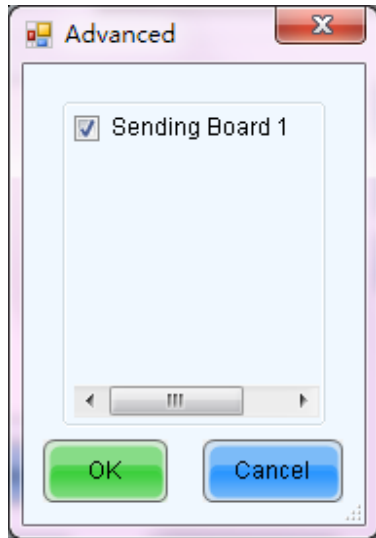
Step 3 Click  to select a controller for loading configuration files. If no any controller is selected, the configuration files, by default, will be loaded to all controllers connected to the system.

Figure 11-5 Selecting a controller for configuration file loading



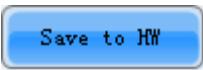
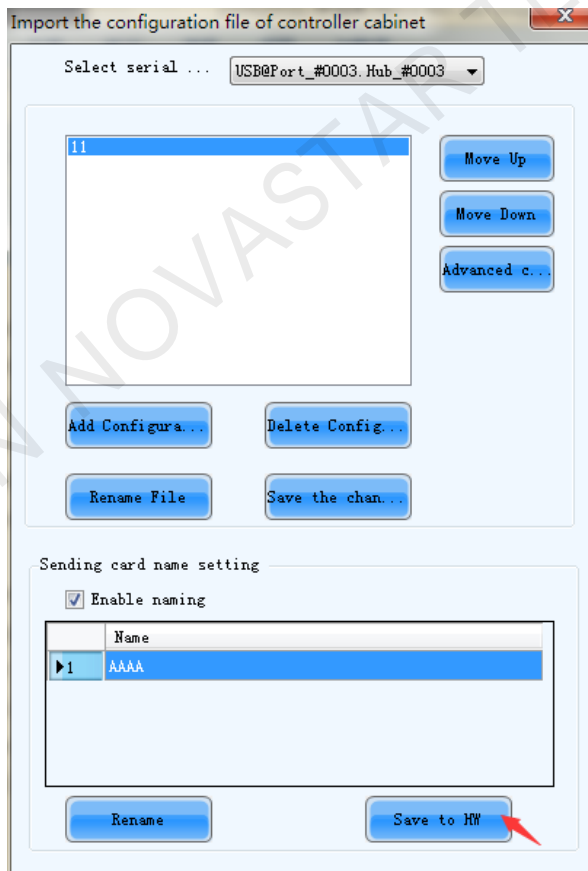
Step 4 Click  , all added configuration files will be saved to the selected controller (s).

Figure 11-6 Selecting a sending card for configuration file loading



12 Dark or Bright Lines Adjustment for Cabinets

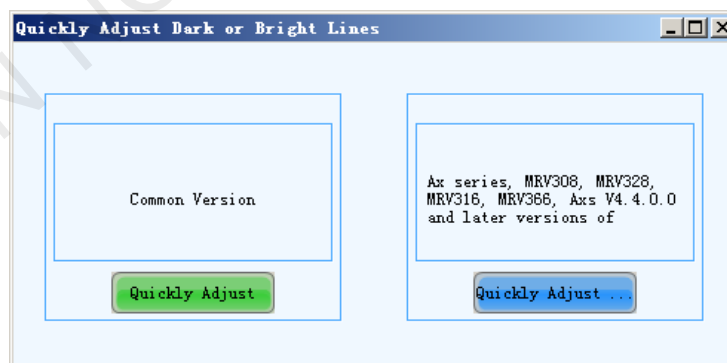
When the user couples with the screen, after cabinets and cabinets, or modules and modules are pieced together, if dark or bright lines are detected at the joints, it can be adjusted by using this function, which will adjust the four sides of the module and module and bright dark degree of four points in order to improve visual abruptness caused by the bright dark lines caused by visual abrupt.

All parameters will be recorded in the dark / bright-line configuration files once the dark or bright lines are adjusted. The previous dark or bright lines can be reduced by the function of **Dark or Bright Lines Recovery for Cabinet** if necessary.

12.1 Quickly Adjust Dark or Bright Lines

Select **Tools > Quickly Adjust Dark or Bright Lines > Adjust Dark or Bright Lines**, enter the adjusting page.

Figure 12-1 Function version selection



Common Version

Step 1 Click **Quickly Adjust** in the common version area.

Figure 12-2 The Quickly Adjust Dark or Bright Lines page.

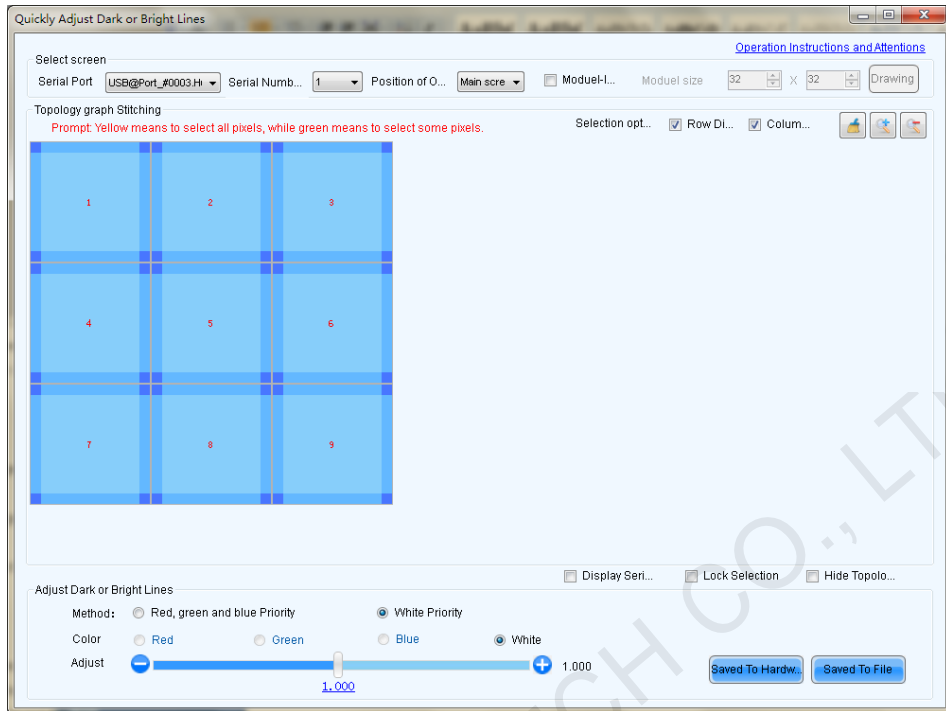
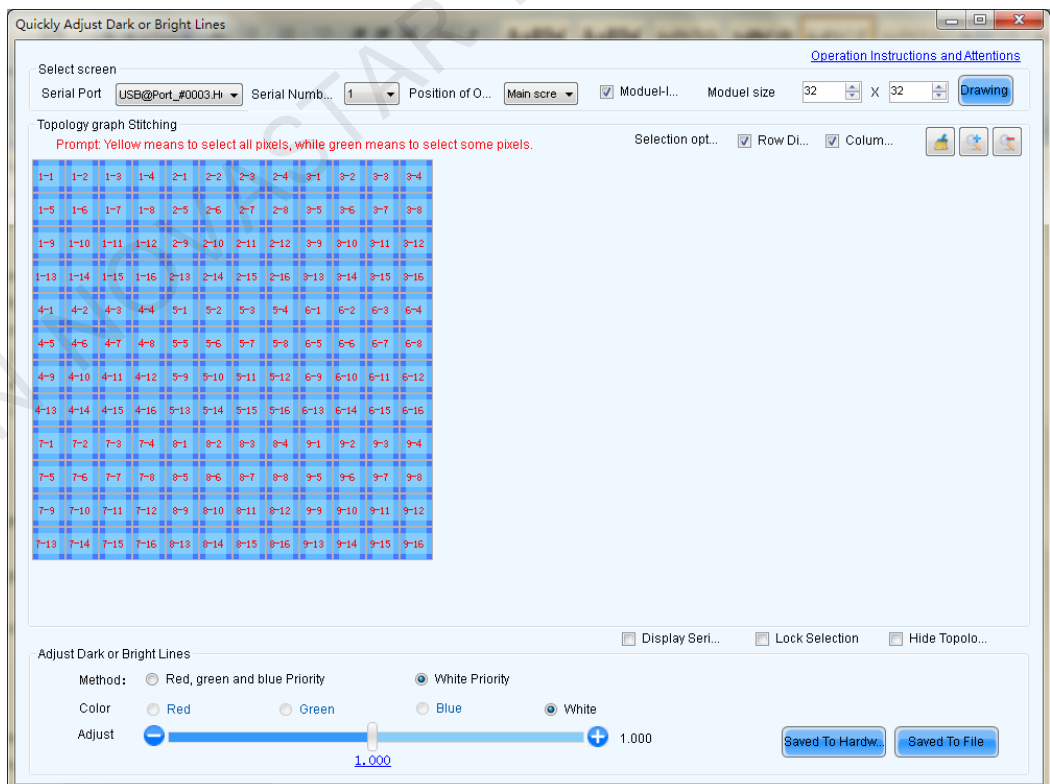


Figure 12-3 Module adjustment



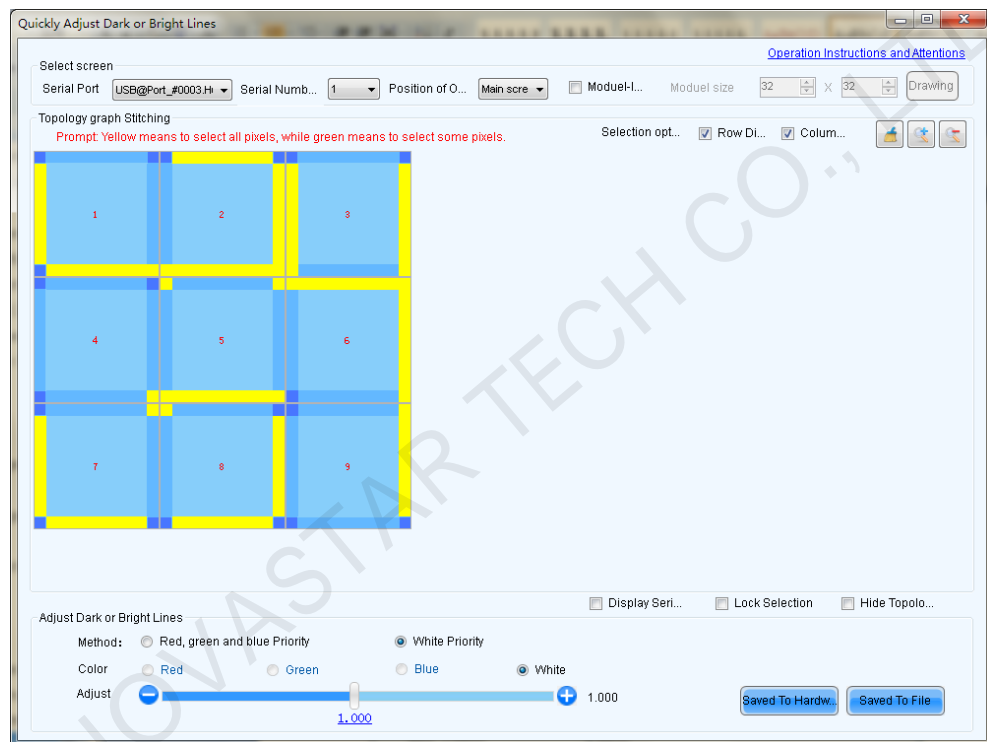
Step 2 Select the screen that will be adjusted currently, and select the location that will play the screen, which setting must be set the same as the computer display.

Step 3 After selecting screen, it will display splicing topology corresponding immediately; check “Module-level adjustment” to show topological graph of module splice, the user can quickly see the specific location that bright dark line shines upon the topological graph on the screen. And then select to adjust.

It will introduce the method that select and cancel the edge or vertex as follows: take cabinet topological graph as an example, the operation of topological graph of module is the same as topological graph of the cabinet.

1. Using the mouse to directly click the four edges or vertices of the box body selected, click firstly to select, click secondly to cancel.

Figure 12-4 Click on the edge or vertex of the box body selected






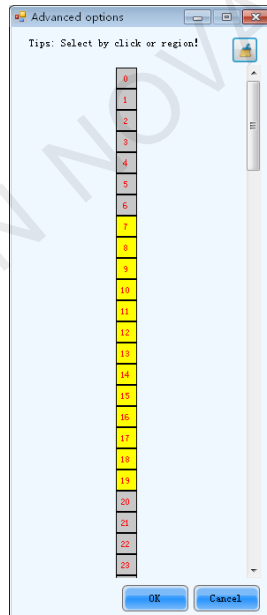
-  : Click to cancel all the part selected.
-  : Enlarged topological graph.
-  : Reduce the topology map.
- Display Serial number: If checked, the number is displayed on the screen that is convenient for the user to find the bright dark lines.

Figure 12-5 Number On Display



- Lock selection: if selected bright dark side, check it that will be locked to avoid accidentally cancel or multiple select.
 - Hide topological: check it to hide the topological graph.
2. It can also select multiple edges or multiple vertices by using the mouse. If the user also checks "row direction" and "column" direction, select the vertices and the edges in the two directions of row and column in the box selection, after it is completed, and then click somewhere selected will cancel the selection.
 3. Double click edges that can select part of the points on the edge.

Figure 12-6 Select part of the points on the edge



- Step 4 Select the part that will be adjusted, began to adjust bright and dark degree, drag link adjustment by using the mouse. There are two types of adjustment, one is priority mode for red, green and blue that can respectively adjust bright and dark of red,

green and blue; the other is a priority mode for white, adjust red, green and blue synchronously.

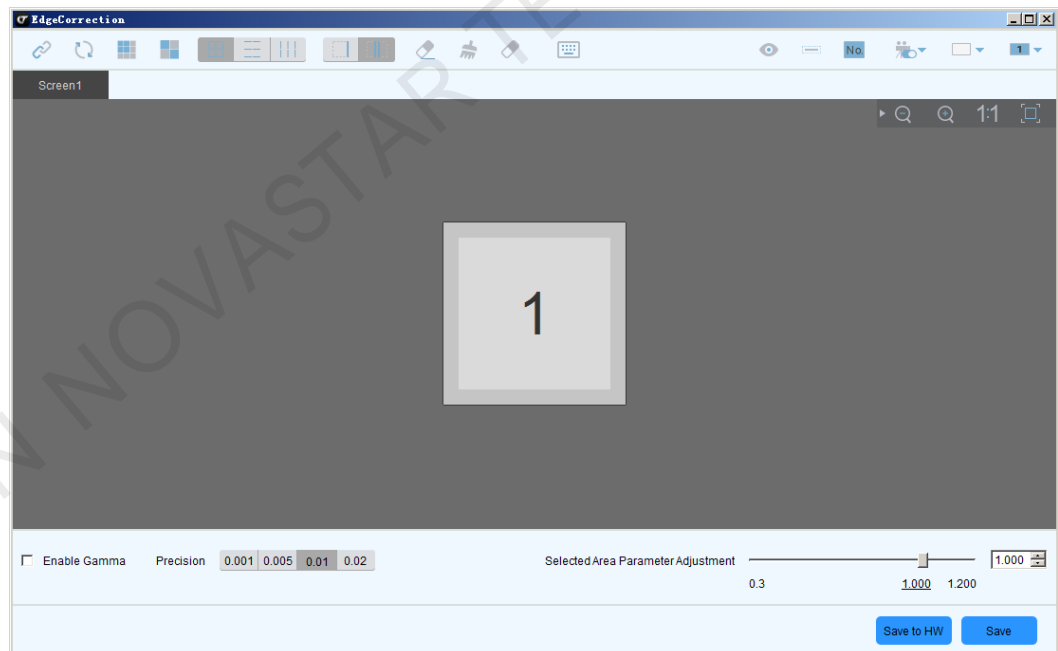
Step 5 Adjust to the best result.





- Click **Save to Vendor Area** to save current adjustment result to the vendor data storage area of the receiving card.
- Click **Save to User Area** to save current adjustment result to the user data storage area of the receiving card.
- Click **Save to File** to save the adjustment data to file. The data of one LED screen is saved as one file. The file can be uploaded when you upload calibration database in the future.
- Click **Restore to Vendor Area**. The system will use the bright and dark line data saved in vendor data area.
- Click **Restore to User Area**. The system will use the bright and dark line data saved in user data area.













Non-Common Version

Click **Quickly Adjust (New)** in the non-common version area to enter the function page, as shown in [Figure 12-7](#).

Figure 12-7 Non-Common version



-  : Reconnect device.
-  : Refresh data.
-  : Set the number of module rows and columns to be displayed.
-  : Show cabinets.

-  : Show all/horizontal/vertical borders of the modules.
-  : Select one border or two adjacent borders at a time.
-  : Deselect the selected borders.
-  : Clear the effects of all the borders.
-  : Clear the effects of selected borders.
-  : Set keyboard shortcuts.
-  : Show/Hide the display window.
-  : The selected modules or cabinets are displayed with a dash box on the display window.
-  : Show module ID.
-  : Disable seam calibration, enable chroma calibration or brightness calibration.
-  : Set the color of the display window.
-  : Set the position of the display window.
- Main display: Show the window on the main display.
- Extended display: Show the window on the extended display.
- Enable Gamma: Enable Gamma adjustment.
- Precision: Set the precision for adjusting parameters.
- Selected Area Parameter Adjustment: Set the parameters of the selected area for dark or bright line adjustment.

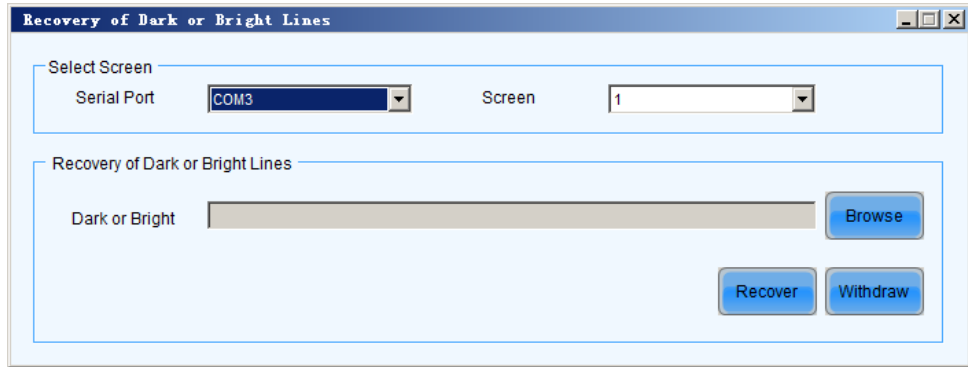
12.2 Dark or Bright Lines Recovery for Cabinet

All parameters will be recorded in the dark / bright-line configuration files once the dark or bright lines are adjusted. The method for recovering dark or bright lines is to load the dark / bright-line configuration file to recover the display to the last dark or bright lines. If this file is used for several times, adjusted parameters of those previous recovering dark or bright lines will be recovered accordingly.

Method for recovering dark or bright lines

- Step 1 Click **Tools > Dark or Bright Lines Adjustment for Cabinet > Dark or Bright lines Recover for Cabinet** on the main interface of NovaLCT.
- Step 2 Select the display for dark / bright line reducing, click **Browse** to load the dark / bright line file in relation to the display and then click **Reduce** to reduce them to the last ones.

Figure 12-8 Dark or bright lines recovery for cabinet



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13 Video Control

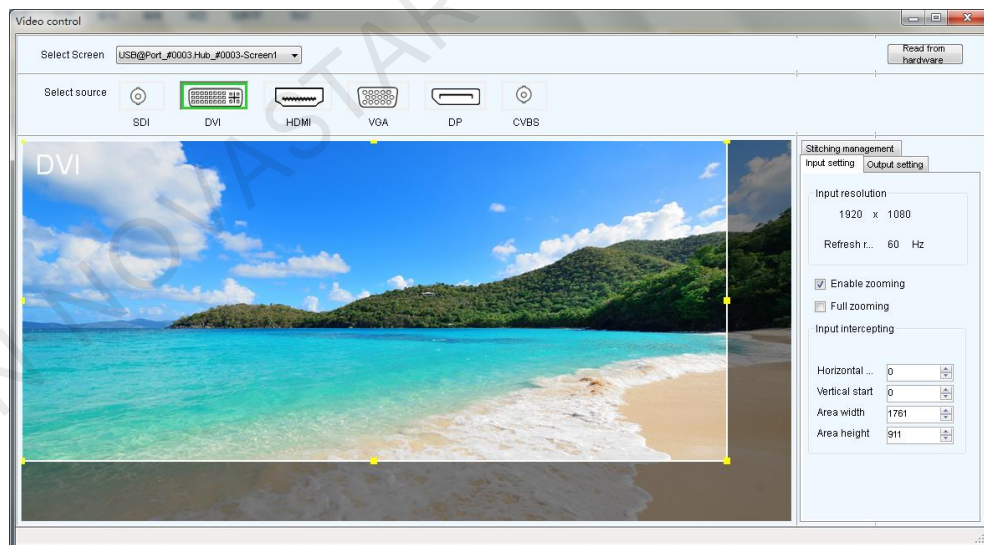
Video control only supports single controller that drives a single LED display or multiple controller assembly that drive a single big screen.

To satisfy all kinds of display effects, set the input, output and splice parameters of the LED display.

First choose LED display and input source of the LED display.

Read from hardware: save all video control parameters before reading from hardware.

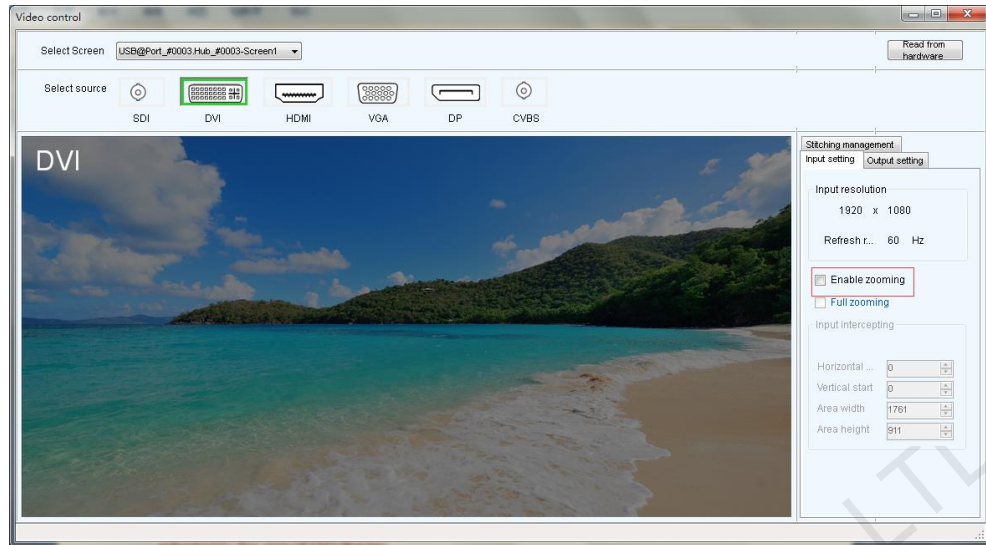
Figure 13-1 Video control



Input setting

There are three types of input setting

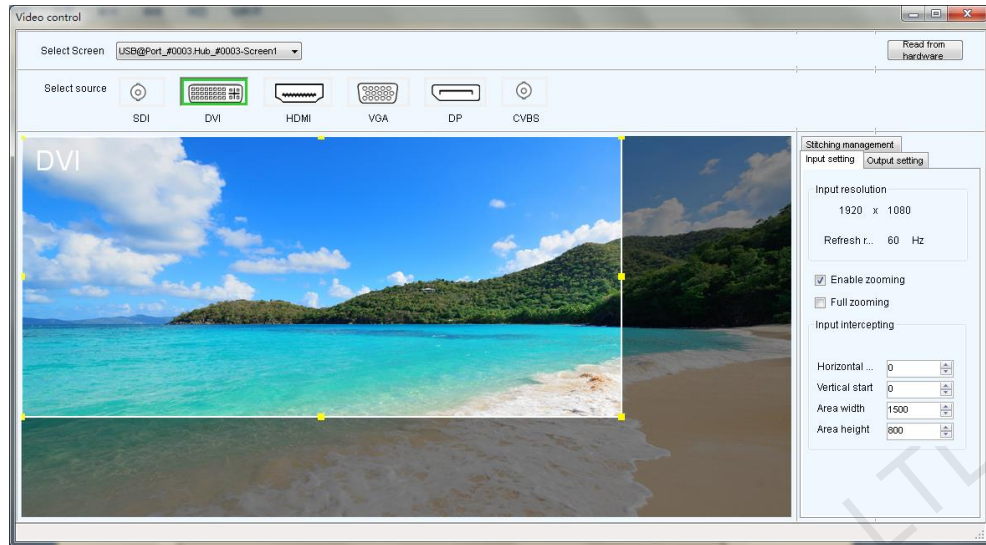
- First: Pixel to pixel display, namely do not use zoom, the output image is identical to the input image, and output is in original proportion.
Operation: Do not check “Enable zooming”



- Second: the output image is adjusted to the size of LED display, namely automatically adjusted to the size of LED display.
Operation: Enable zooming, and enable automatic entire screen zoom.



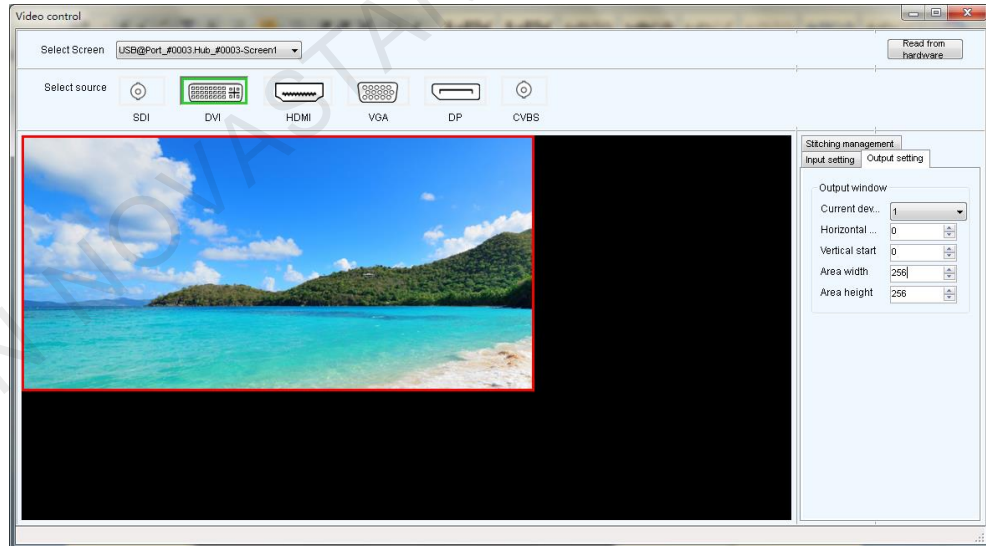
- There: customized zooming effect.
Operation: enable zoom, but do not enable automatic entire screen zoom.
Operational steps of customized zooming:
Set input interception, i.e. only intercept part of the input image after certain starting point and show on the LED display. Drag the interception window directly with your mouse to decide the location and size of intercepted image, or set the area width (smaller or equal to the width of input source), area height (smaller or equal to the height of input source), horizontal start and vertical start on the right hand side interface.



Output setting

Click **Output setting** to configure the output window, if there is only one single device, then the area size is smaller or equals to the size of LED display; if there are multiple devices, it is needed to configure the starting points and area size of each device, the sum of all areas is smaller or equals to the size of LED display; after the window is configured, images can only be displayed inside the window.

Figure 13-2 Output configuration



Stitching management

First enable the stitching function, then set the total number of pixels in the big screen, then configure the area driven by each device, as well as the starting location of each loaded area. The sum of loaded area of all video controllers is the number of total pixels on the big screen.

Pixel-to-pixel Auto Set: Press this button, the selected device will output a pixel-to-pixel image.

Figure 13-3 Stitching management



14 Module ID Settings

In order to make the large screen easier to manage, the system features a function to configure ID for each module.

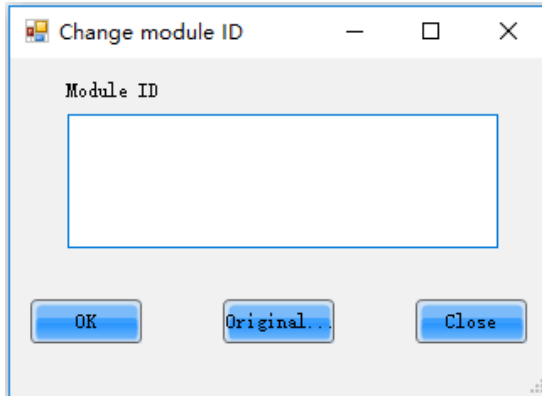
Check the module ID and module status

- Step 1 Select **Tools** > **Module ID Setting** to enter the module ID setting page.
- Step 2 Click on **Refresh** and the system will read the real-time module ID and module status which will be shown in a topology.

Module ID Settings

- Step 1 Enter **admin** in the module setting page to activate the module ID generating rule and saving function, as shown in the following figure.
 - Scaling rate: Drag the slider to zoom in and out the topology of the left-side module.
 - ID: Show the currently selected module ID.
 - Set ID: Set IDs for the whole module.
 - Prefix: Set prefix for the serial number of each module.
 - Ordering: The regulated order for generating serial numbers in the process of generating module IDs in batches.
 - Z type: Generate module IDs from upper left to upper right horizontally of the first row.
 - N type: Generate module IDs from upper left to lower left vertically of the first column.
 - Serial number: Number all the cabinets from left to right, beginning with 0 for modules of each cabinets.
 - Generate a serial number for each module based on cabinets and number all cabinets from left to right.
 - Click **Generate** to make the system automatically set an ID for each module according to the prefix and ordering method.
 - Click on **Save** to make the system send the module ID to the hardware for saving.

- Step 2 Double-click a module to modify its ID.



Step 3 Enter the module ID.

Click **OK** to modify the selected module ID.

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15 Hardware Program Update

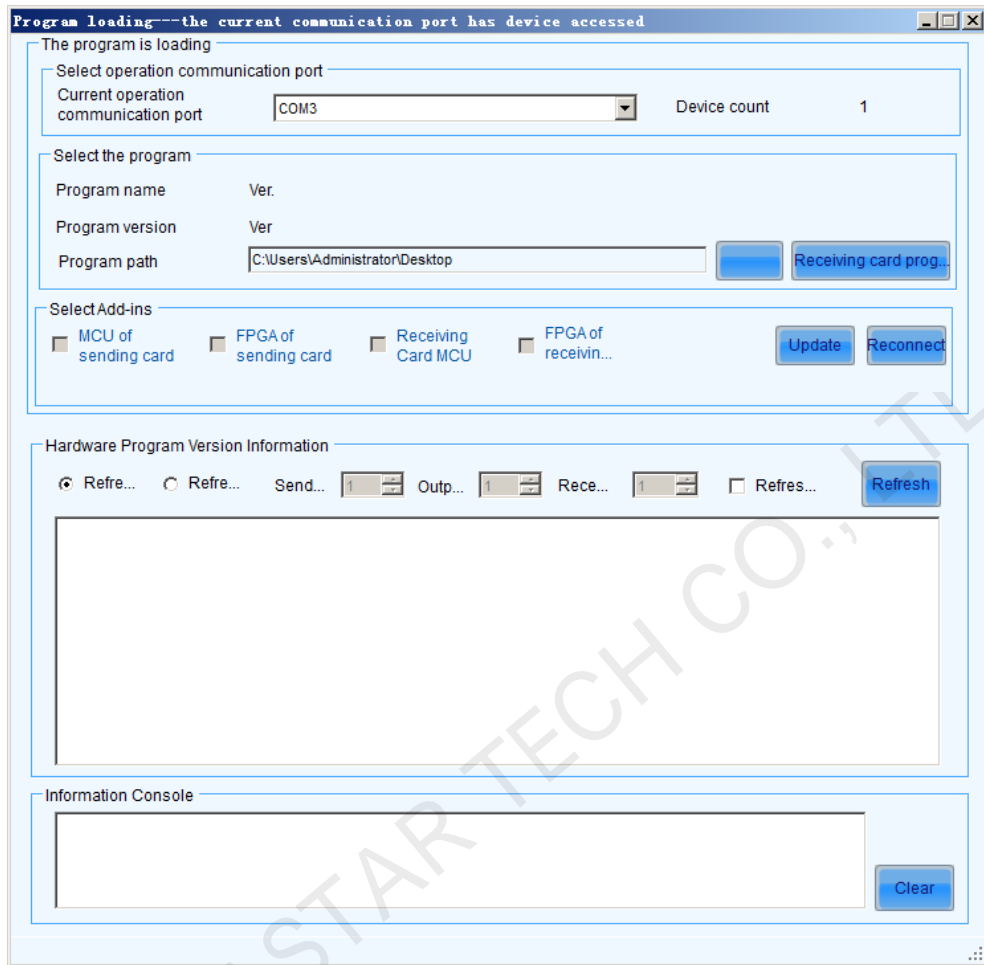
Login as an advanced user and type in **admin** on the NovaLCT main interface to open the page for updating the hardware program.



Note:

- There is not any place to view the typing when typing the passcode. Just type in the passcode directly.
- Just type in the passcode again if the one input before is wrong.
- It not recommended changing the program unless there are problems with the hardware.

Figure 15-1 The Load Program page



- **Current Operation Communication Port**
Select the serial port or Network port through which the hardware to be updated is connected to the computer.
- **Program Path**
Select the program to be loaded to the hardware here.
- **Receiving card program readback**
Read back the hardware programs in receiving card and save them to Data package (only supported by A4/A5 series receiving cards currently).
- **Sending card MCU**
Select this option if the MCU program of a sending card is to be updated.
- **Sending card FPGA**
Select this option if the FPGA program of a sending card is to be updated.
- **Receiving card FPGA**
Select this option if the FPGA program of a receiving card is to be updated.
- **Update**
Update hardware program to all the receiving cards or specified receiving cards.
- **Change**
Click this button to load the selected program to the selected hardware.

- Refresh All
If this option is selected, the version information of all sending cards and receiving cards connected to the current serial port will be refreshed when click the **Refresh** button.
- Refresh One
If this option is selected, only the version information of the selected receiving card will be refreshed when click the **Refresh** button.
- Refresh
Click this button to show the current version information of the hardware. This can be used to check whether the hardware program has been updated.

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16 Troubleshooting

16.1 NovaLCT shows "No Hardware" on corresponding pages

Check whether the hardware system is powered on.

Check whether the cable connection is good.

16.2 NovaLCT shows "No Screen" on corresponding pages

If the LED display has been configured already, then try reading the configurations from the display by click the **Read from HW** button on the **Screen Connection** page. If the display has not been configured yet, configure it.

16.3 The LED display does not show the image correctly during the Smart Setting procedure

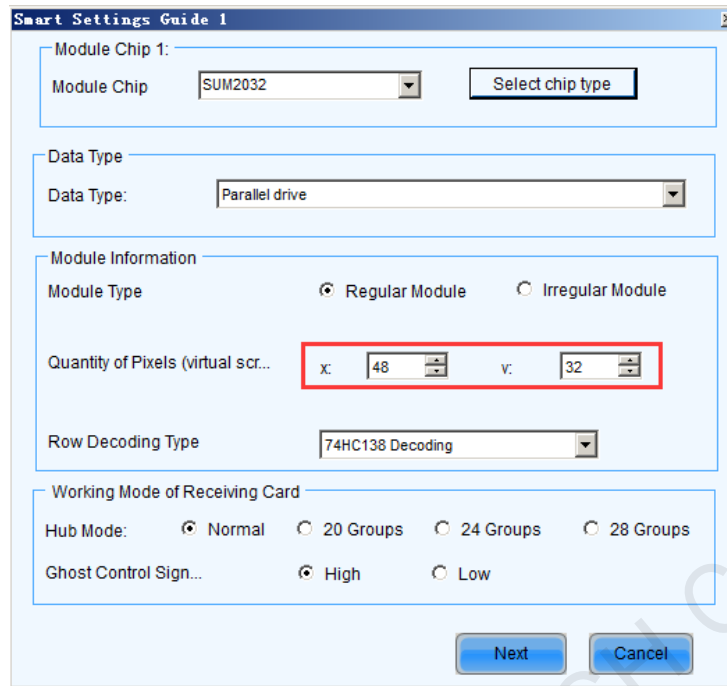
Check whether the sending card resolution and the graphic card output video resolution on the Sending card page are the same. Set them to be the same if they are not.

Check whether the settings in the Smart Setting procedure are correct.

16.4 Only a part of the modules of each cabinet work normally in Smart Setting

Check whether the row and column numbers set in [Figure 16-1](#) are consistent with the actual row and column numbers of the cabinet.

Figure 16-1 The page of Smart Setting Step 1




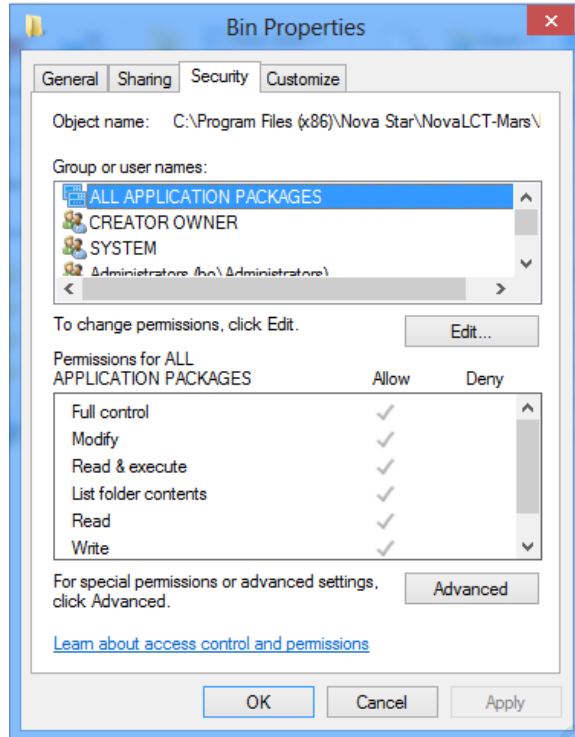
16.5 Permission Error

If the operating system is Windows 8 or above, the user is suggested to install NovaLCT in other drives than the system disk; if user insists on installing the software in the system disk, Permissions shall be given manually to the software, otherwise part of the function of the software requiring permission will not work normally.

Operating procedures to give permissions to the software are as follows:



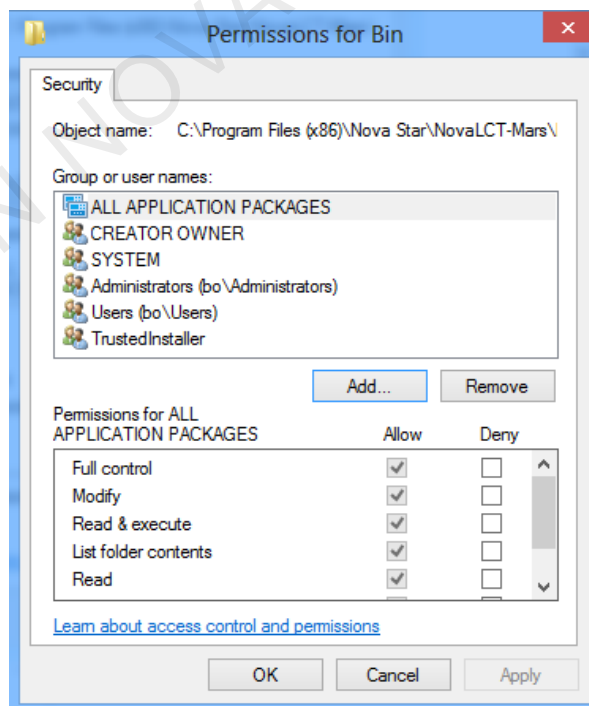
- Step 1 After installing NovaLCT, find  on the desktop, right click attribute to find the path of the document.
- Step 2 Return to the previous level from the opened file directory, i.e. the directory of \Nova Star\NovaLCT.
- Step 3 Right-click on **Bin** folder to pop up **Bin Properties** window and select **Security** tab.



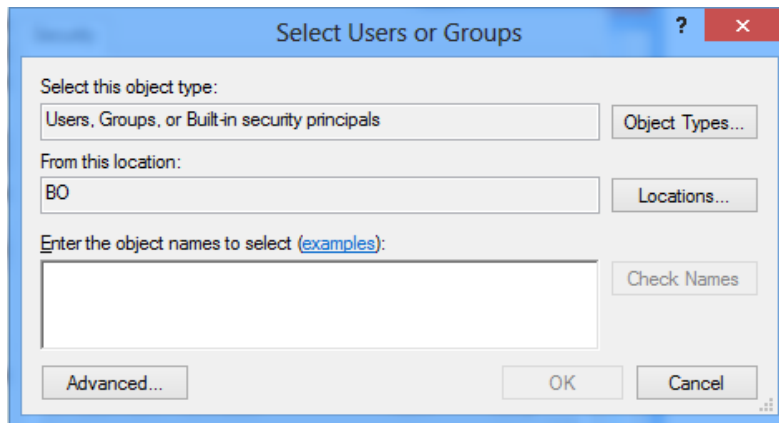
Step 4 In the group or username, check whether there is current user or Everyone. If not, skip to step 5. If there is, click to check whether the "allow" corresponding Permissions below has been checked; if not, check it, and then click "OK" to finish Permissions setting.

Step 5 Add Everyone user for the directory.

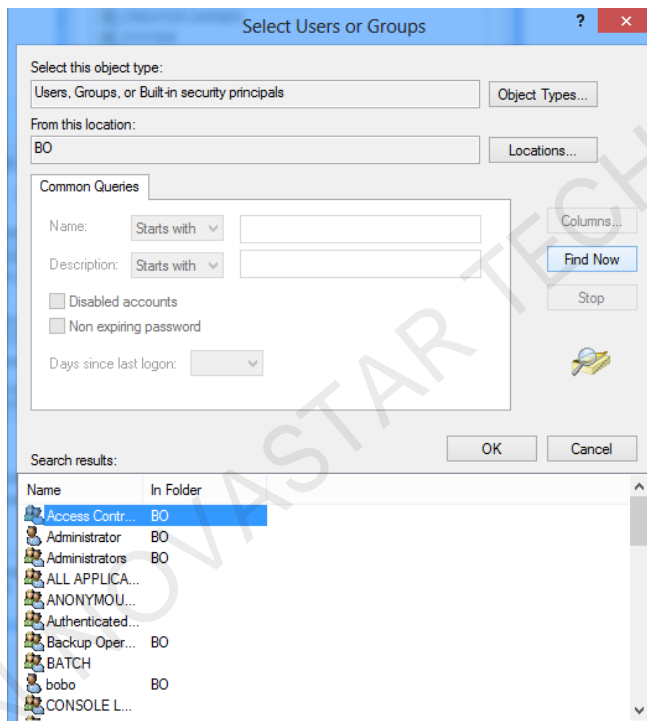
Step 6 Click  to enter the following interface.



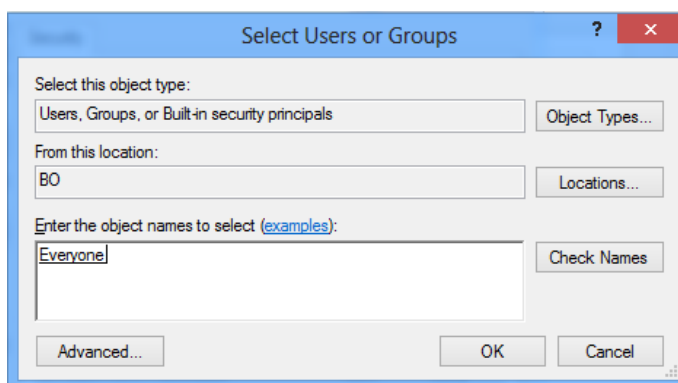
Step 7 Click **Add**.



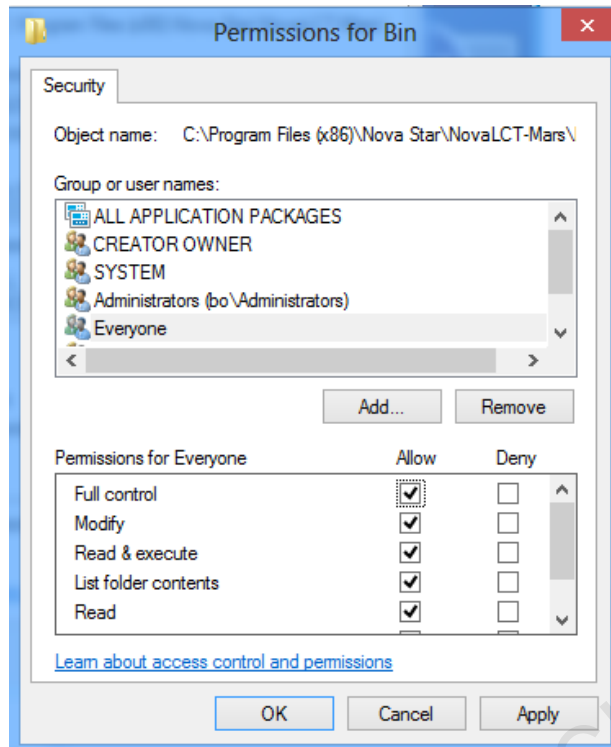
Step 8 Click **Advanced**, find Everyone in the search result. Select it and click **OK**.



Step 9 Click **OK**.



Step 10 Enter into the following interface; select all of the **Allows** and click **OK**.



Step 11 Finish Permissions setting and begin to enjoy the convenience brought by NovaLCT.

16.6 Failed to install previous versions

After the up-to-date version of NovaLCT has been installed on the computer, the installation of previous versions may fail. If it fails, please uninstall the up-to-date one and then install the previous ones.