NovaLCT
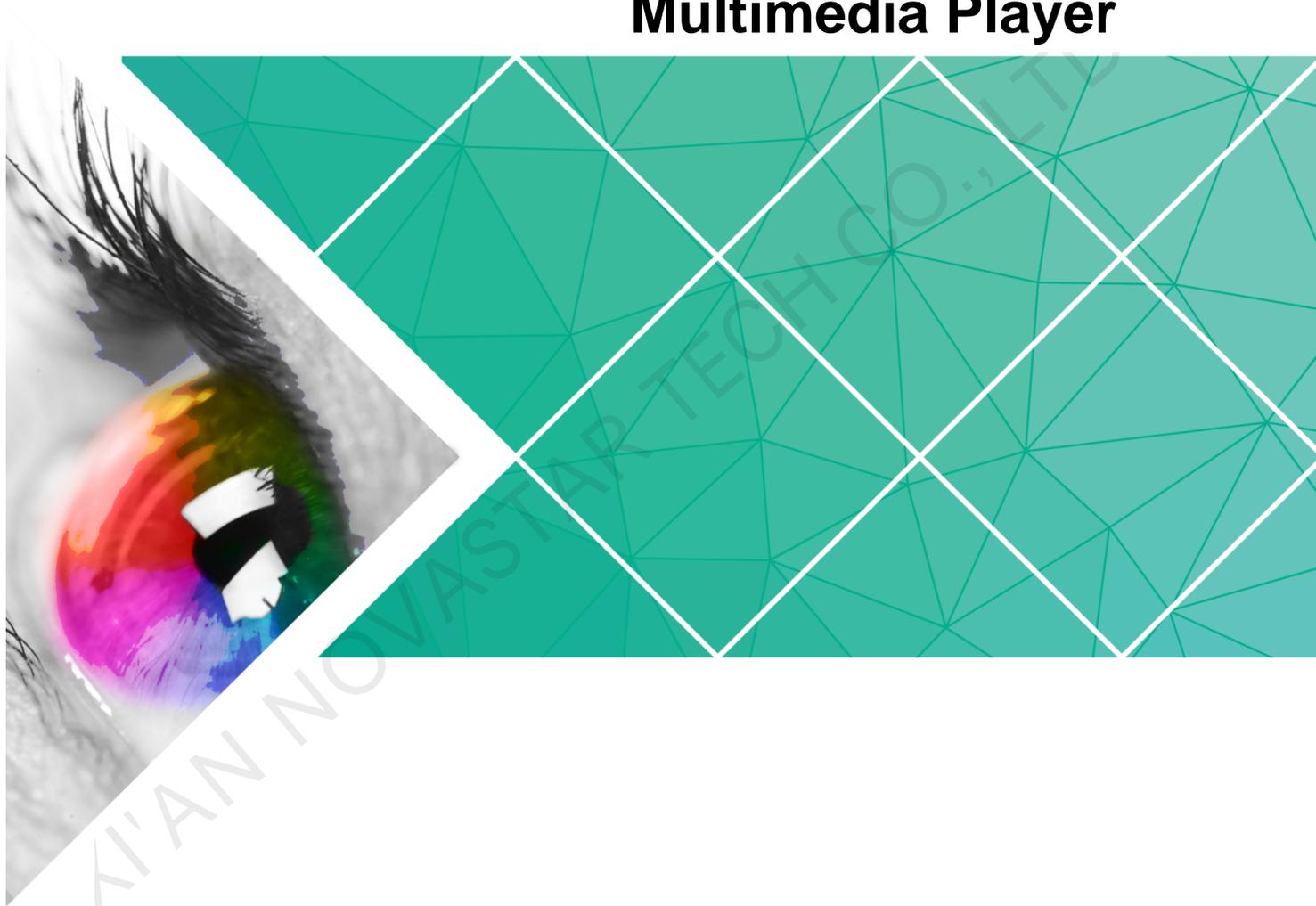
LED Configuration Tool for Multimedia Player

User Guide

Product Version: V5.2.0

Document Number: NS110100706

Trademark

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Table of Contents

1 System Overview

NovaStar multimedia players are designed for small and medium size LED full color displays. This kind of players can be widely used in LED commercial display fields, such as light pole screens, chain store screens, advertising machines, mirror screens, retail store screens, door head screens, on-board screens and the screens requiring no PCs.

NovaLCT is the display configuration software running on Windows. In multimedia player applications, NovaLCT can work in conjunction with receiving cards, monitoring cards and multi-function cards to enable smart setting, brightness adjustment, power control, LED error detection and hardware monitoring of the LED screen. The user can easily control all the key information of the screen with a computer to get the optimal display at any time.

The typical networking of the multimedia player is shown in Figure 1-1.

Figure 1-1 Typical Networking
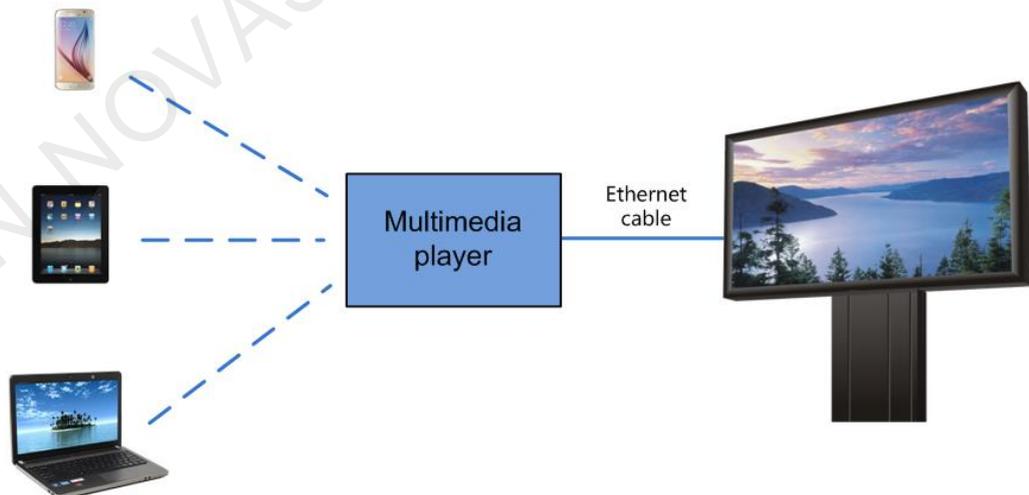
2 Software Installation

Preconditions

- Have prepared a PC with Windows system installed.
- Have obtained the installation package "NovaLCT V5.2.0.zip" from NovaStar official website www.novastar.tech.
- Have disabled antivirus software.

Installation

Firstly please unzip the installation package "NovaLCT V5.2.0.zip", then double-click "NovaLCT V5.2.0.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**

Step 1   Open NovaLCT and choose **User** > **Media Player Login**.

- The system automatically searches the multimedia players in the same network segment and then displays them in a specified sorting order.

- Click   . In the drop-down box, click **Specify IP**. The **Search for IP Address** dialog box appears. Enter the IP address of the current asynchronous card and then click **Search**.

Figure 3-1 Searching for IP address
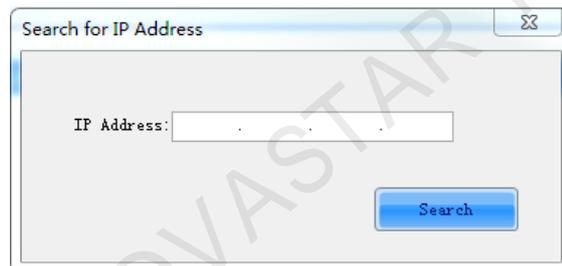
Step 2   Click the terminal name in the terminal list.

Step 3   Click **Connect System**. The **Connect Terminal** dialog box appears.

Step 4   Enter user name and password for logging in the terminal, and click **OK**.

If the login is successful, the interface below will appear, as shown in Figure 3-2.

Figure 3-2 Successful login interface
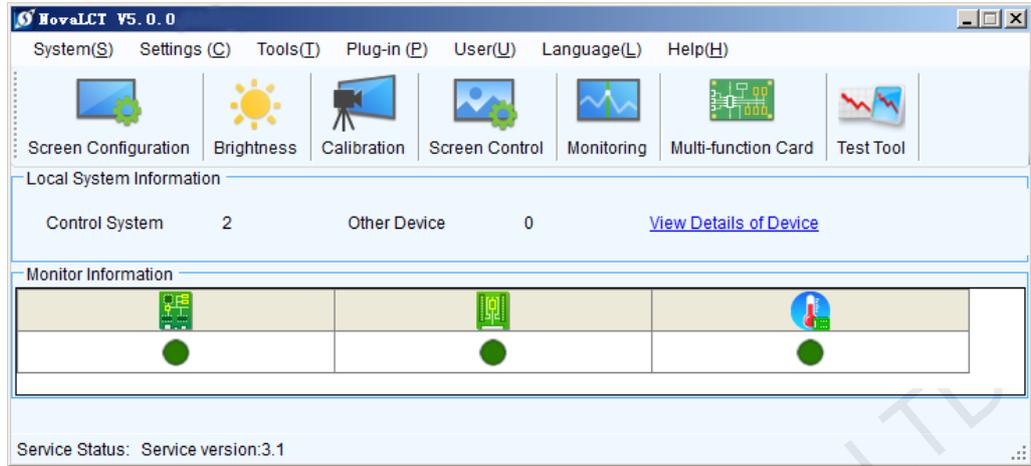
4 Function Overview

Menu		Description
System	Reconnect	This is used to reconnecting the NovaLCT to the multimedia player.
Settings	Screen Configuration	Shortcut button: Screen Configuration This is used for configuration of the LED screens.
	Brightness	Shortcut button: Brightness This is used for adjusting the LED display brightness. There are two ways for brightness adjustment, automatic brightness and manual brightness.
	Multi-function Card	Shortcut button: Multi-function Card This is used to open the page for Multi-function card configuration.
	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.
	Advanced Color Configuration	• Factory setting (current gain, RGB brightness). • Configuration color space (original color space, target color space). • Color temperature table.
	Adjust Screen Effect	Enable/Disable 18-bit mode and ClearView mode.

Menu		Description
Tools	Receiving Card Relay	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.
	Calibration	Shortcut button: Calibrate the screen and manage the calibration coefficients.
	Screen Control	Shortcut button: Perform the screen control functions which include "Black Out", "Freeze" and "Normal". Besides, self test options are also provided.
	Monitoring	Shortcut button: Enter the monitoring page to view the monitoring results or set the monitoring parameters.
	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.
	Module ID Setting	Perform module ID configuration to make module management easier. Some modules do not support ID configuration, please contact NovaStar's technicians for details.
	More	Includes **Reset Run Time**, **Brighter Pixel Correction** and **Bite Error Detection**. • **Reset Run Time**: Reset the run time displayed on the LCD of each cabinet. • **Brighter Pixel Correction**: Solve the problem that the brightness of a calibrated screen is not uniform. **Bite Error Detection**: Detect the data packet loss during communication between receiving cards.

Menu		Description
Plugins	Test Tool	Shortcut button: Test Tool 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.
	DHCP Service	Obtain the IP address assigned by the server.
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	-	Switch system language.
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

5.1 Screen Configuration

5.1.1 Start with 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
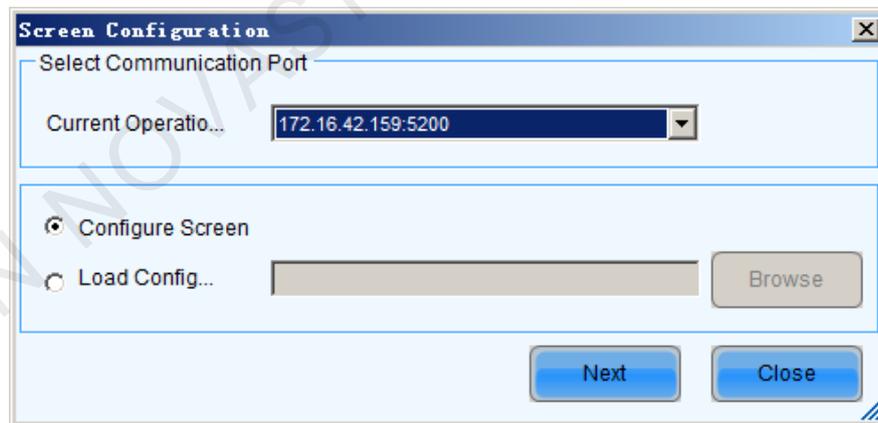
Step 2 Select the **Load Config File** option, use the **Browse** button to select the system configuration file to be loaded.

Step 3 Click **Next**.

The LED display system will have been configured when the load operation is finished.

> Note:
> The loaded performance parameters from the configuration file can be adjusted if they are not suitable. Please refer to 5.1.4 Adjust the

	Performance Parameters for details about how to adjust the performance parameters.

5.1.2 Start LED Display Manually

5.1.2.1 Smart Settings

Step 1 Click Screen Configuration on the main interface and select **Screen Configuration**.

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

Figure 5-2 Screen configuration-Receiving card
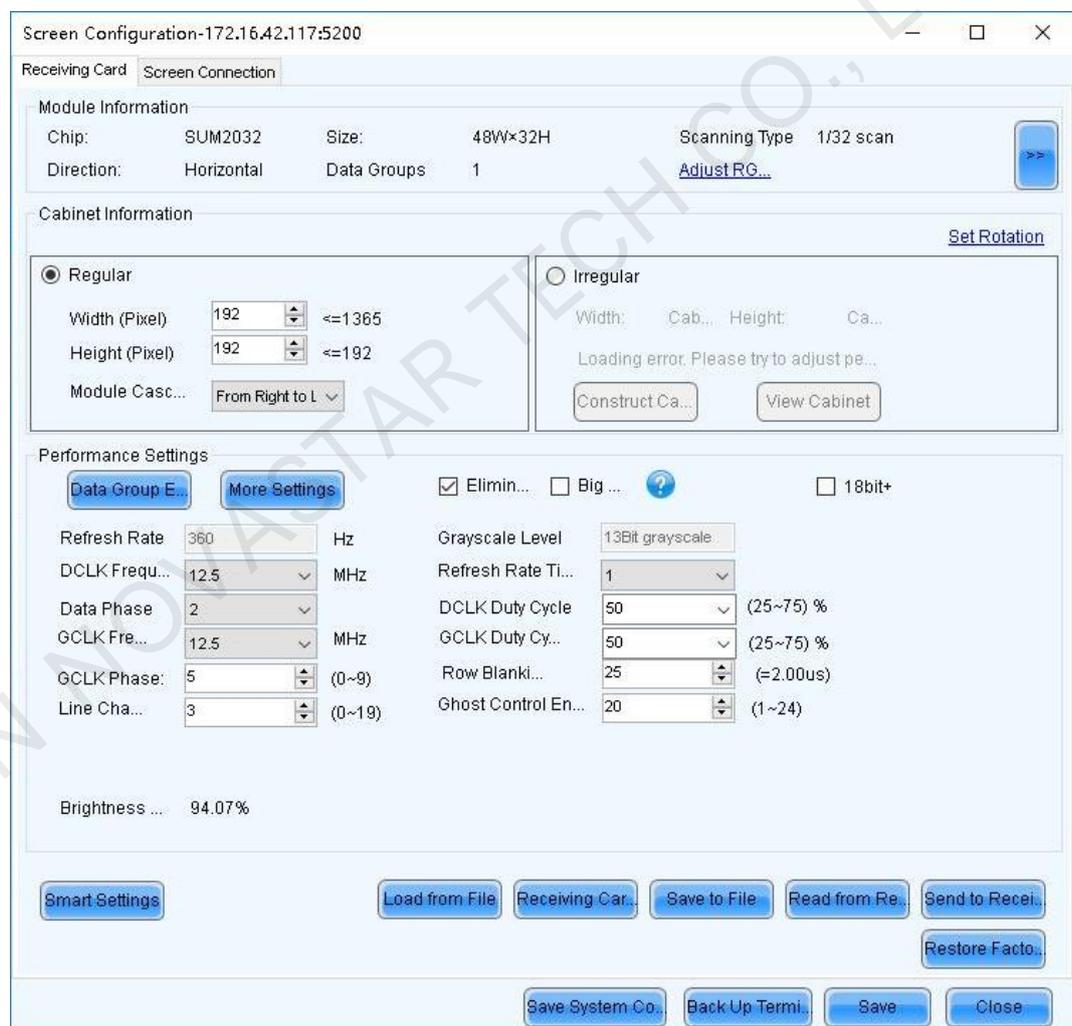

Figure 5-3 Screen configuration-Screen connection
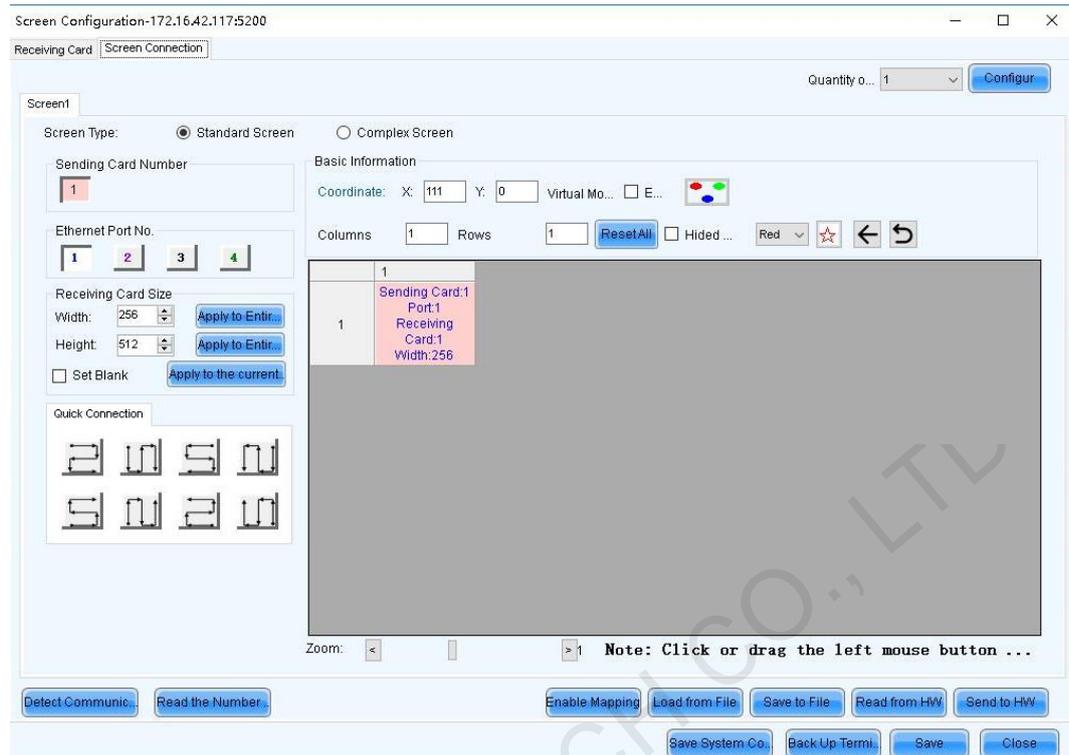
- Quantity of Screens

    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.

- 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 multimedia player.

- 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).

- Read form HW

    This is used for the application to read the LED display information from the hardware.

- Send to HW

    This is used to send the LED display configuration settings to the connected multimedia player.

- Restore Factory Settings

Restore the current parameter configuration to the factory settings.

- Restore System Configuration

  Restore the current operation status of the system (or sending card, receiving card) to the status of the backup file.

- Back Up Terminal Configuration

  Back up the current configuration parameters.

- Save System Configuration File

  Save system configuration parameters as a file (*scfg).

Step 3   Click **Smart Settings** under the **Receiving Card** tab, and the **Smart Settings Selection** window pops up as shown in Figure 5-4.

Figure 5-4 The Smart Setting dialog
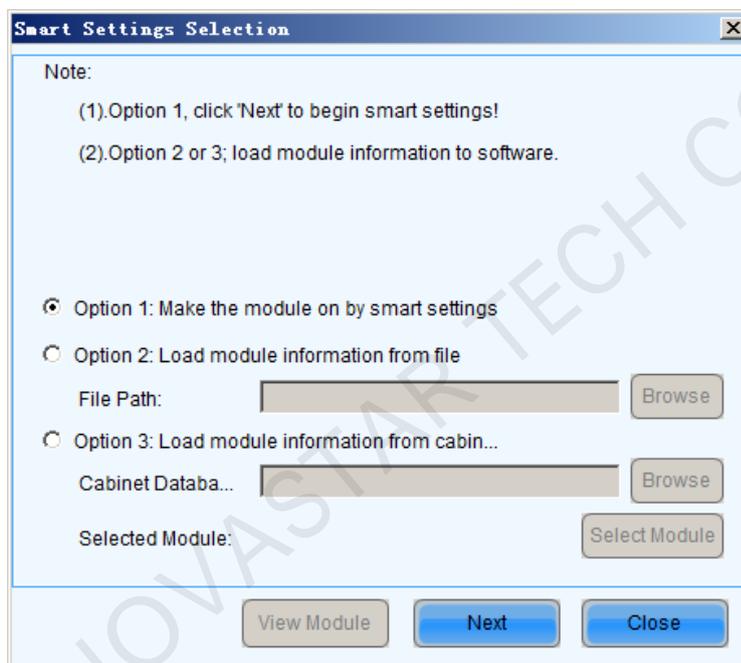
Step 4   Select **Option 1** and click **Next** to activate smart setting wizard. The **Smart Settings Guide 1** window will appear, as shown in Figure 5-5.

Figure 5-5 Smart Settings Guide 1
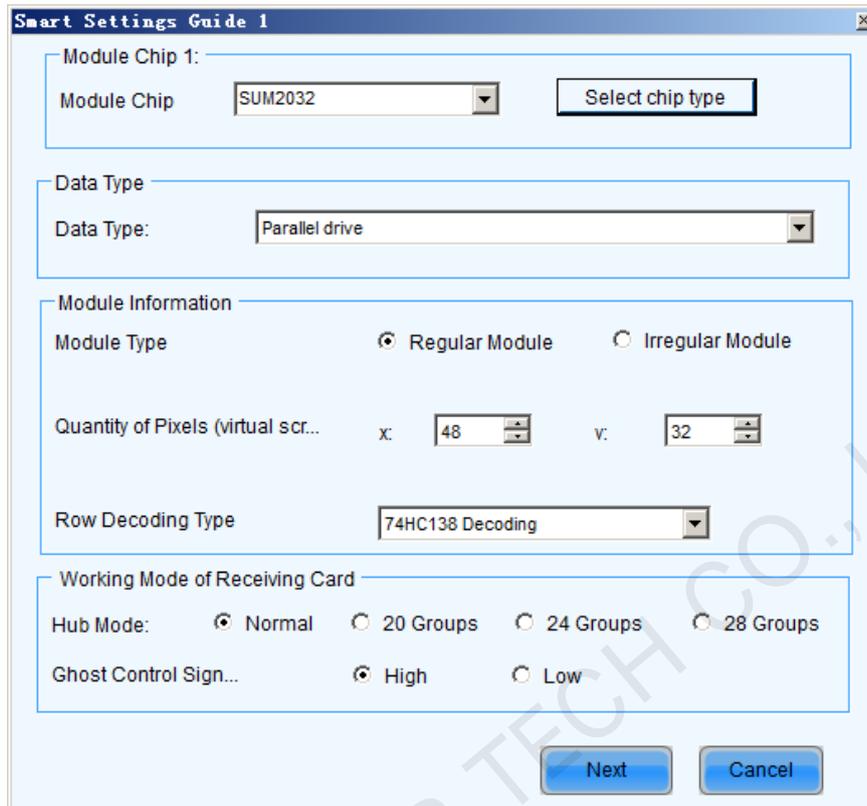
- Module Chip

    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 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.

	Note:
	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).
	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).

Step 5 Click **Next** to access **Smart Settings Guide 2**. Shown in Figure 5-6 is the Smart Settings Guide 2 window.

Figure 5-6 Smart Settings Guide 2

	Note:
	This step will be skipped if module polarity is known and set in Step 1.

Step 6 Click **Next** to access **Smart Settings Guide 3**. Shown in Figure 5-7 is the Smart Settings Guide 3 window.

Figure 5-7 Smart Settings Guide 3
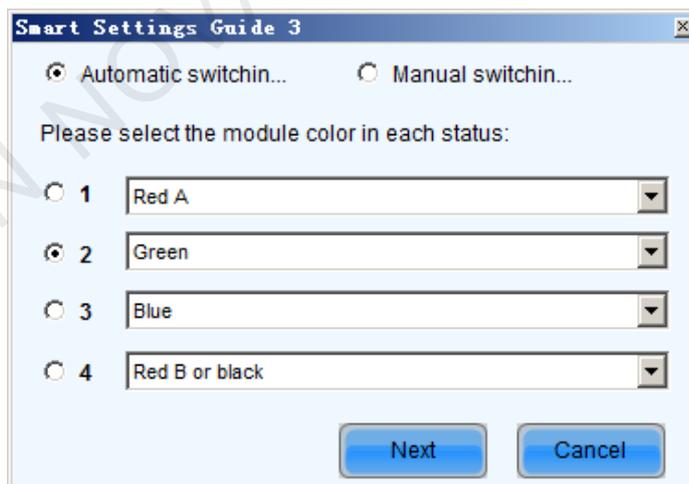
Step 7 Complete the settings in **Smart Settings Guide 3** according to the actual situation, and click **Next** to access **Smart Settings Guide 4**. Shown in Figure 5-8 is the Smart Settings Guide 4 window.

Figure 5-8 Smart Settings Guide 4
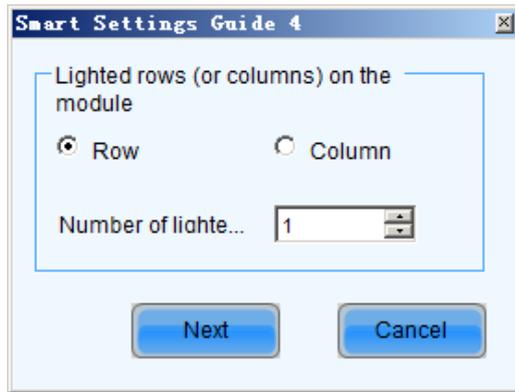
Step 8 Complete the settings in Smart Settings Guide 4 according to the actual situation, and click **Next** to access **Smart Settings Guide 5**. Shown in Figure 5-9 is the Smart Settings Guide 5 window.

Figure 5-9 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 5-10 is the Smart Settings Guide 9 window.
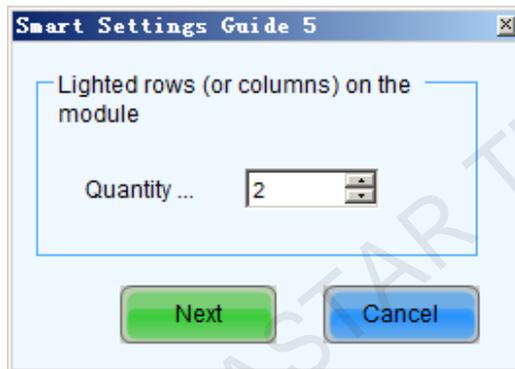
Click the corresponding grids according to the position of the lightened lights until no light is lightened any more. A line of the lightened lights routing will be drawn at the same time.

Figure 5-10 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 ![zoom out] or ![zoom in] 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 5-11. 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 5-4). Click **Finish** directly if you don't want to save the settings.

Figure 5-11 The Save Module Information dialog
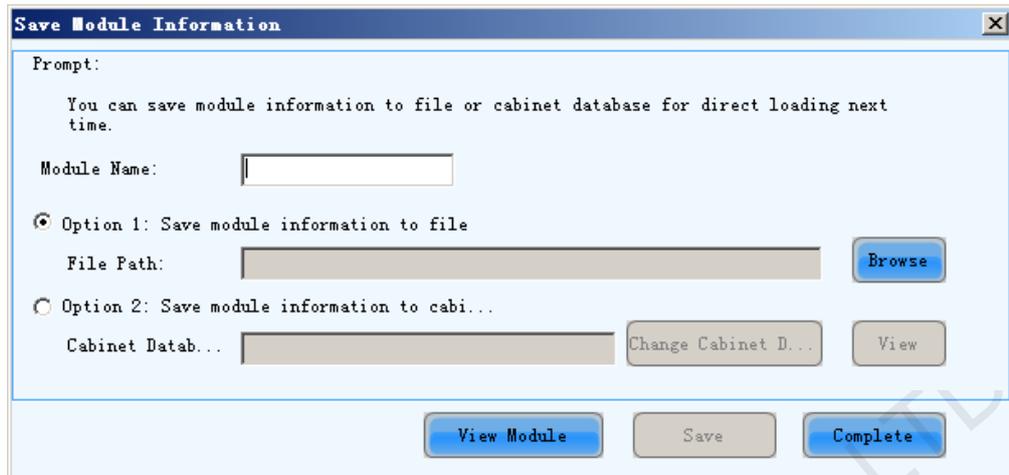
5.1.2.2 LED Display Configuration

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

If no LED display has been configured (Figure 5-12), please enter screen number (number of the LED displays to be configured) and click **Configure** button. The default screen configuration page (page for simple LED display configuration) will open.

The configuration information will be shown on the Screen Configuration page if a LED display has been configured. Modify the settings and send them to hardware if necessary.

Figure 5-12 No LED display configuration information
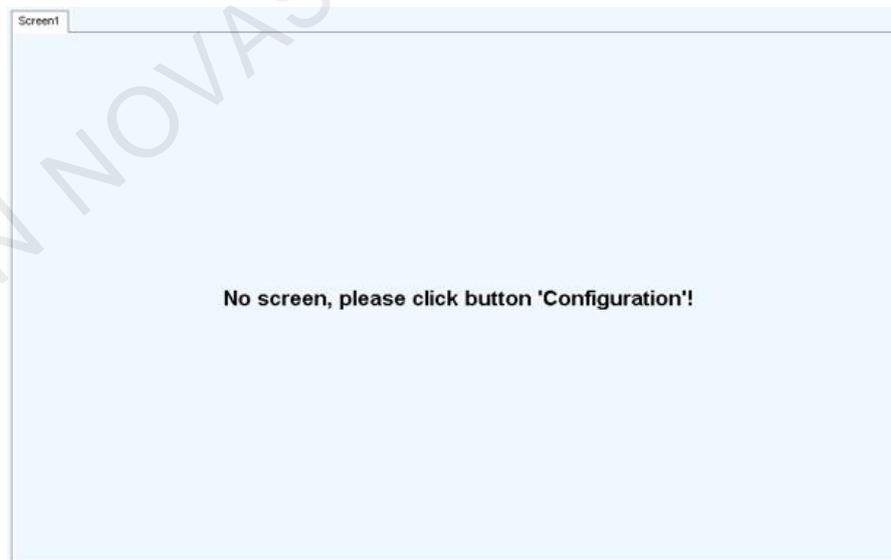
Screen types include standard screen and complex screen. Configurations for different types of screen will be given as follow.

Standard Screen Configuration

Set the cascade type of receiving cards manually. The load of each receiving cards can be different.

Figure 5-13 Standard screen configuration page
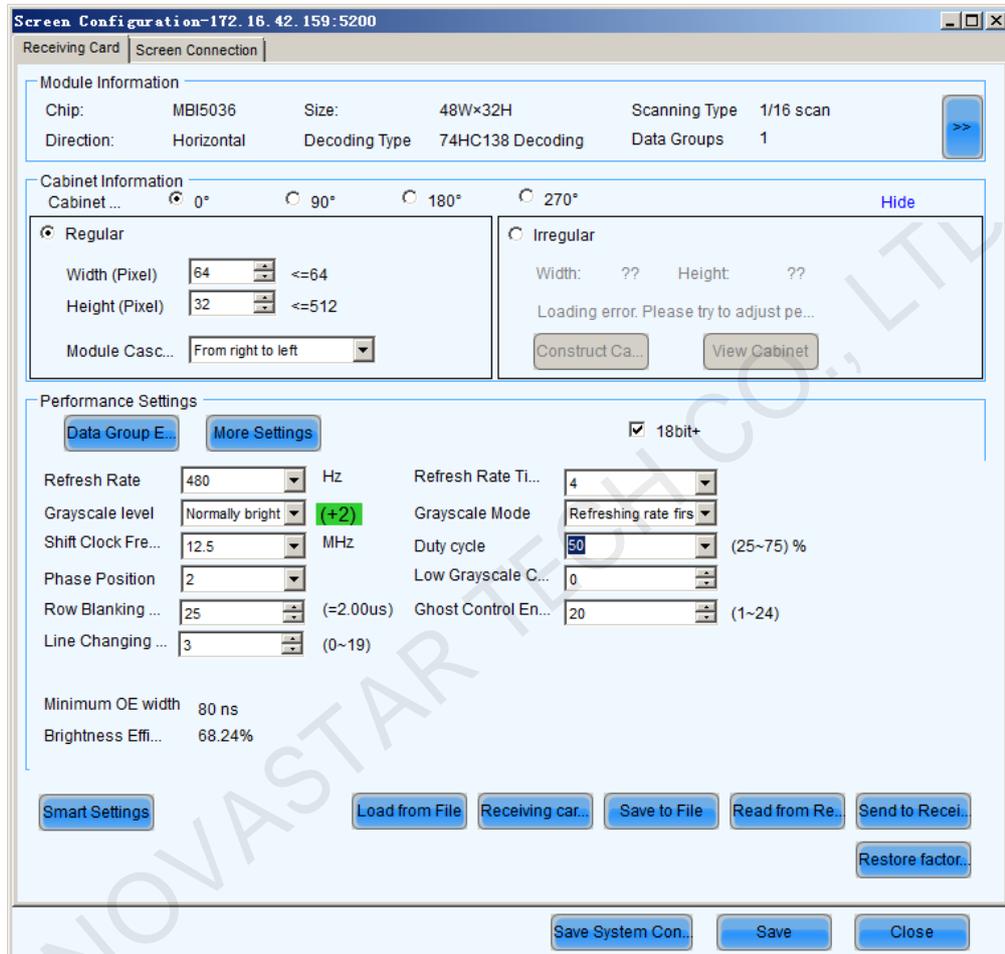
- Coordinate

    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 5-14 Positions of the virtual lights before change
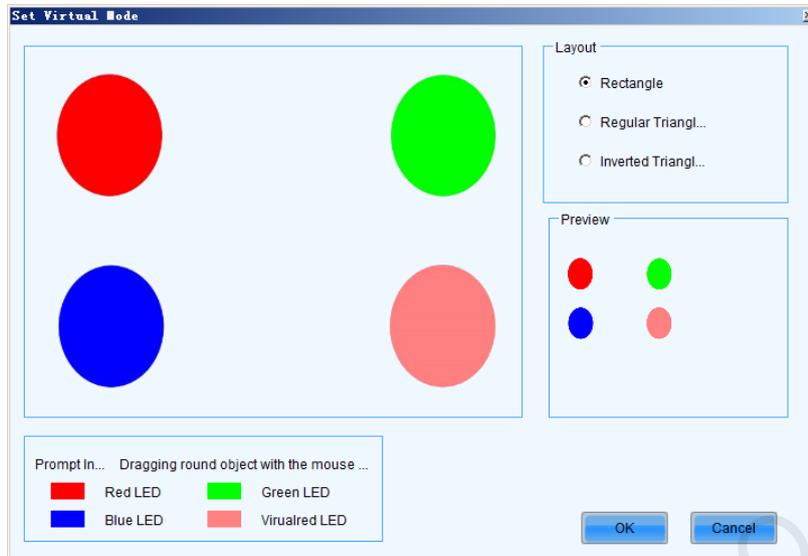
Figure 5-15 Positions of the virtual lights after change
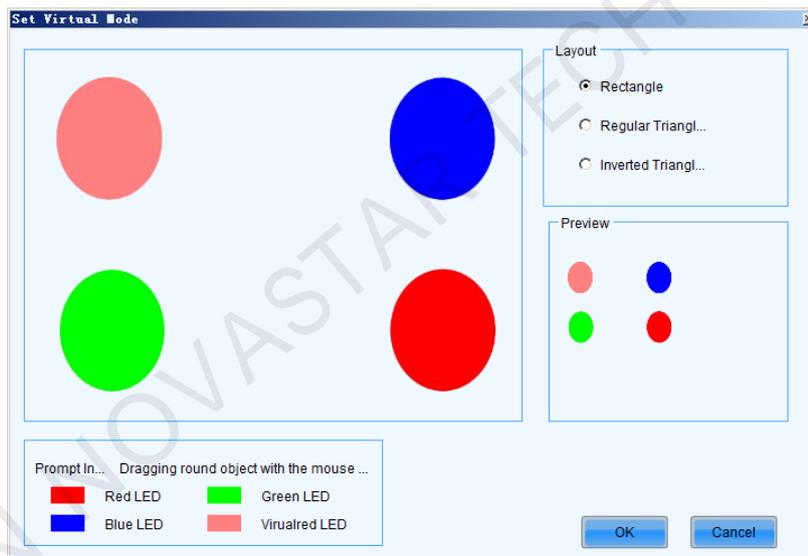
- Receiving Card Columns/Rows

  These are the numbers of columns and rows of the scan board (receiving card) array of the LED display. A sketch map of the scan board 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

  No settings are required.

- Ethernet Port No.

  Select an Ethernet port of the multimedia player. 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 multimedia player.

- 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 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 Entire Row

  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.

	Note:
	• For different multimedia players, 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 receiving card.

Complex Screen Configuration

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

Figure 5-16 Complex screen configuration page
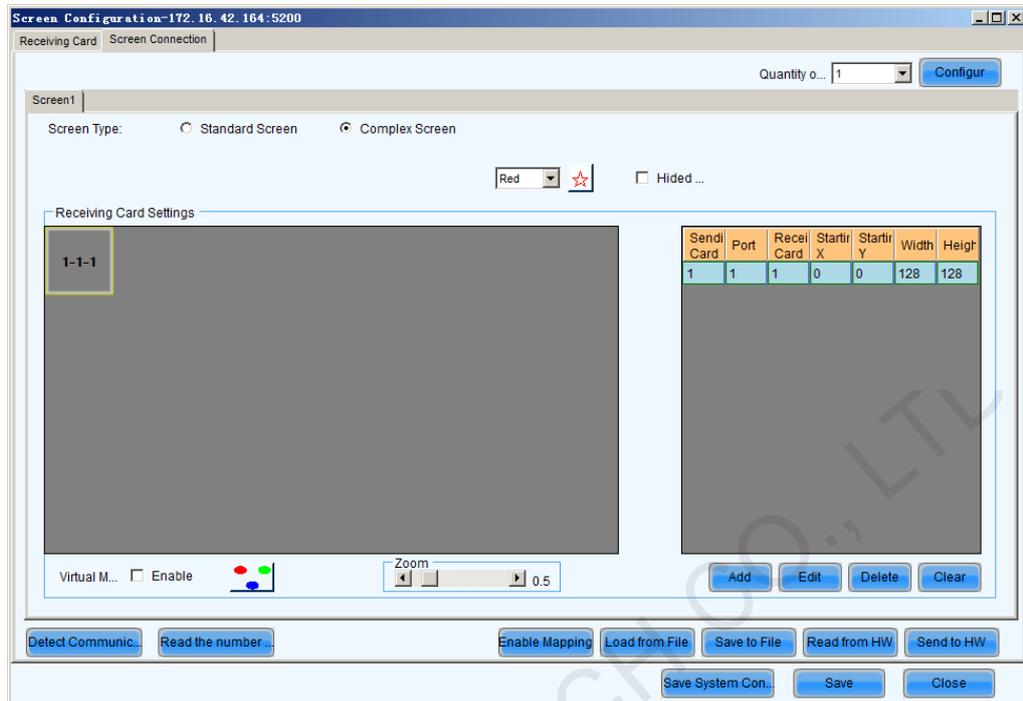
- Add

  Click **Add** to access the window for receiving cards information setting, such as Ethernet output ports, pixel array sizes and so on.

- 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.

5.1.3 Set Cabinet Information

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

Select the **Receiving Card** page in the Screen Configuration window (Figure 5-2). Figure 5-17 is the receiving card page.

Figure 5-17 Cabinet information settings
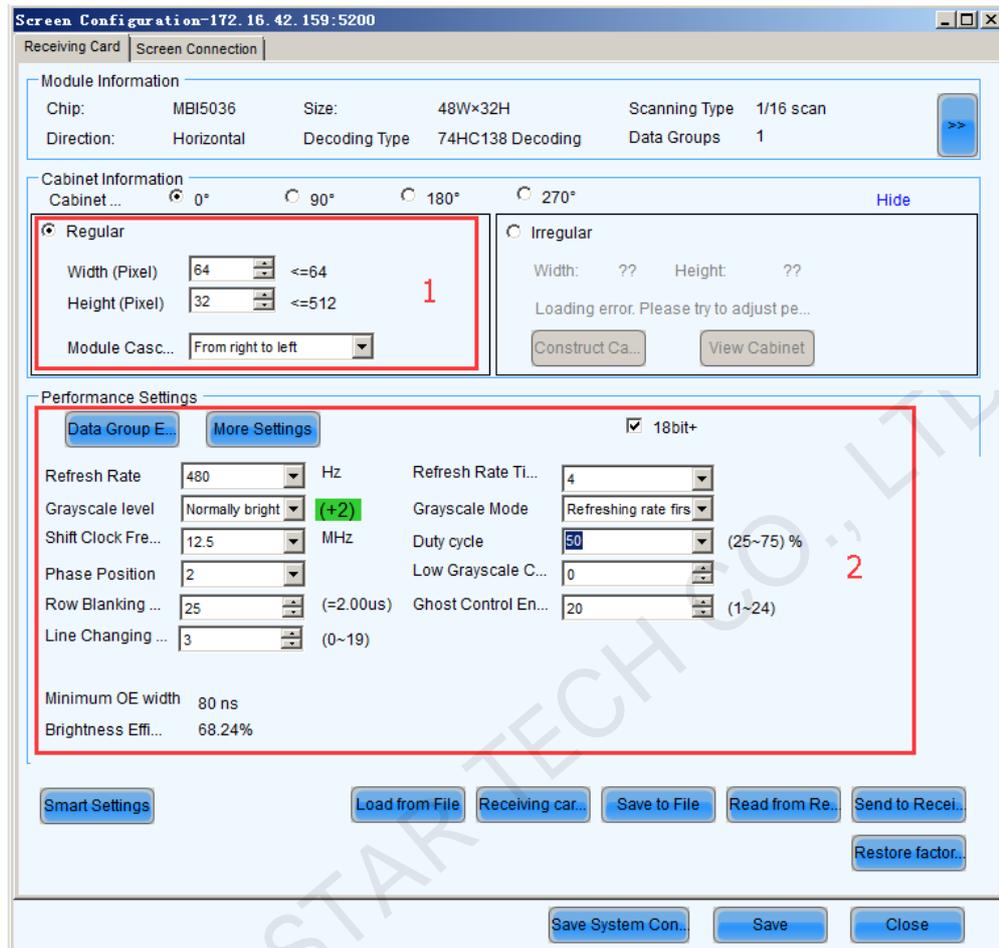
Note that the Regular panel is for regular cabinets parameters setting and the Irregular panel is for irregular cabinet parameters setting.

- 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

  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.

- Maximum Height

  The Maximum Height depends on the module design.

	Note:
☞	• 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.

5.1.4 Adjust the Performance Parameters

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

The area marked with **2** in the **Performance Settings** panel in Figure 5-17 is shown in Figure 5-18.

Figure 5-18 The Performance Setting panel
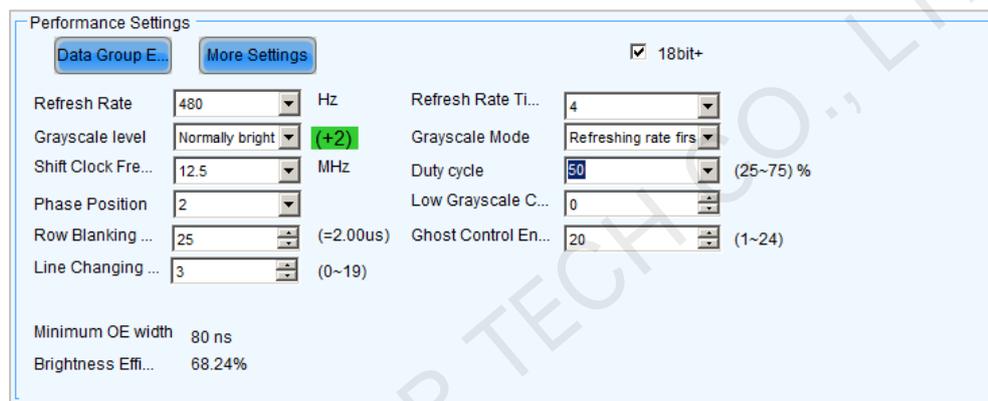
Eliminate Afterglow: Some of chips are supporting the functions of eliminating afterglow, and the software defaults to be ticked.

Data group exchange

Adjust the order of the data groups.

There are intuition and group data group exchange modes.

- As shown in Figure 5-19, in intuition mode, fill out on software based on the order displayed on the screen.
- As shown in Figure 5-20, 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**.

- Reset data : Clear current data, and reset.

- Send : Send data to hardware.

- Apply : Save current data.

Figure 5-19 Intuition mode
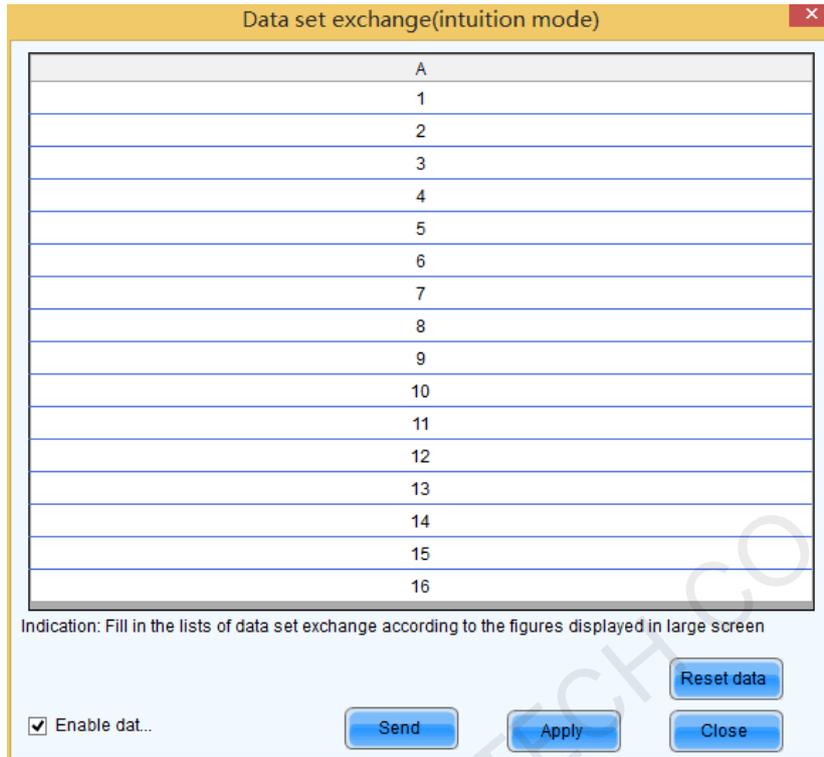
Figure 5-20 Group mode
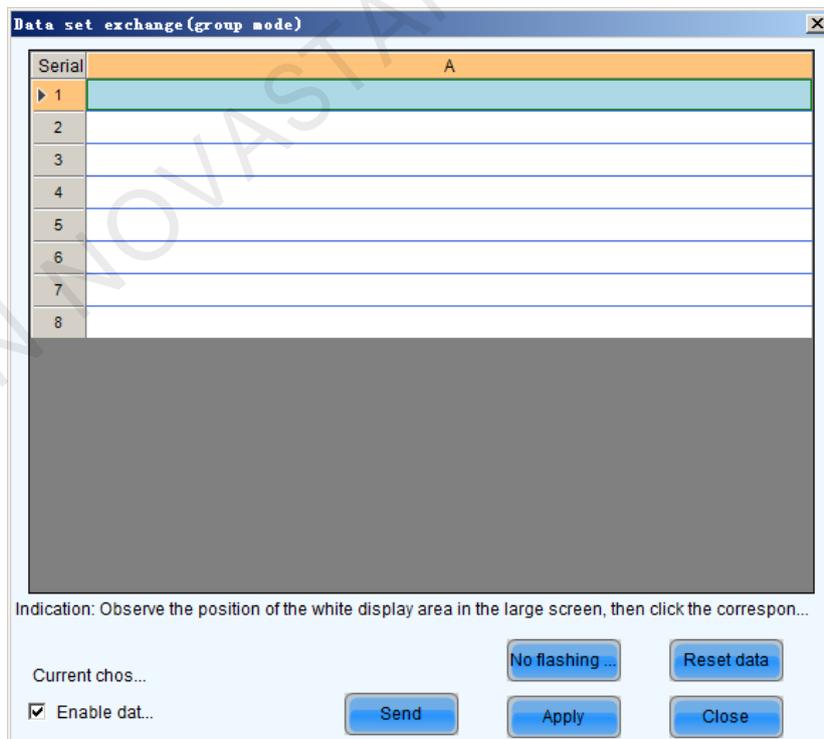
More settings

- Symmetrical/Data Group Extension

Figure 5-21 More settings
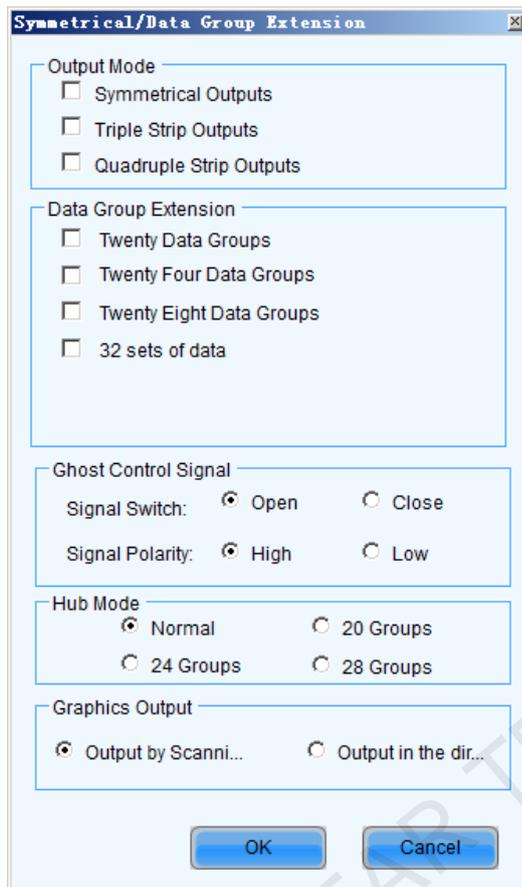
- Output Mode

  ➢ Symmetrical Outputs

  If selected, the two 50-pin output ports of a scan board will work for the left and the right half of the cabinet pixel array respectively.

  ➢ Triple Strip Outputs

  Being optional, and after being selected, the loaded box will be divided into three parts from left to right.

  ➢ Quadruple Strip Outputs

  Being optional, and after being selected, the loaded box will be divided into four parts from left to right.

- Data Group Extension

  ➢ Twenty Data Groups

  If selected, the scan board will provide 20 sets of output data for the cabinet.

  ➢ Twenty Four Data Groups

  If selected, the scan board will provide 24 sets of output data for the cabinet.

  ➢ Twenty Eight Data Groups

If selected, the scan board will provide 28 sets of output data for the cabinet.

> ➢ 32 sets of data

  If selected, the scan board 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 insolated points, and shut down the indicators of the receiving card, Shorten the synchronization time, Brightness slowly brighten, and EMC Function.

● Flash Arrangement

  Figure 5-22 is the physical connection schematic diagram of Flash. According to that diagram, the sequence number of BUS is determinedly 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 5-22 Physical connection schematic diagram of Flash
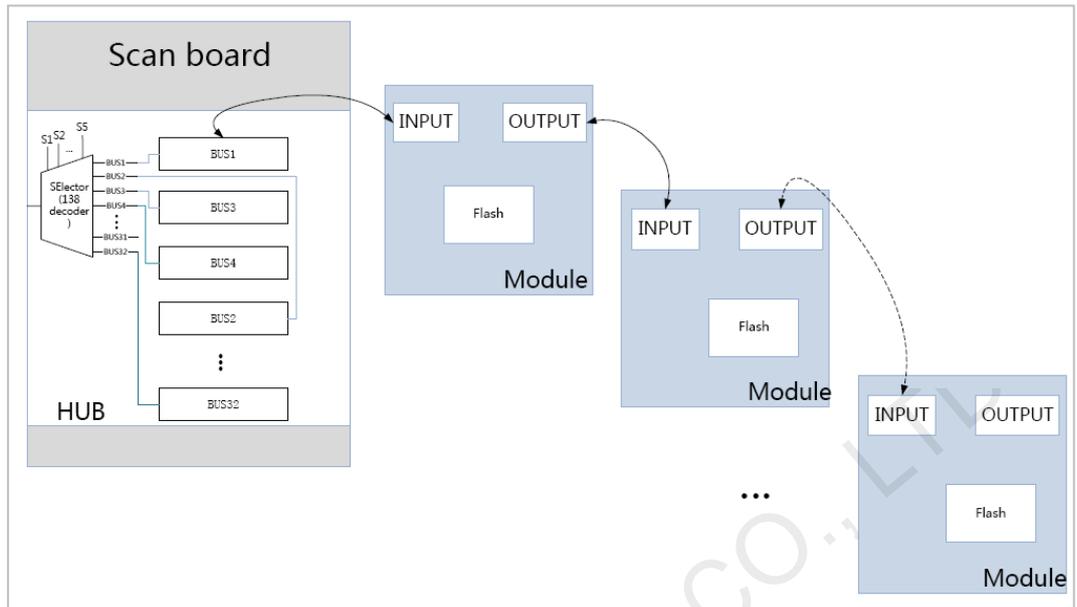
As shown in Figure 5-23, to set MOM Topology on the software, firstly set FLASH row and column numbers, and then click anywhere on the right side of the window, select the corresponding BUS, and based on the actual route, click the left button of the mouse or press the arrow key to set each piece of 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 5-23 MOM Physical Setting
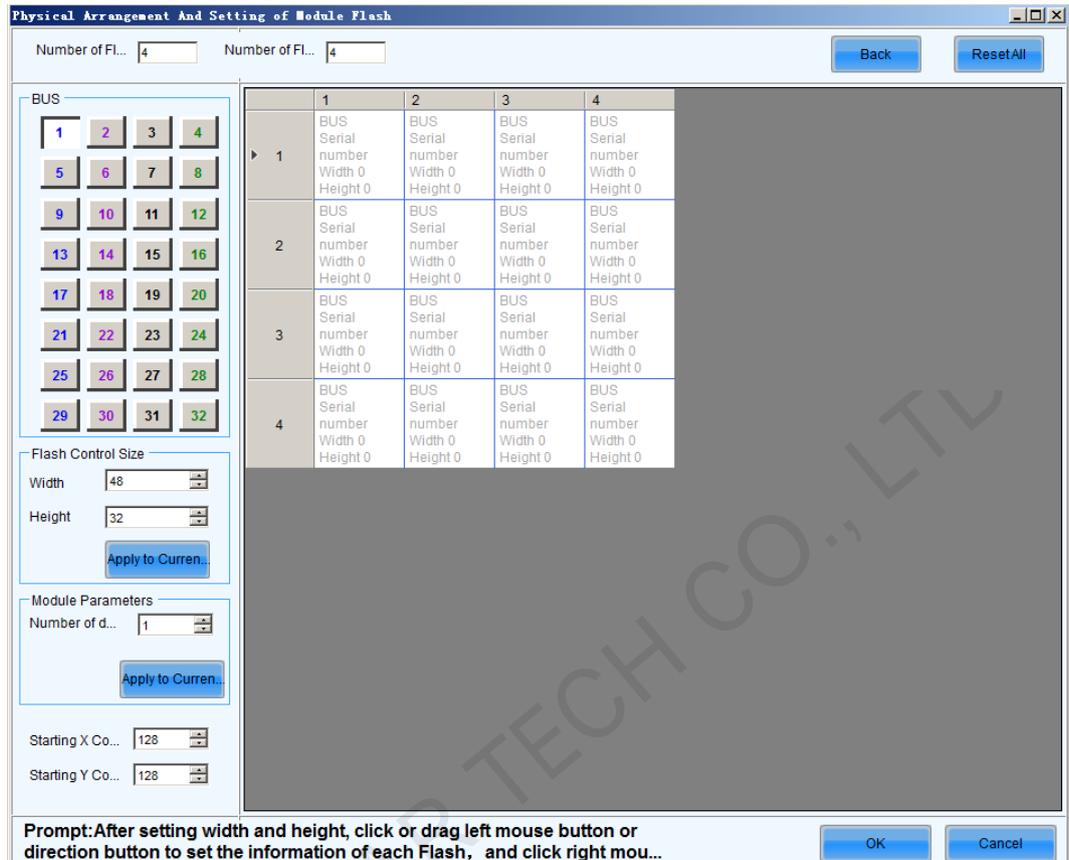

- Monitoring Card Data Set Exchange

  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.
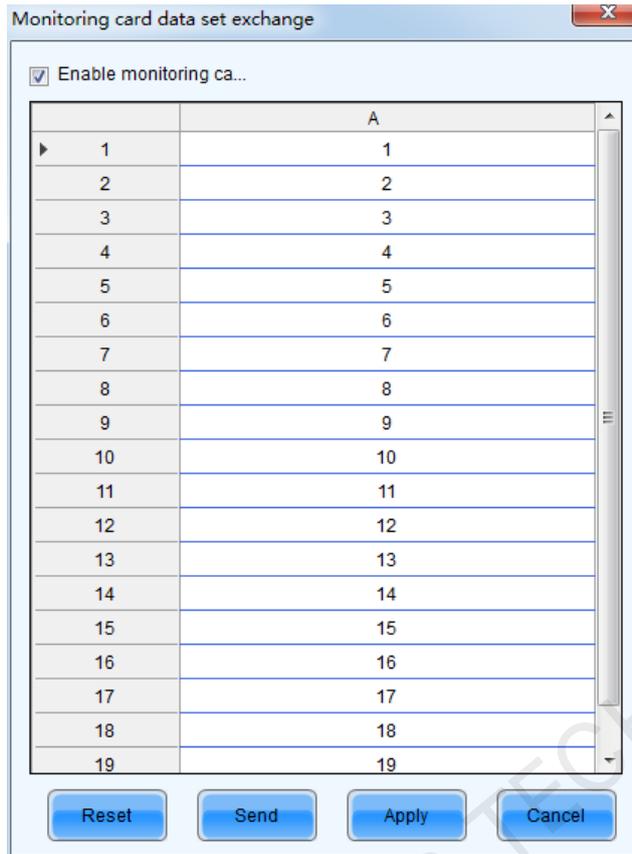
- Reset: Clear the configured monitoring card data set exchange information and set to the default configuration.
- Send: Send the configuration data to the hardware.
- Apply: The system will save the configured data.
- Cancel: Cancel the current configuration and exit the configuration interface of 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.
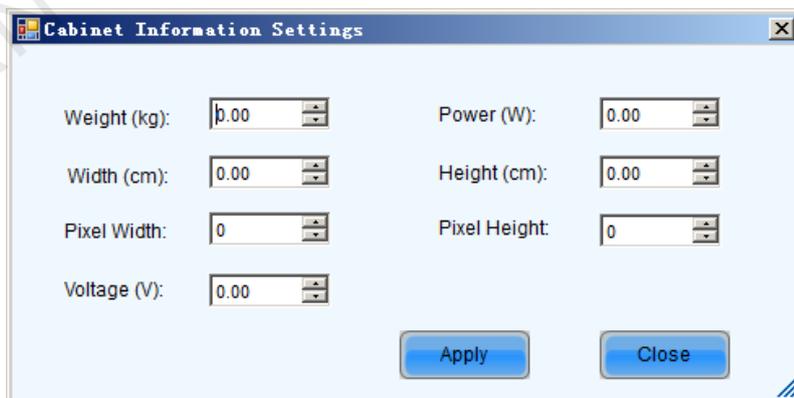
● Brightness Mode

Load brightness configuration files and send them to hardware.

Step 1 On the homepage of NovaLCT, choose **Screen Configuration** > **Receiving Card**.

Step 2   Click **More Settings**. In the drop-down box, click **Brightness Mode**. The **Save Brightness Configuration** page appears.
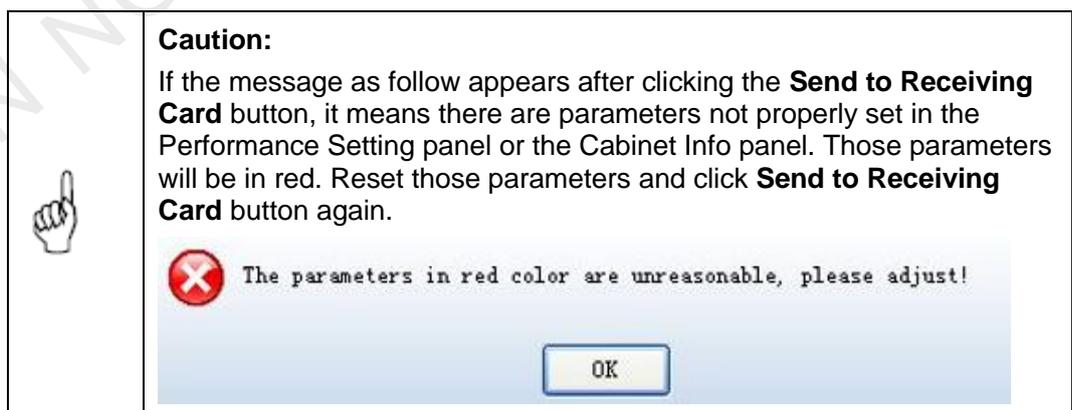
Step 3   Click **Load Configuration File**. The **Brightness and Configuration File Mapping** dialog box appears. Click **Browse** and load brightness configuration file. Set the corresponding brightness and then click **Add**.

Step 4   Click **Send to HW** and then click **Close**.

- MBI5153 Extended Attributes

  Adjust the Gamma values for RGB respectively. It includes advanced mode and common mode.

Step 5   On the homepage of NovaLCT, choose **Screen Configuration** > **Receiving Card**.

Step 6   Click **More Settings**. In the drop-down box, click **MBI5153 Extended Attributes**. The **Extend Property** page appears.

Step 7   Select **Advanced mode** or **Common mode**. Set parameters according to the instruction and then click **Send**.

Step 8   Click **Apply**.

Performance Parameter Adjustment Procedure

Step 1   Adjust the parameters in the Performance Setting panel (Figure 5-18) until the Maximum Width and Height shown in the Cabinet Info panel (Figure 5-17) are larger than the pixel array size of the cabinet. Then click the **Send to Receiving Card** button.

☞	**Caution:** If the message as follow appears after clicking the **Send to Receiving Card** button, it means there are parameters not properly set in the Performance Setting panel or the Cabinet Info panel. Those parameters will be in red. Reset those parameters and click **Send to Receiving Card** button again. ❌ The parameters in red color are unreasonable, please adjust! OK

Step 2   If all parameter settings are acceptable, the dialog as shown in Figure 5-24 will appear.

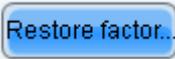Figure 5-24 The dialog for specifying receiving cards to send the parameter settings to
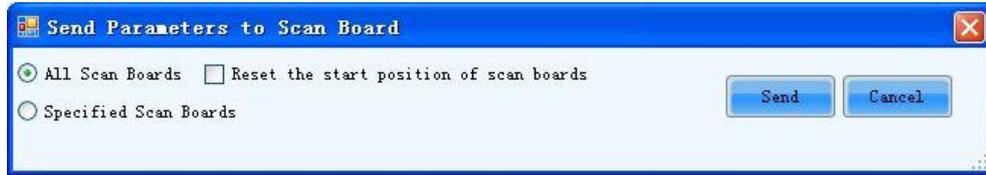
- All Receiving Card

  When this option is selected, parameter settings will be sent to all receiving cards (scan boards) that are connected to the current multimedia player.

- 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 multimedia player.) 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.

Step 3 Click **Send** button and the parameter settings will be sent all or the specified receiving cards.

5.1.5 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 [Save to factory..] 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 [Restore factor..] to restore the parameters of factory area to application area.

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

5.1.6 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

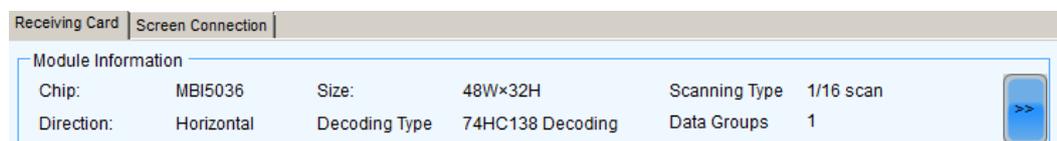There are two ways to save a module configuration file:

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

Figure 5-25 The dialog for saving module setting to a module configuration file
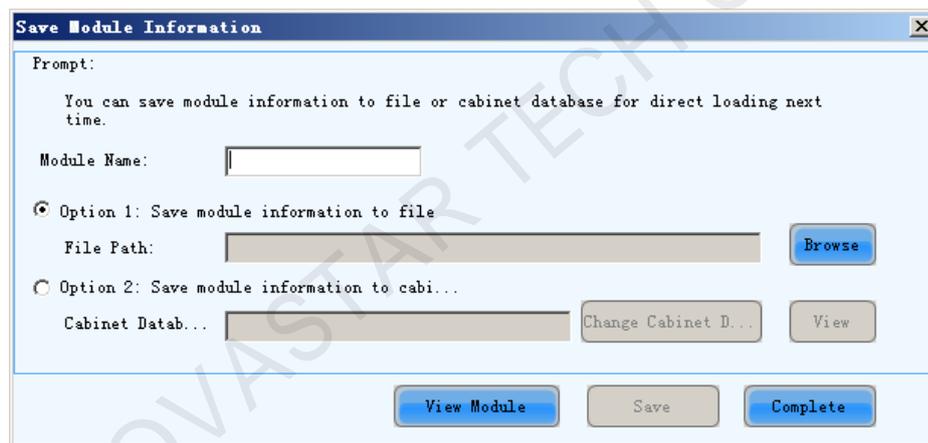
- The other way is to click button in the **Module Information** panel of the **Receiving card** page.

Figure 5-26 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 Screen Configuration

Start with System Configuration Files for details.

5.2 Adjust Brightness

On the Home page of NovaLCT, click . The **Brightness Adjustment** page appears.

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

On the **Brightness Adjustment** page, select **Manually Adjustment**.

Figure 5-27 Manual adjustment
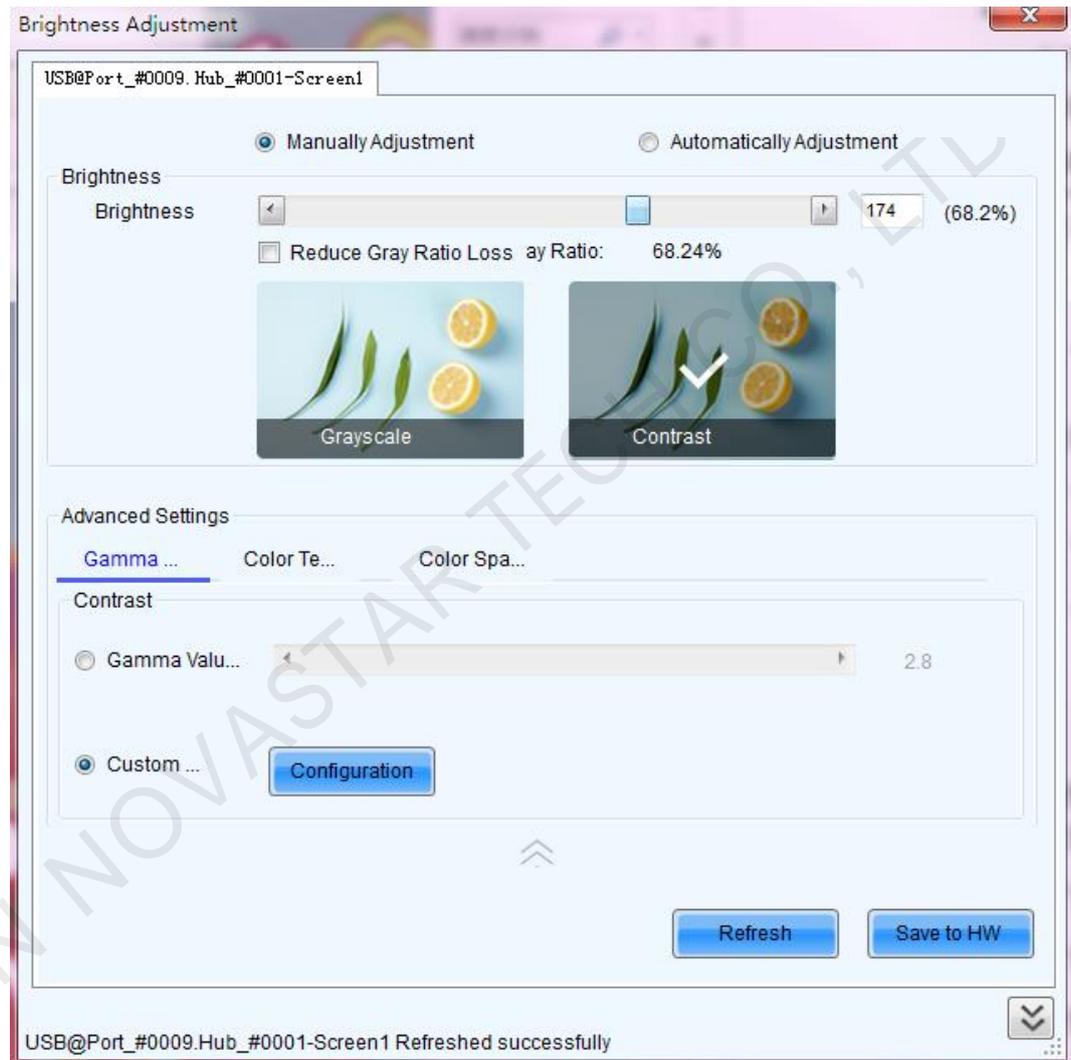
Brightness

Set the brightness value following the operations below.

- Drag the slider or enter a number to set the brightness.
- Select **Reduce Gray Ratio Loss**. Different brightness correspond to different gray ratios.
- Select the **Grayscale** or **Contrast** mode.

Advanced Settings

Advanced settings include adjustment of Gamma, color temperature and color space.

- Gamma adjustment
  - Gamma Value Adjustment: Select **Gamma Value Adjustment** and drag the slider to adjust the value.
  - Custom Gamma Adjustment: Select **Custom Gamma Adjustment** and click **Configuration** to enter the **Gamma Adjustment** page.

    a. Select a grayscale bit value from the drop-down box.

    b. Drag the slider to adjust the Gamma value.

    c. Under **Recommended Gamma**, select the Gamma mode, including **Original**, **Mode A** and **Mode B**.

    d. Under **Picture Quality**, select the picture quality mode, including **Soft Mode** and **Enhanced Mode**.

    e. Click **Send**.
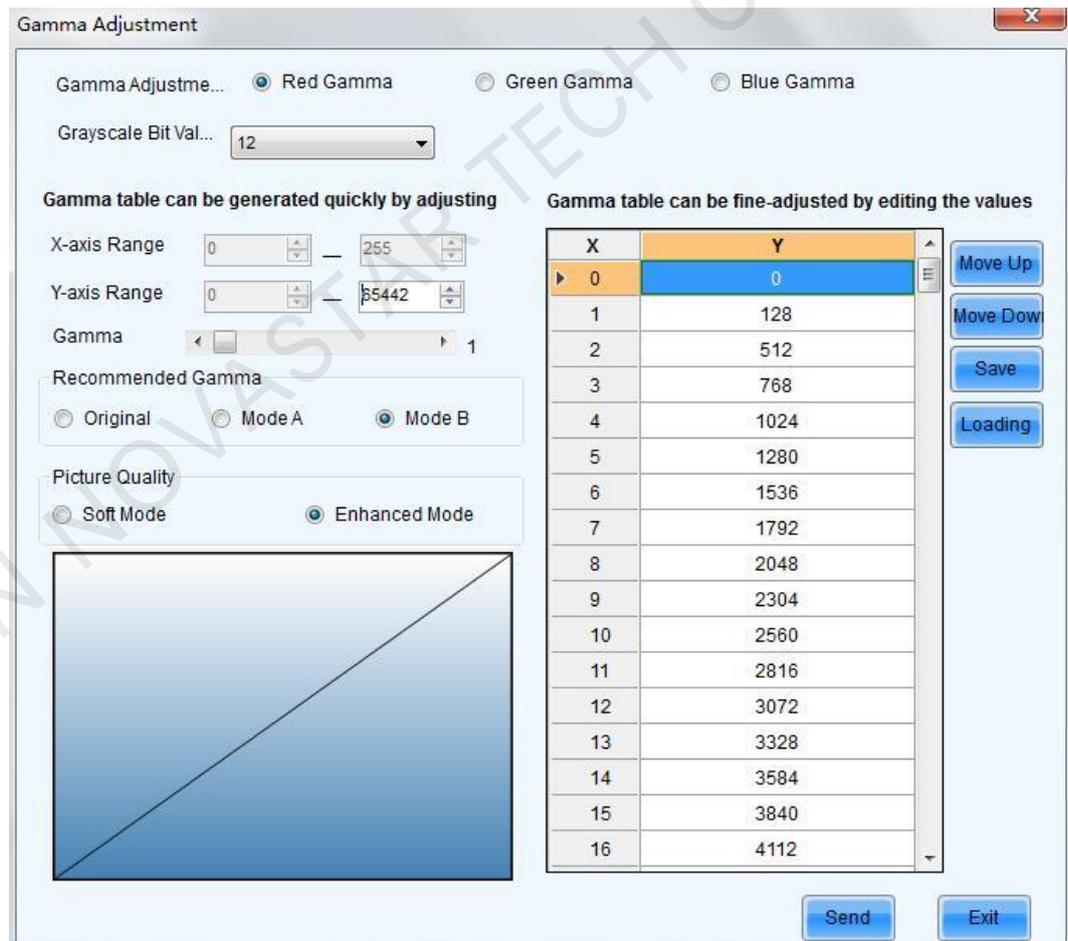
Note:

Dragging the Gamma slider to set the Gamma value will adjust the Gamma curve and Gamma table simultaneously.
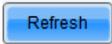
- Move Up: Move the position of the selected value up in the Gamma table.

- Move Down: Move the position of the selected value down in the Gamma table.
- Save: Save the current Gamma values as a file.
- Load: Load a Gamma value configuration file from PC.

- Color temperature adjustment
  - Rough adjustment: Select **Rough Adjustment** and drag the slider or enter a number to set the color temperature.
  - Precise adjustment: Select **Precise Adjustment** and click [+] to enter the **Advanced Color Configuration** page. On that page, click **Import** to import a color temperature file, or click **Add** to set the color temperature information.
- Color space adjustment
  - Disable: Do not enable color space adjustment.
  - PAL/NTSC: Set the color system as PAL or NTSC.
  - Add configuration: Click [+] to enter the **Advanced Color Configuration** page to configure the color space parameters. Then, click **Sen**d and **Save to HW**.

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 [Refresh] and you can see current brightness.
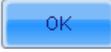
5.2.2.1 Advanced Adjustment

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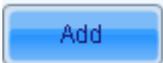
Step 1 Click [Add], Set the start time, type of adjustment and designated brightness.

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 Brightness and Color Calibration), check **Adjust Gamma**, drag scroll bar to adjust Gamma value.

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

Add environment brightness

Step 1　Click **Add**, 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 Brightness and Color Calibration), 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.
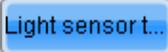
- **Light sensor t...**: Detect light sensors connected to sending cards and function card, the light sensors that connected to function card must be set as the external device.

- **Refresh**: 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.
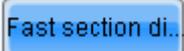
- **Fast section di..**: Divide the portion between the maximum environment brightness and minimum environment brightness into designated equal parts, the portion between the maximum and minimum LED display brightness is also divided into similar equal parts. The software will adjust the LED display brightness to corresponding section in accordance with the section of current environment brightness.
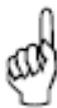
> Note:
> NovaLCT first generates the environment brightness value from measurement results of all available light sensors according to the calculating type. And then NovaLCT uses the generated environment brightness to adjust the LED display brightness according to the parameter settings, such as brightness thresholds, segment numbers.

- **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.

Step 1   Select the check box in front of **Opening** to start the night mode.

Step 2   Click ![icon] 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.

	Note:
	• 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] icon.

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

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

5.2.2.2 Adjust with Light Sensor

One time point will be generated by NovaLCT automatically, and it will be configured with environment brightness by default.
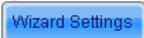
Step 1   Click ![Wizard Settings], check **Adjust by Light Sensor**, and then click ![Next].
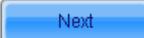
Step 2   If you have not finished configuration of light sensor, it is need to configure the light sensor then, the detailed operation, please refer to the step 3) in 5.2.2.1 Advanced Adjustment.

Step 3   Add specified brightness, ambient brightness as required, or edit or delete the added settings.

Step 4   All operations are finished, click ![Save].
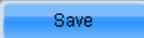
5.2.2.3 Auto Brightness Time Interval

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 5-28.

Figure 5-28 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.

	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.

Figure 5-29 Adjust brightness
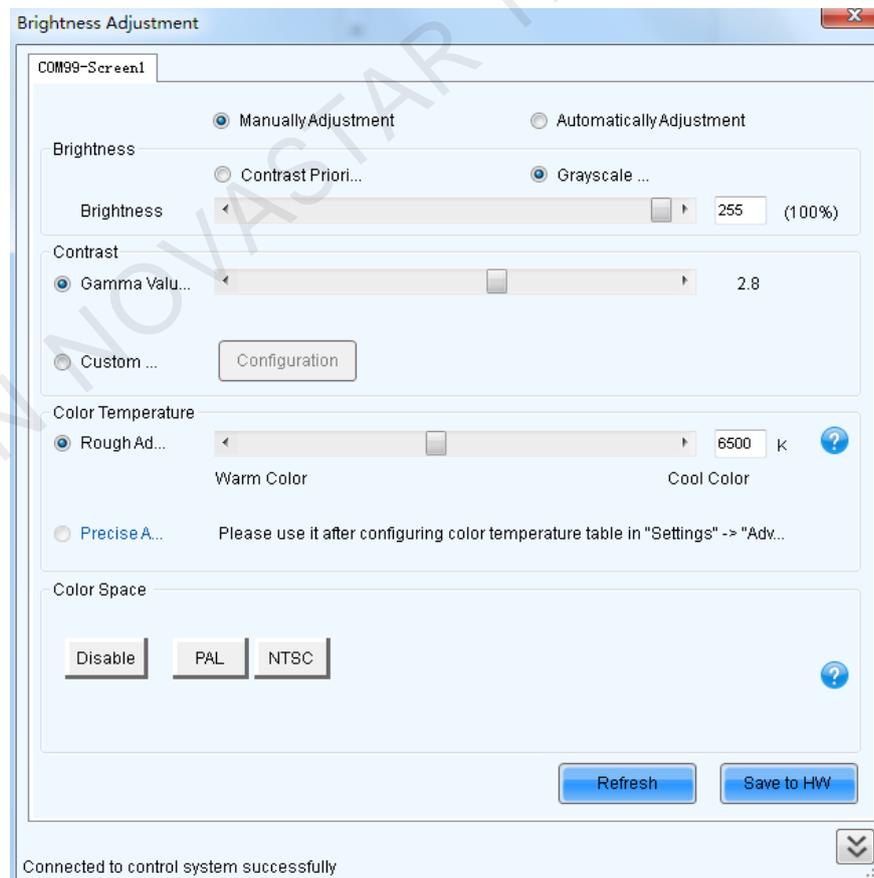
- Brightness

Set the brightness mode and value.

- Contrast

  Gamma coefficient can be any value between 1 and 4. And the default value is 2.8. Check **Custom Gamma Adjustment**, and click **Configuration** to manually define the Gamma table.

- Color Temperature

  - Roughly Adjustment: Pull the bar to adjust the color temperature (Enter **Settings > Advanced Color Configuration > Configure Color Space** interface, fill the value of original color space which must be obtain by light sensor, and send the values to hardware).

  - Accurate Adjustment: Check this option, then choose color temperature segment. For color temperature segment configuration, please see 5.5 Advanced Color Configuration 3) color temperature table.

- Color space

  Set to enable (PAL/NTSC) or disable color space. For color space configuration, please see 5.5 Advanced Color Configuration.

After the adjustments are completed, click **Save to HW** to save them to the hardware.

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
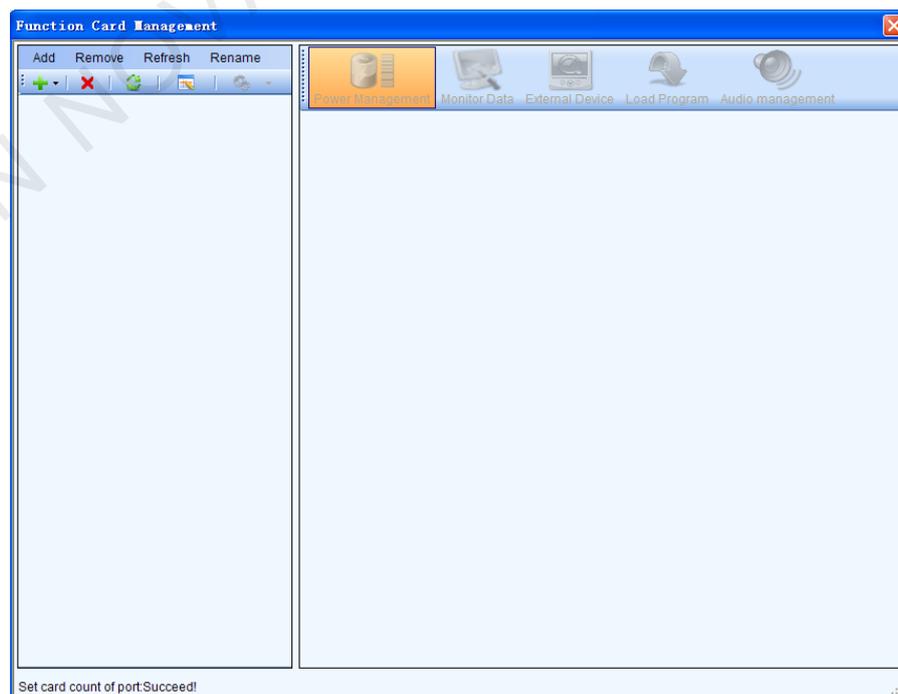
5.3.1 Multi-function Card Configuration

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 multimedia player.
- 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.
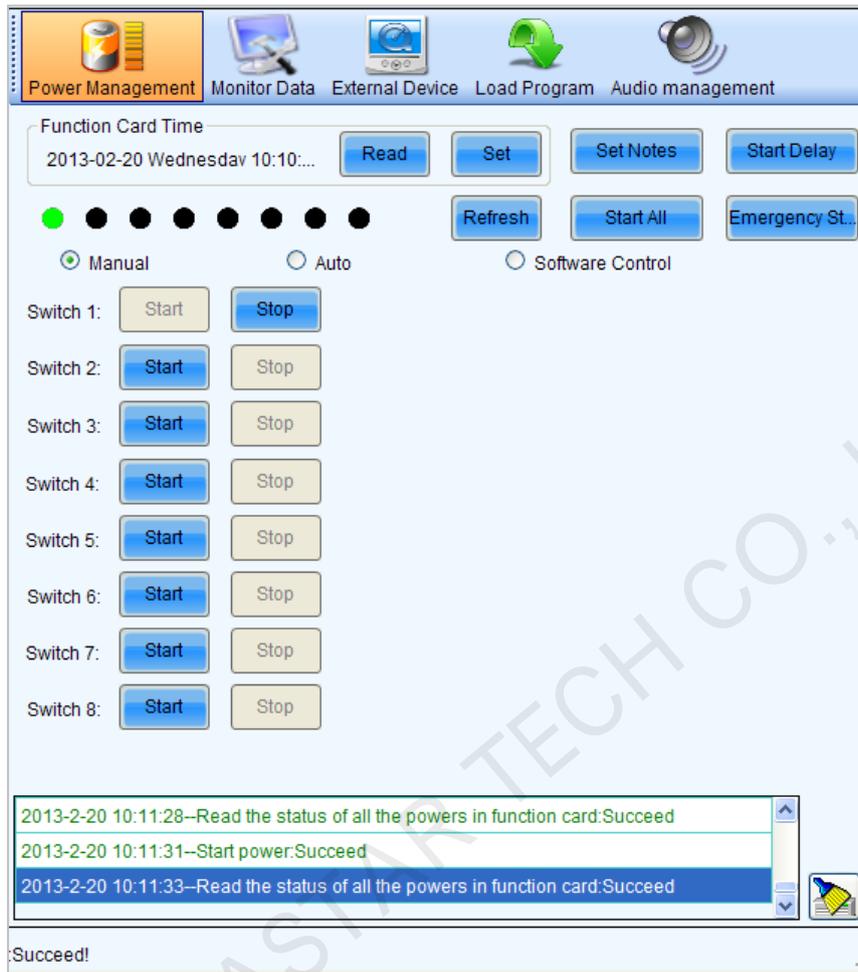
Note:

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**.

	Note:
	• 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
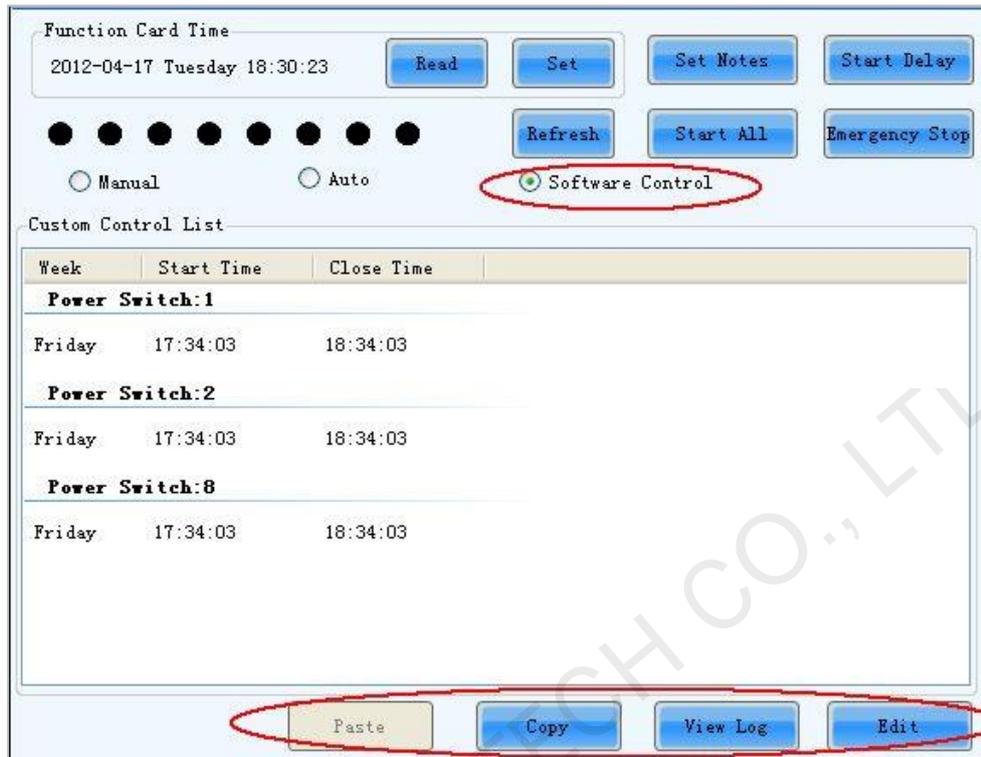
- Copy

  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 form 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. Show in Figure 5-33 is the page for system monitoring.

Figure 5-33 The page for system monitoring
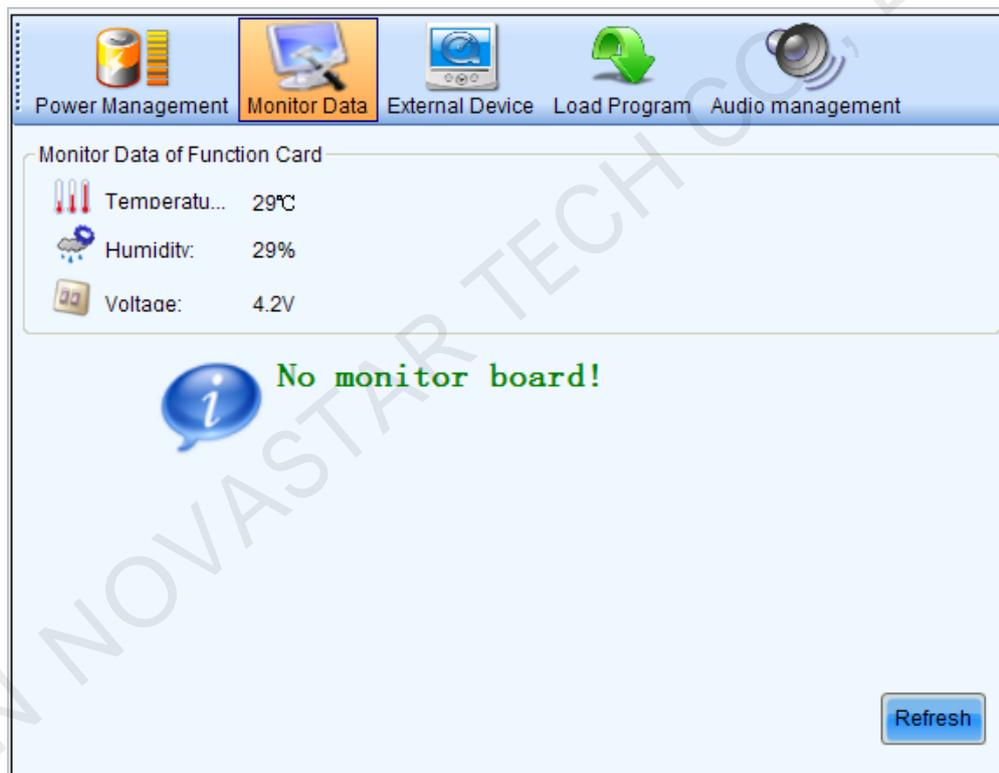
Refresh

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
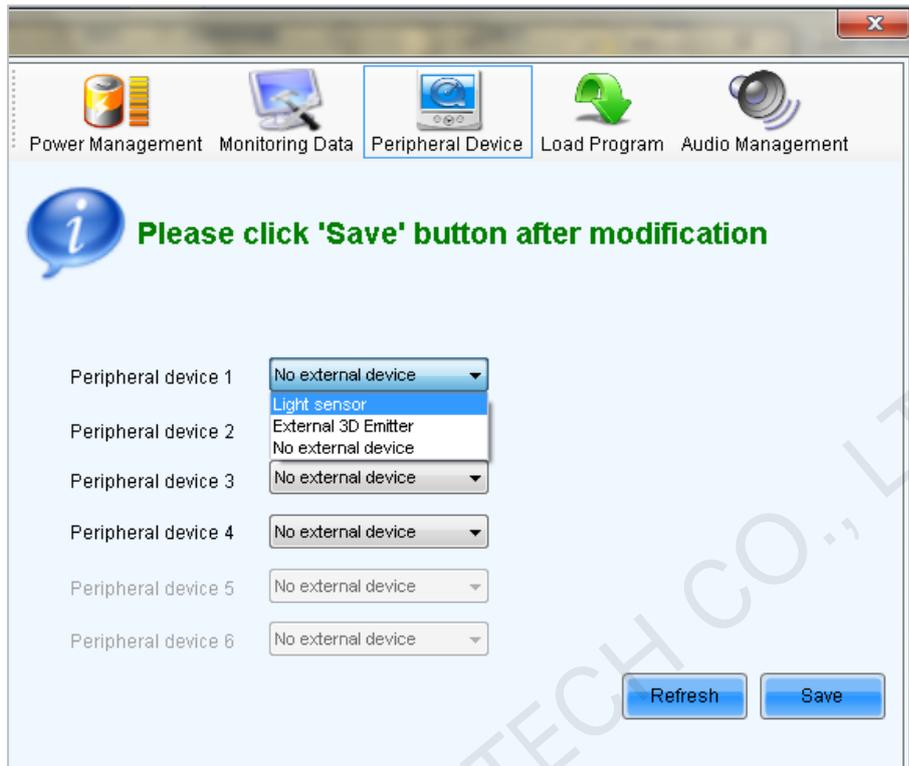
- Refresh

  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
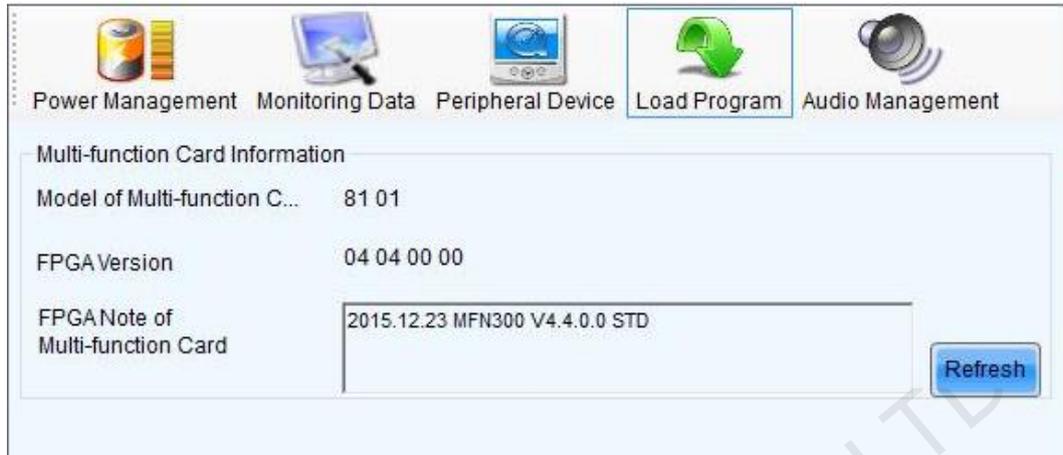
Refresh

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.

	Note:
	• 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.

5.4 Prestore Screen

User can store a picture as the screen's Prestore Screen in the **Prestore Screen Setting** form, and then use as boot logo, cable disconnected logo, and no DVI signal logo.

Click the submenu **Prestore Screen** of the **Settings** in the main menu, and then it is show as follow.

Figure 5-37 Prestore Screen Setting
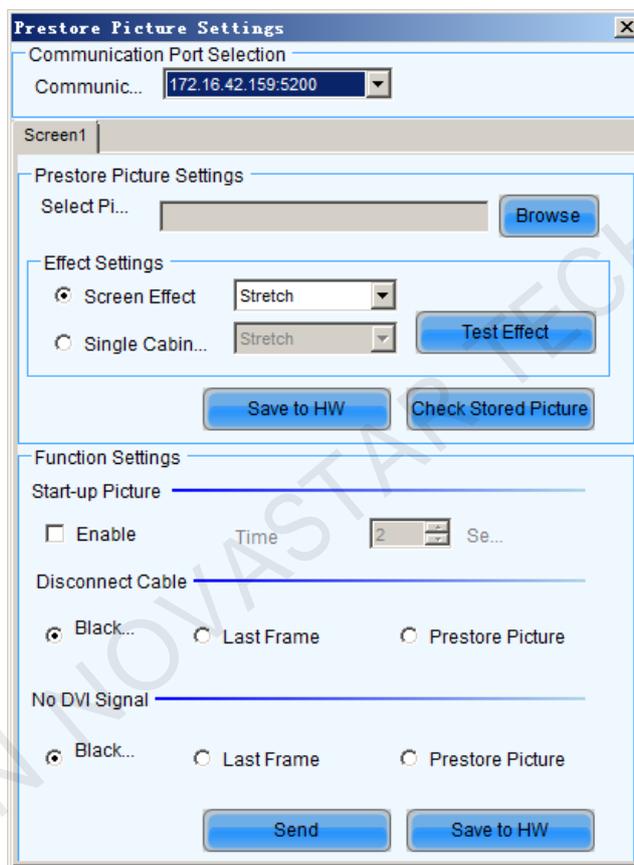
Prestore Picture Settings

- Browse: 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)
- 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 Hardware: User can click this button to save the picture as Prestore Screen to the hardware if he is satisfied with the test effect.

- Check Store 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

- Boot Screen: 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.

- Cable Disconnect: 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 Hardware: Save current settings to hardware, then the settings will not lost after power off.

5.5 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 5-38.

Figure 5-38 Advanced color configuration
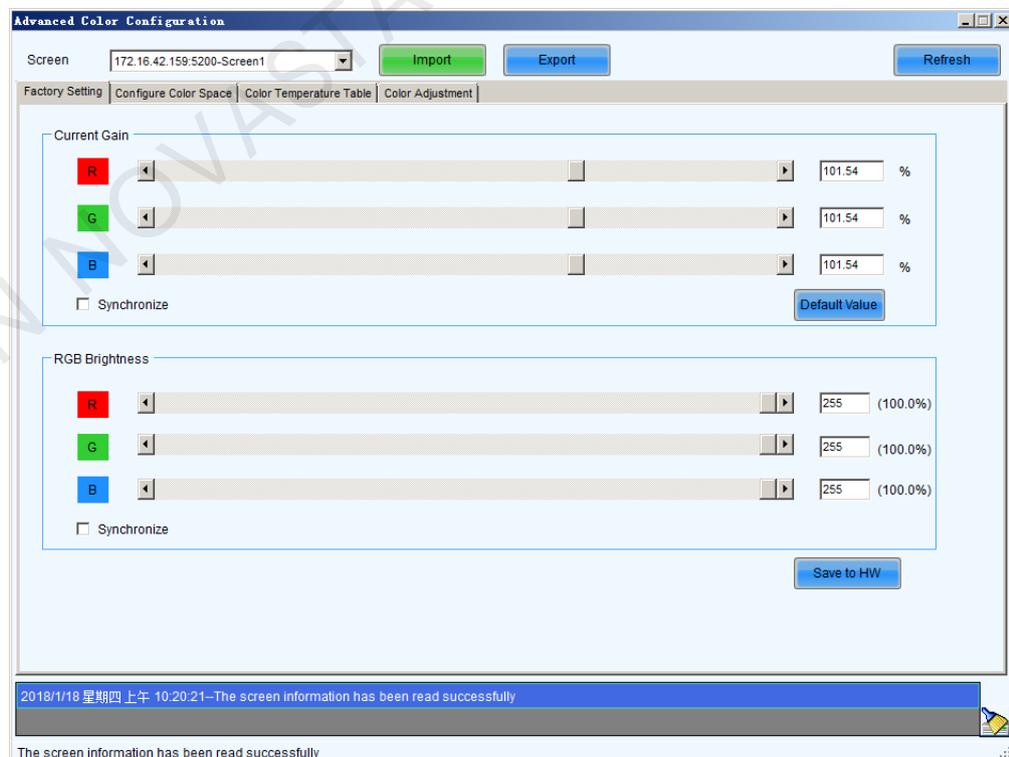
Factory Setting

- **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
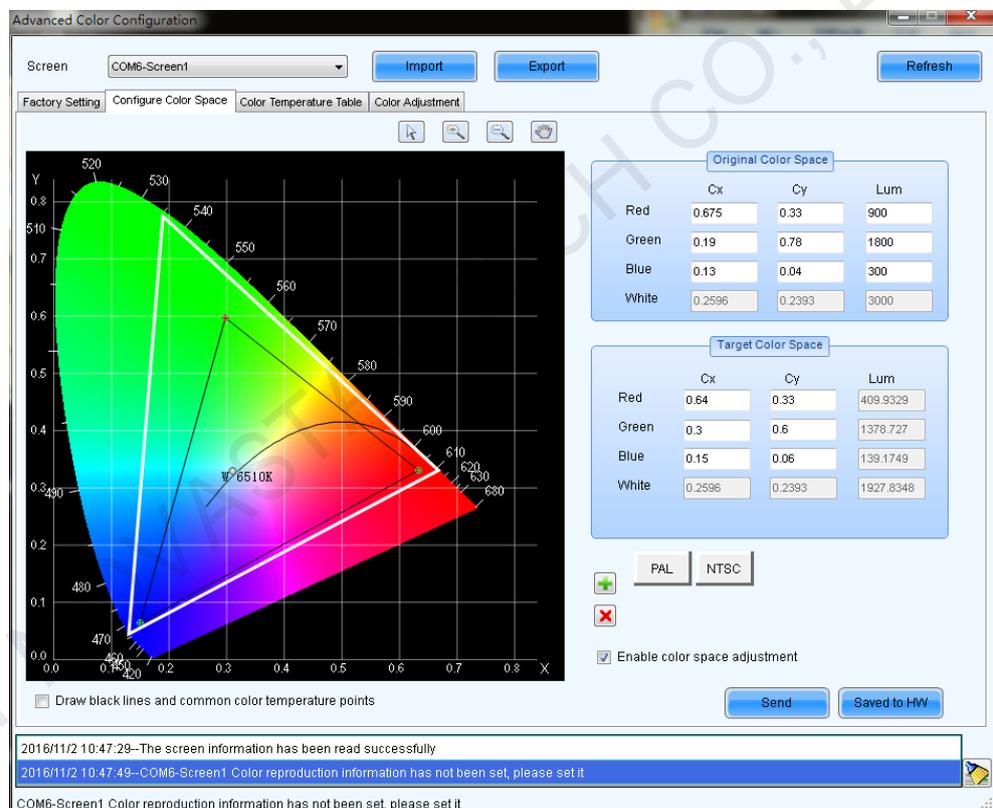
- Original color space: It is suggested to use a light gun to measure current CIE coordinates and brightness and fill out properly, use original color space as basis for adjusting color temperature.

- 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** : Send current calibrated color space and target space to LED display.
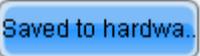
- **Saved to hardwa.** : Save current calibrated color space and target space to hardware.

Color temperature table
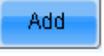
- **Add** : Add color temperature segments.

- **Edit** : Compile selected color temperature segment.

- **Delete** : Delete selected color temperature segment.

- **Delete** : Clear all color temperature segment.

- **Saved to local** : Save the color temperature table to local space.

Color Adjustment

Adjust hue, contrast and saturation of the LED display.

This function is only supported NovaPro HD for the moment.

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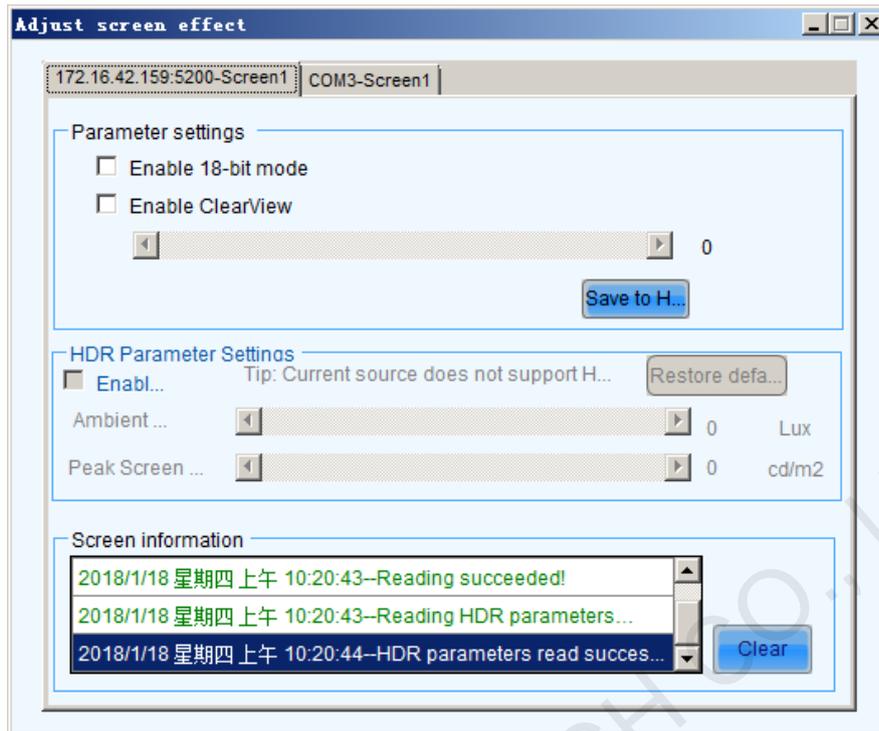
- **Enable 18-bit mode**: This avoids gray loss problem and improves LED display gray scale by 4 times, bringing better and finer display effects.
- **Enable ClearView**: Automatically adjust the texture, dimensions and contrast of images in various areas, improving image display details.
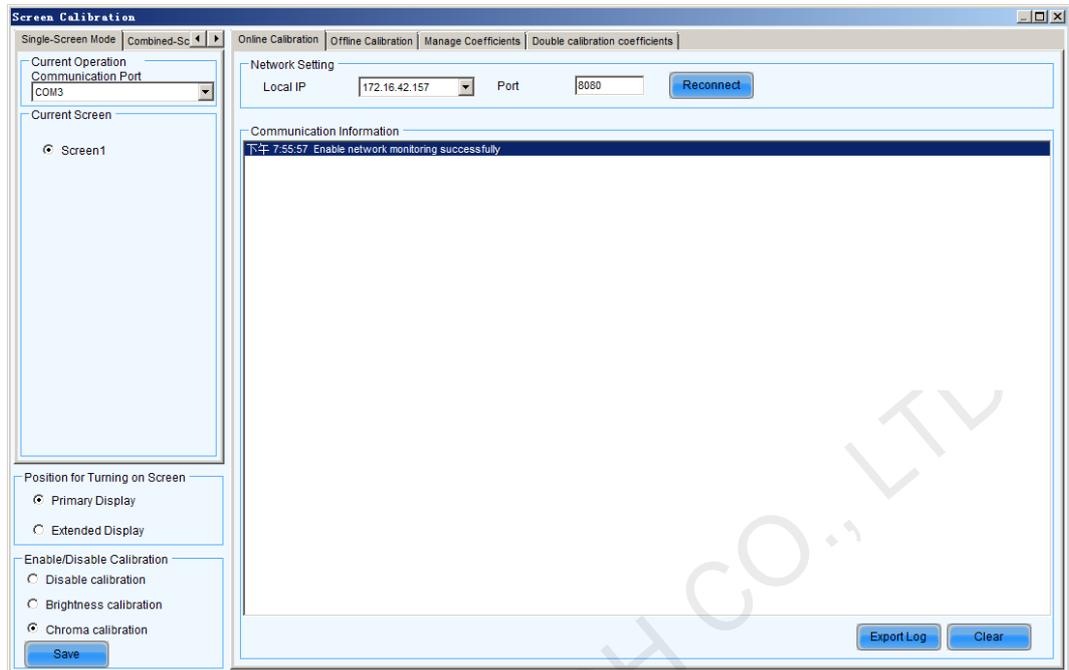
5.7 Brightness and Color Calibration

5.7.1 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 5-39 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.

5.7.2 Coefficients Management

This page is to adjust the calibration coefficients for better calibration performance.

Figure 5-40 The Manage Coefficients page
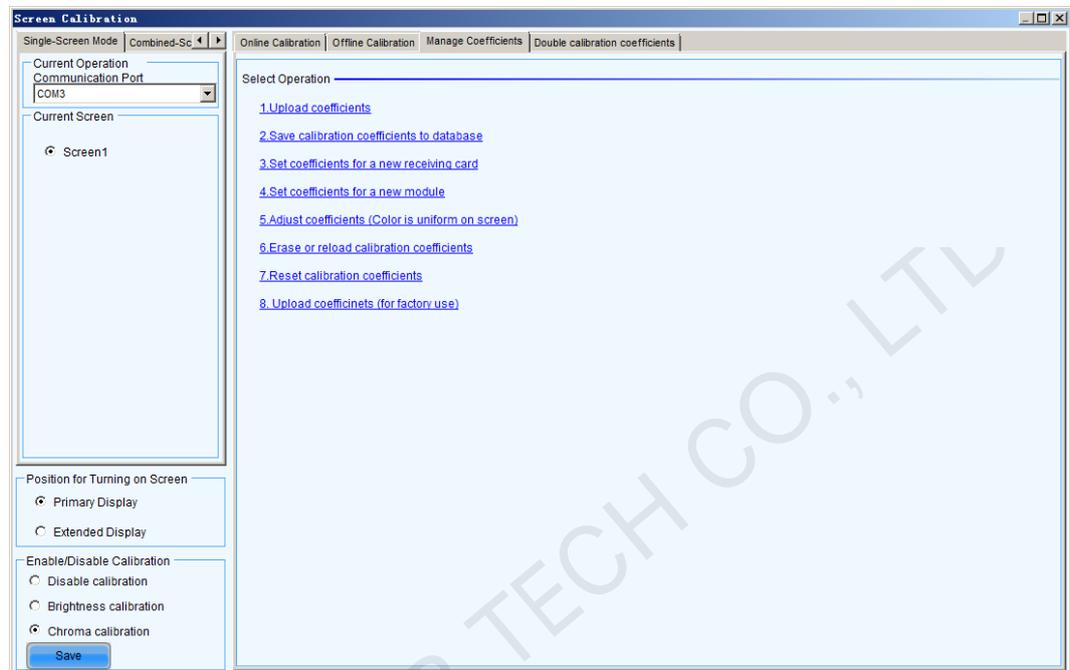
- Upload Coefficients

  Upload a calibration coefficients database to the LED display.

- Save coefficients to database

  This operation is read back the calibration coefficients form 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.

5.7.2.4 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.

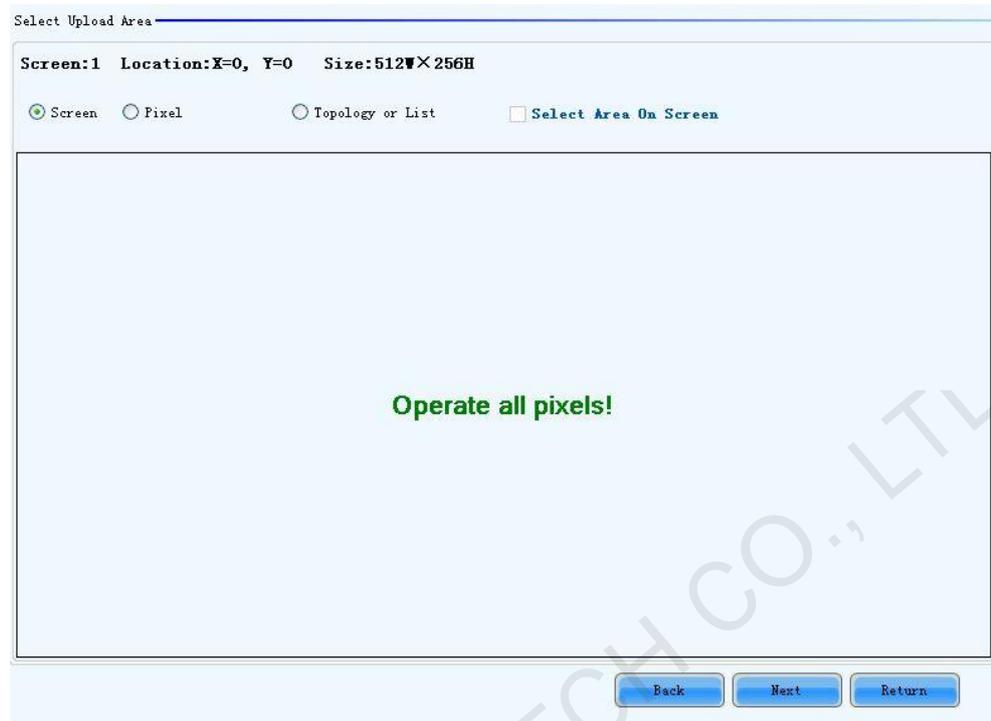Figure 5-41 The page for upload coefficients step 1
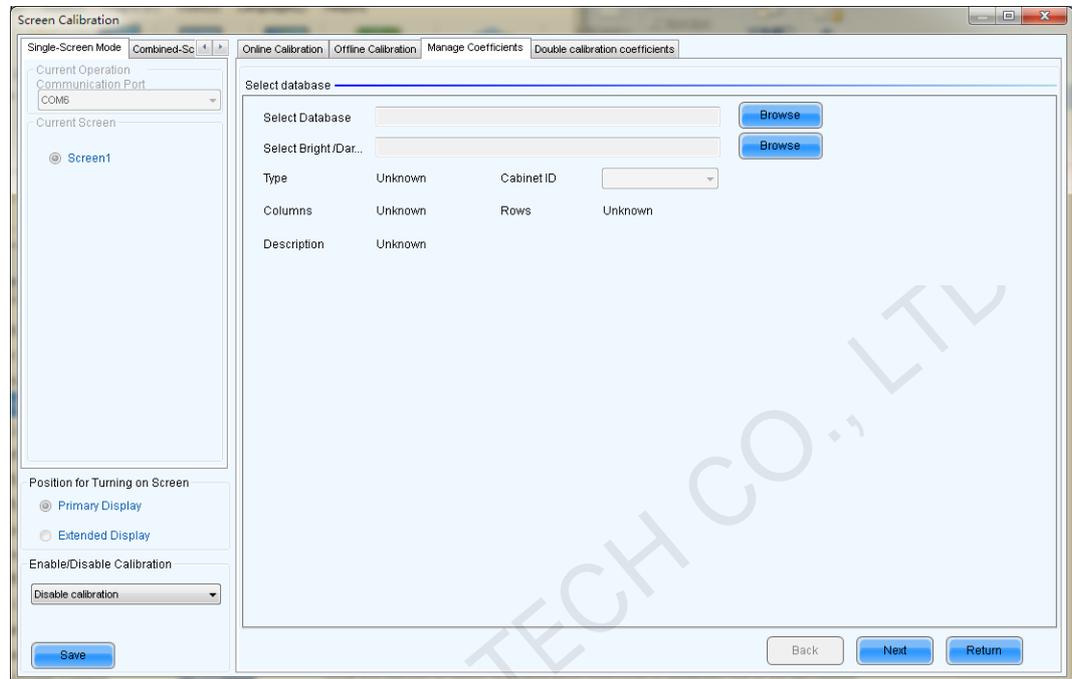
- **Browse**

  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.
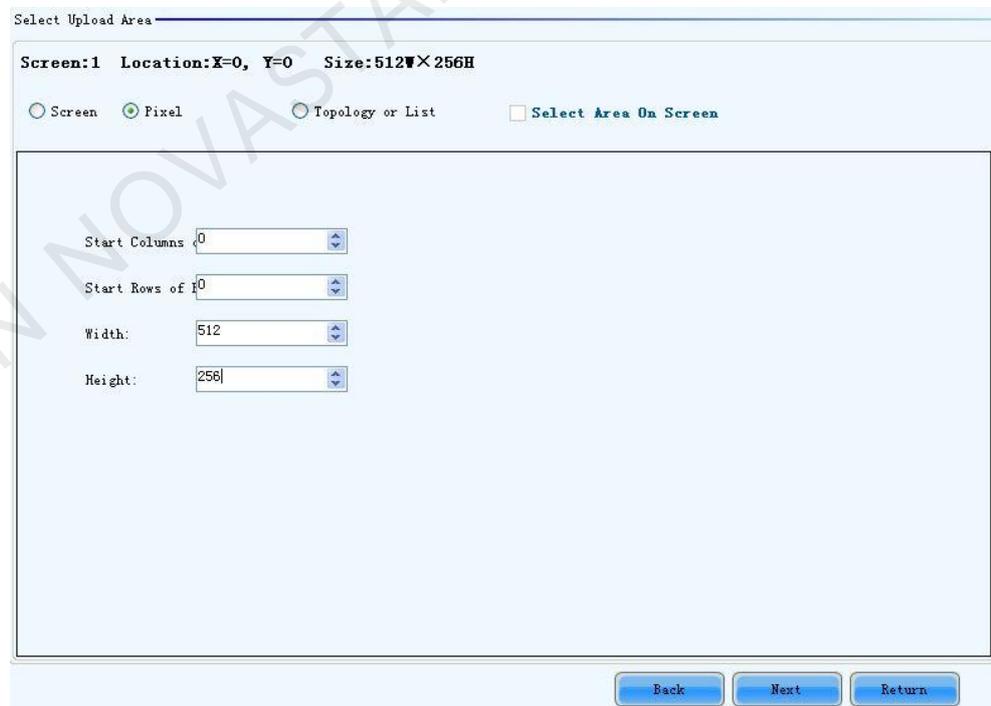
- Screen

Figure 5-42 The page for uploading calibration coefficients in Screen way

- Pixel

Figure 5-43 The page for uploading calibration coefficients in Pixel way

- Topology or List

Figure 5-44 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 5-45 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.

5.7.2.5 Save Coefficients to Database

This operation is to read back the calibration coefficients form 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 5-46 and Figure 5-47 are the pages for saving coefficients to an existing database and a new database respectively.

Figure 5-46 The page for saving calibration coefficients to an existing database

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 5-47 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.

	Note:
	• 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 5-48 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.

5.7.2.6 Set coefficients for a new receiving card

Step 1 Specify the LED display area that the new receiving card works for. Shown in Figure 5-49 is the page for specifying the area.

Figure 5-49 The page for specifying the working area of the new receiving card
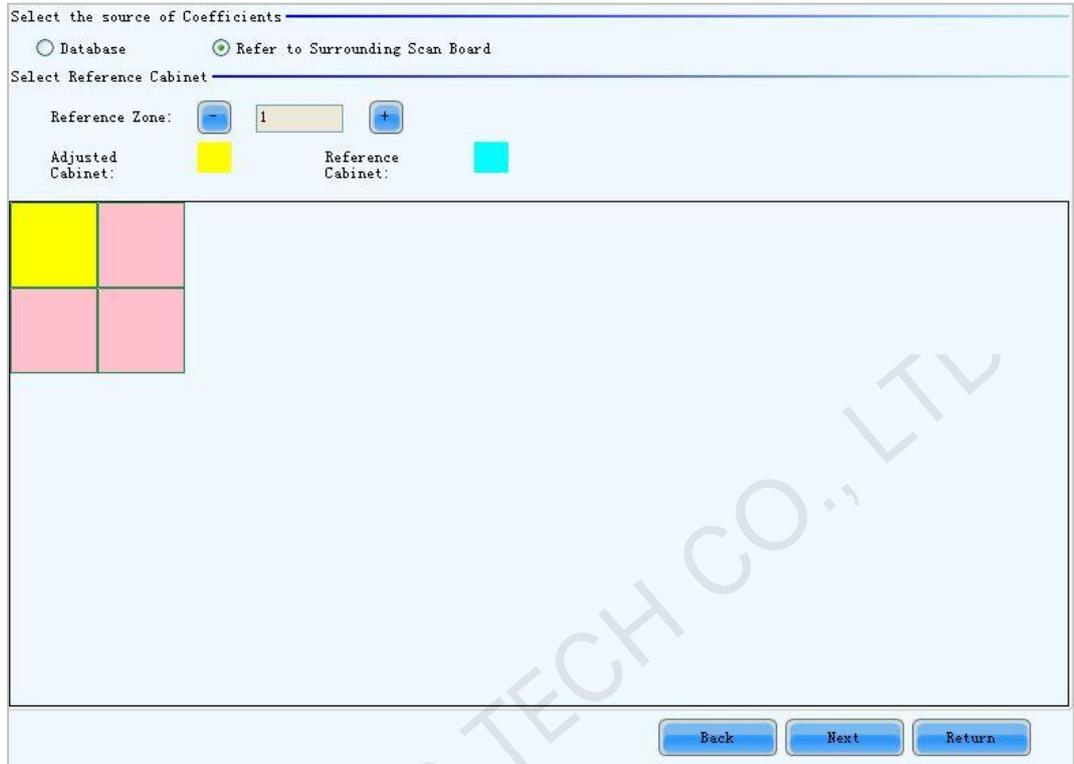

Step 2 Select the calibration coefficient source. The coefficients could be from a database (the **Database** option) or generated according to those of the surrounding receiving cards (the **Refer to Surrounding Scan Board** option).

Figure 5-50 The page for getting calibration coefficients from a database
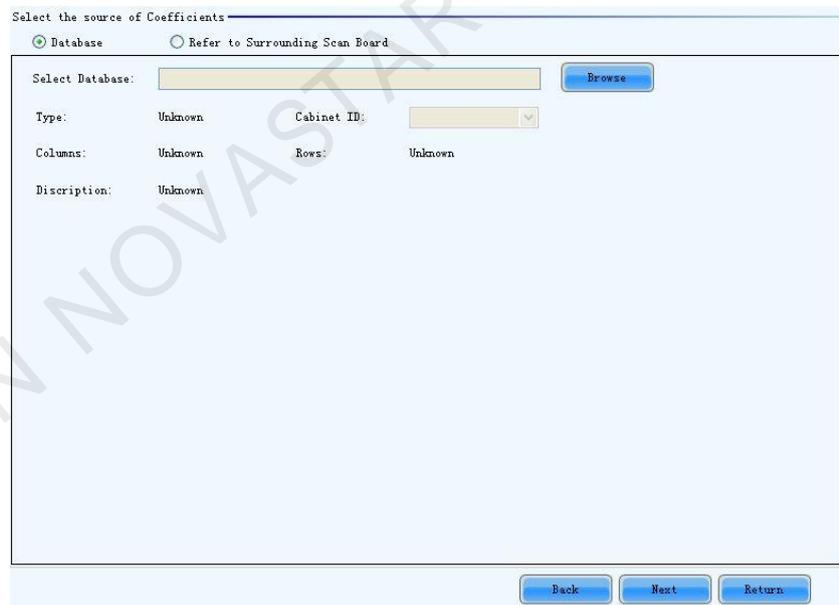
- Browse

  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 5-51 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 5-52 The Simple adjustment page
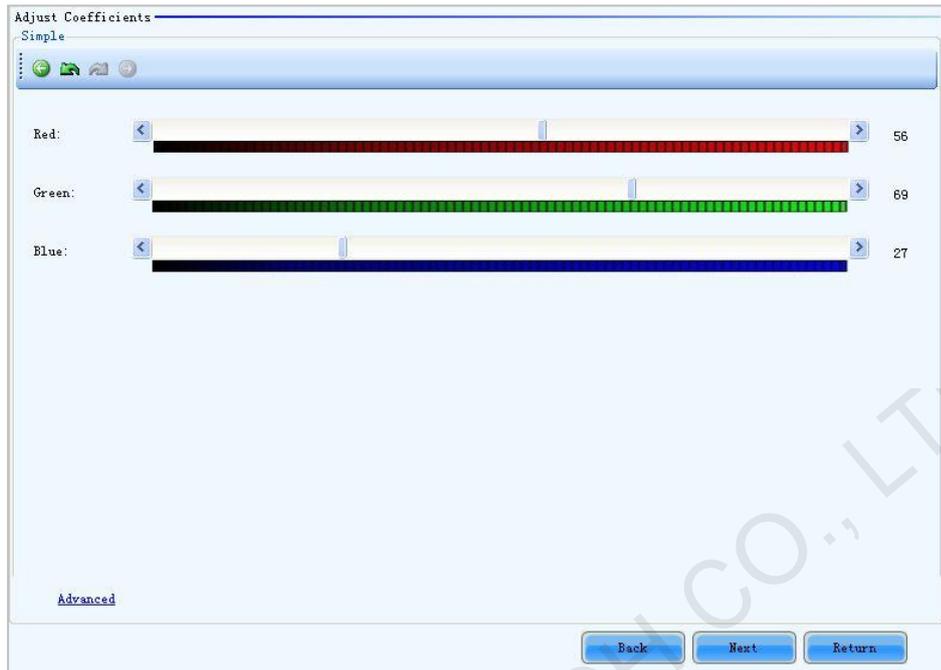
- Red

  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 5-53 The Advanced adjustment page
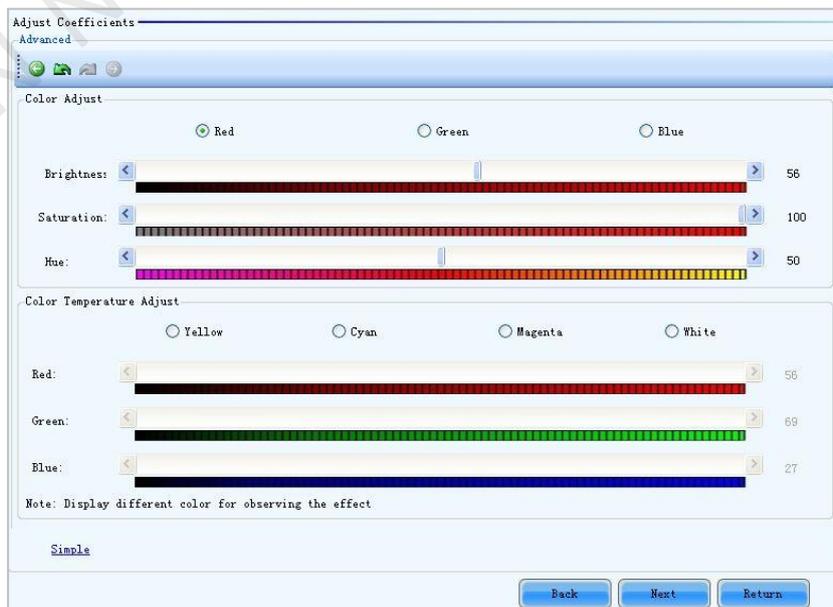
- Color Adjustment

  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.

	Note:
☞	• 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 5-54 The page for saving calibration coefficients to the hardware

Save

Save the coefficients to the hardware.

5.7.2.7 Set coefficients for a new module

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

Figure 5-55 The page for specifying the cabinet which the new module is in

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

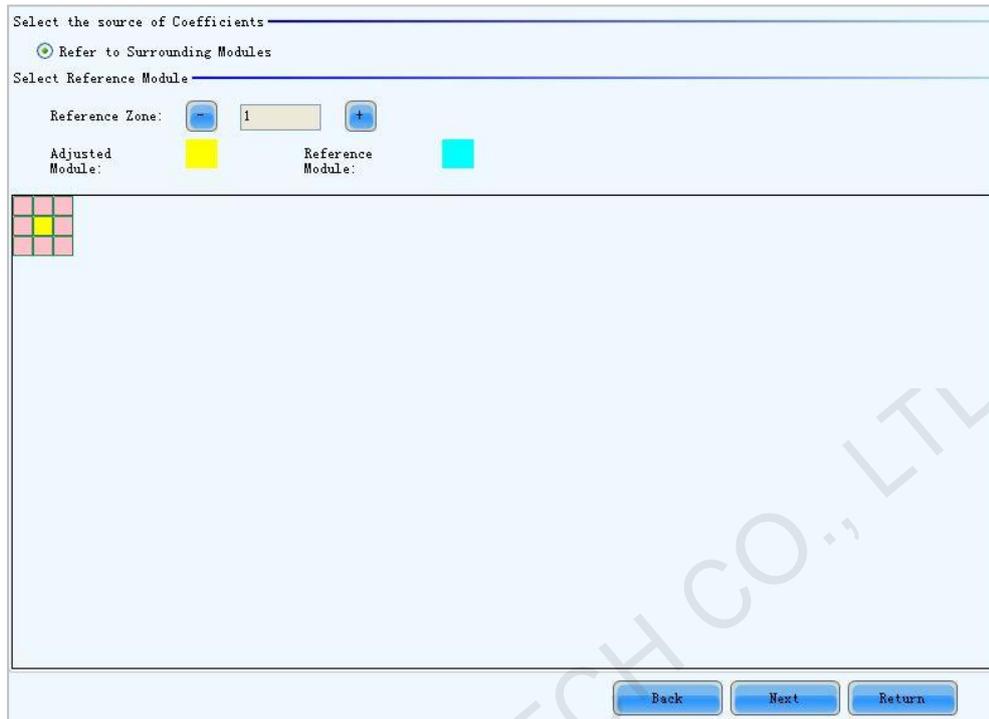Figure 5-56 The page for specifying the new module
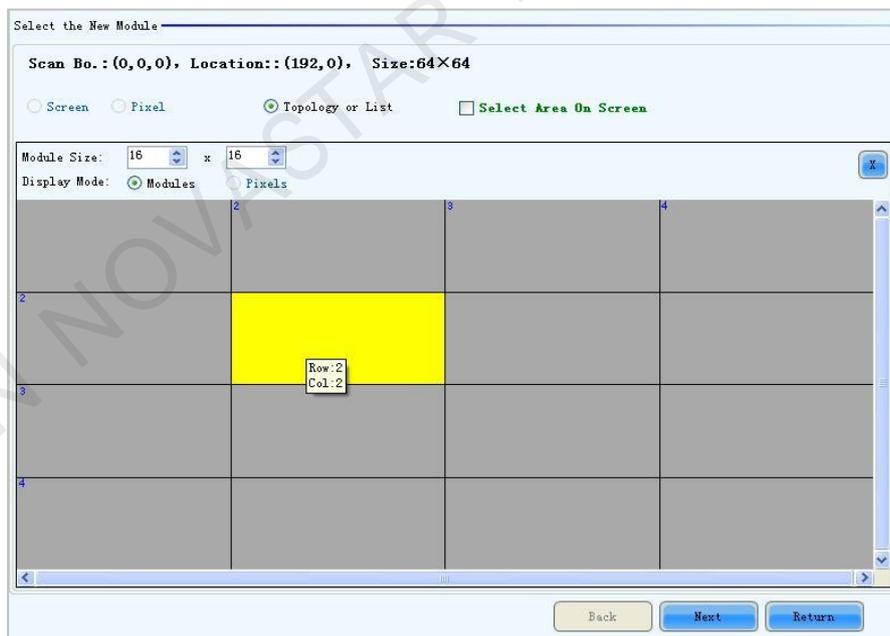
Module Size

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 5-57 The page for selecting the calibration coefficients source

	Note:
	• 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.

5.7.2.8 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 5-58 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 5-59 The page for Adjust Own Effect option

Figure 5-60 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 5-61 The page to save the calibration coefficients
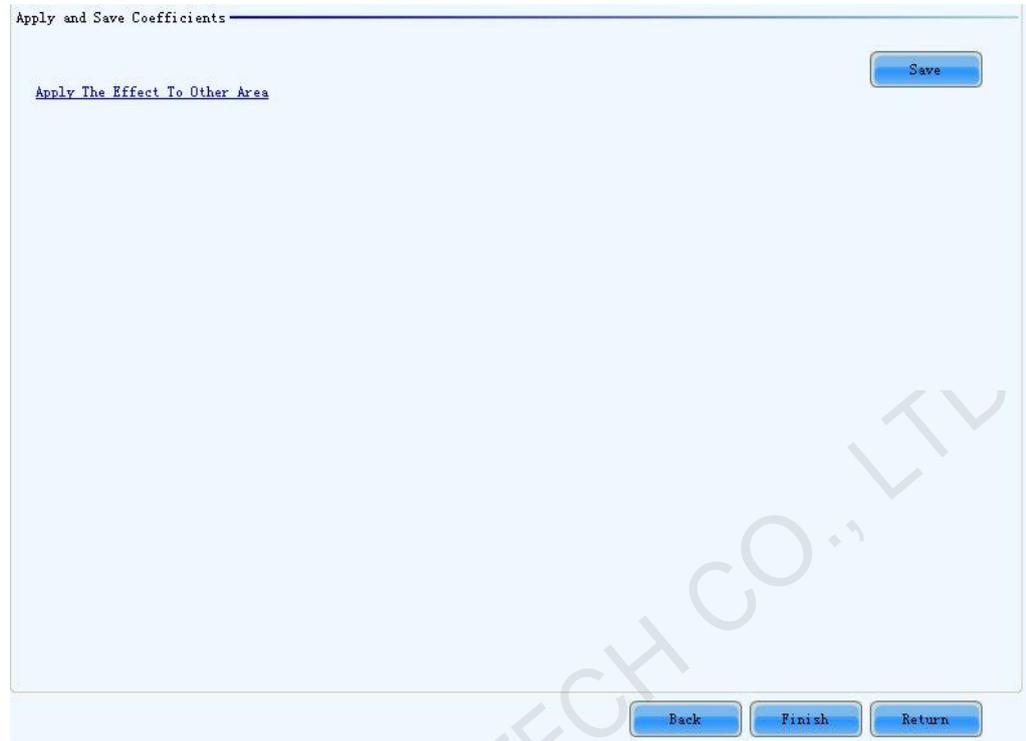
Apply The Effect To Other Area

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

Figure 5-62 The page for Apply The Effect To Other area

Apply

Apply adjustment operations to the selected area.

	Note:
☞	• 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.

5.7.2.9 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 5-63 The page for erasing calibration coefficients
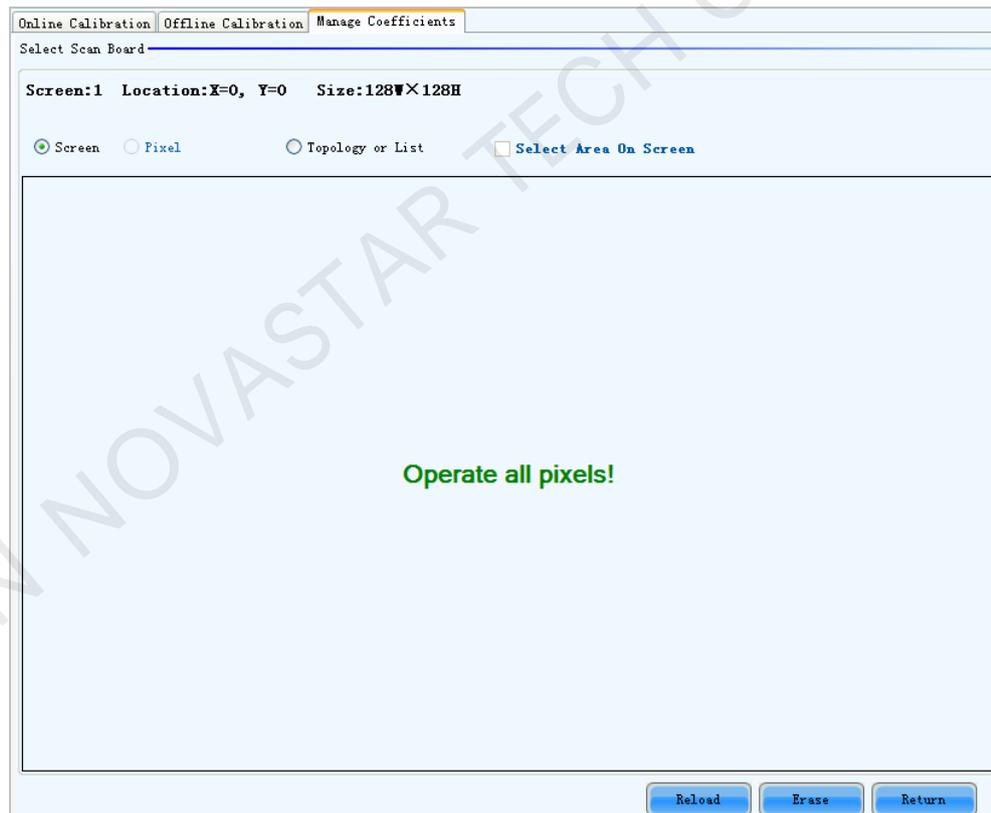
- Screen

  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.

> **Note:**
> The calibration coefficients will be their default values after the erase operation. Make a copy of the calibration coefficients (save to a database file) for safety.

5.7.2.10 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 5-64 Resetting calibration coefficients
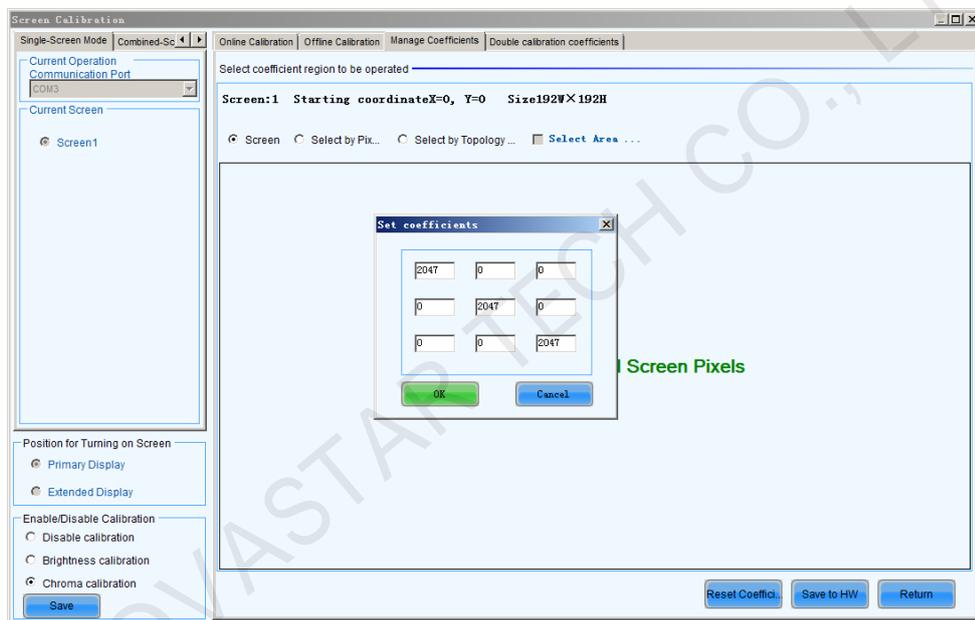
5.7.3 Double Calibration Coefficients

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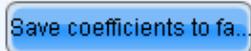
Save coefficients to fa... button, which is usually in hide status to prevent random operations, cannot be displayed until entering "**admin**" on the keyboard.

Figure 5-65 Double calibration coefficients
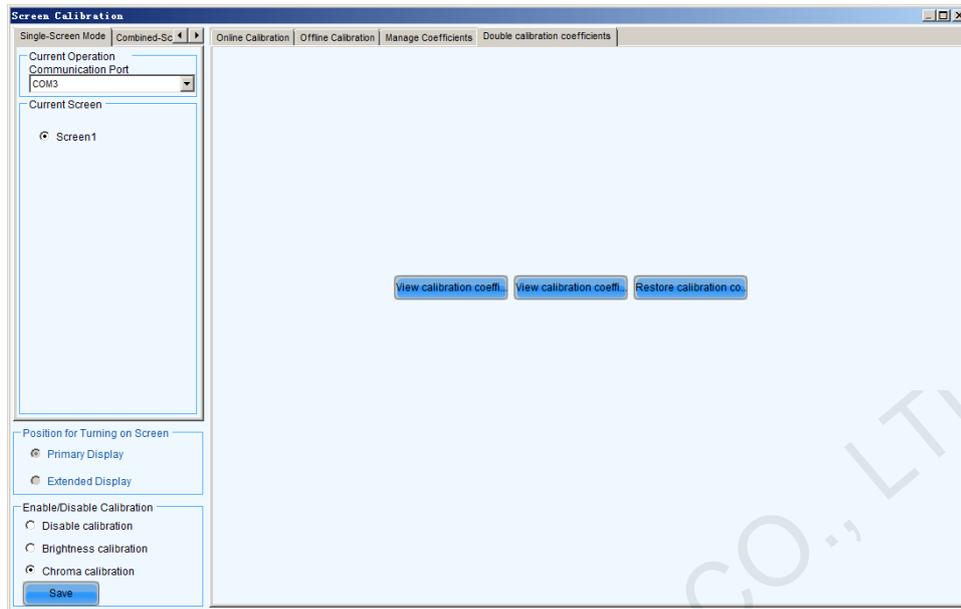
5.7.4 Manage Coefficients

Adjust the coefficients for the screen to make it display better.

5.8 **Screen** Control

Click Screen Control on the main interface to pop up the **Screen Control** window.

Figure 5-66 The Screen Control window
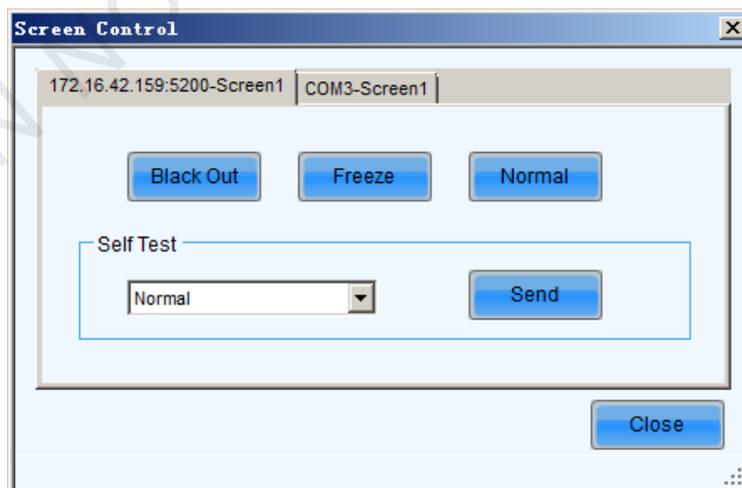
- Black Out

  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.

5.9 Hardware Monitoring

NovaLCT supports monitoring status of multimedia players, 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 the following picture.

Figure 5-67 The Monitor page
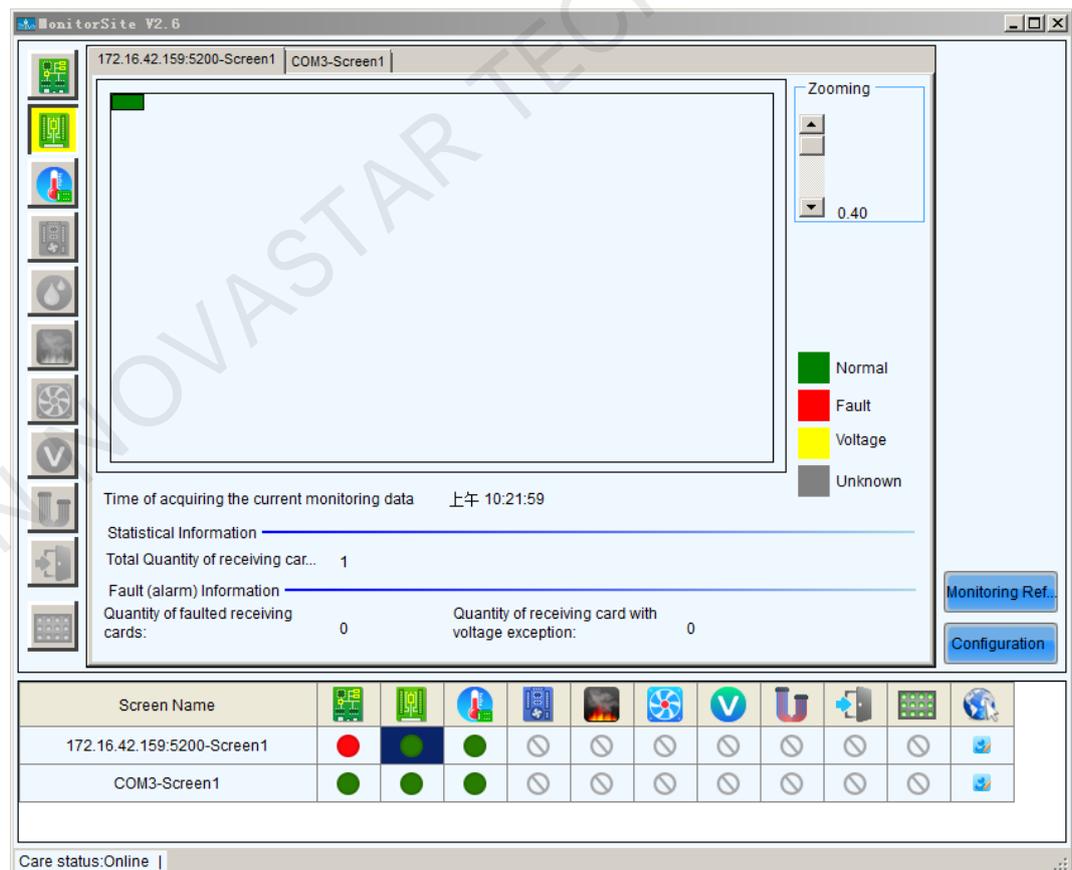
- Monitoring Refresh

    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.

5.9.2 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 5-68 Refresh period
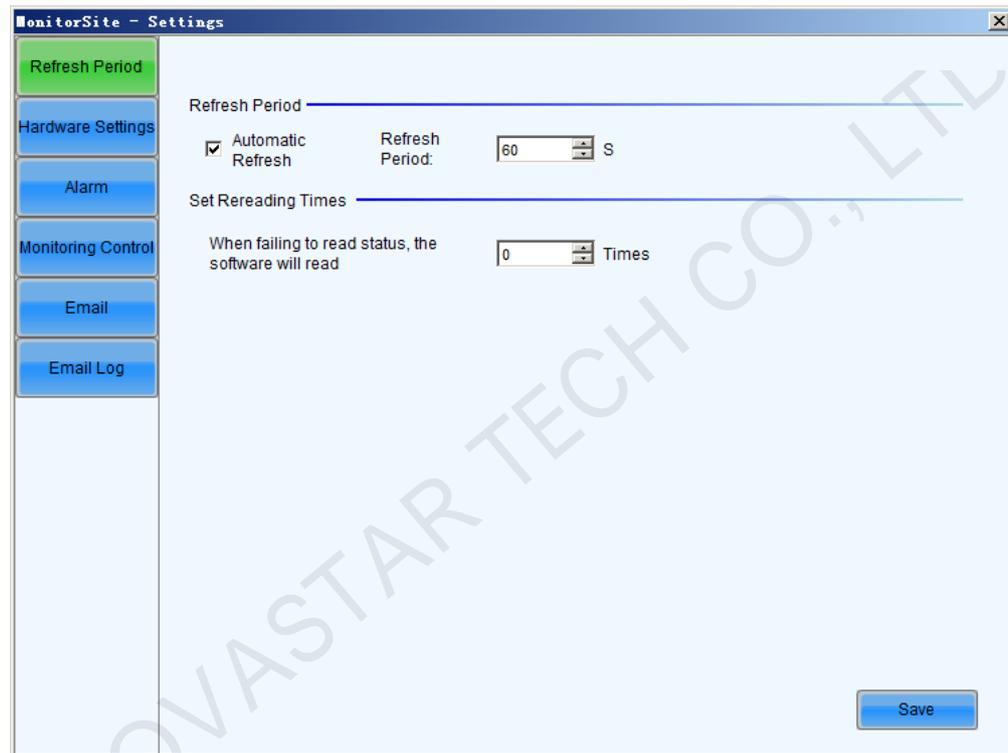
- Auto Refresh

  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.

5.9.3 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.
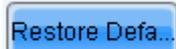
Figure 5-69 Hardware configuration
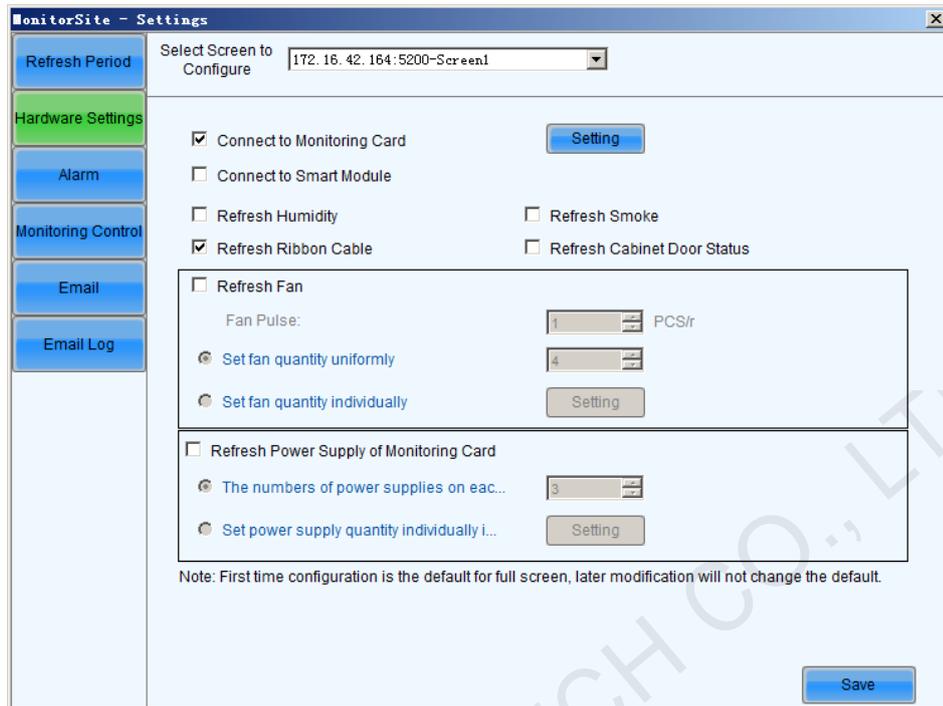
: Click to enter the advanced setting of monitor, as shown in the figure below.
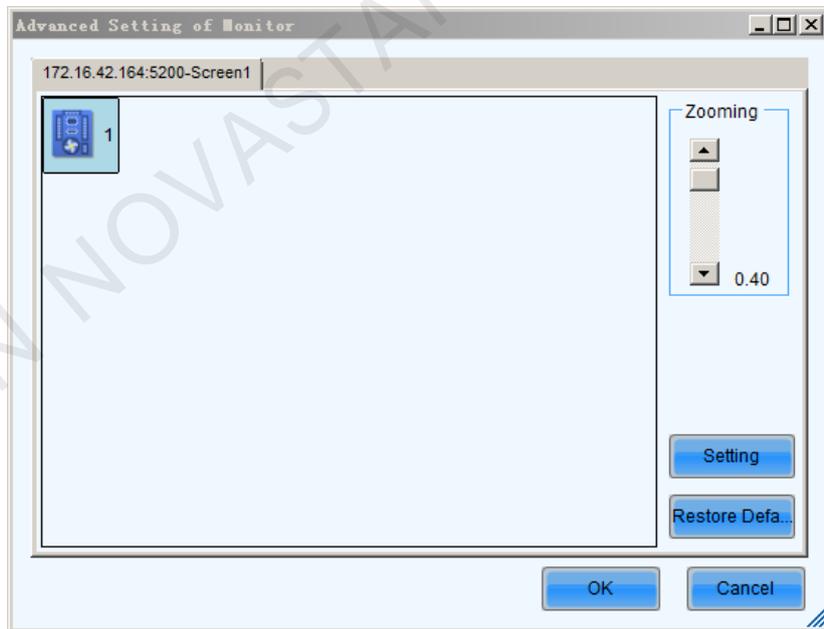
Each receiving card is connected with one monitoring card by default. Click

 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.

5.9.4 Alarm Configuration

Display alarm or fault information when setting the temperature, humidity, fan speed and voltage critical value.
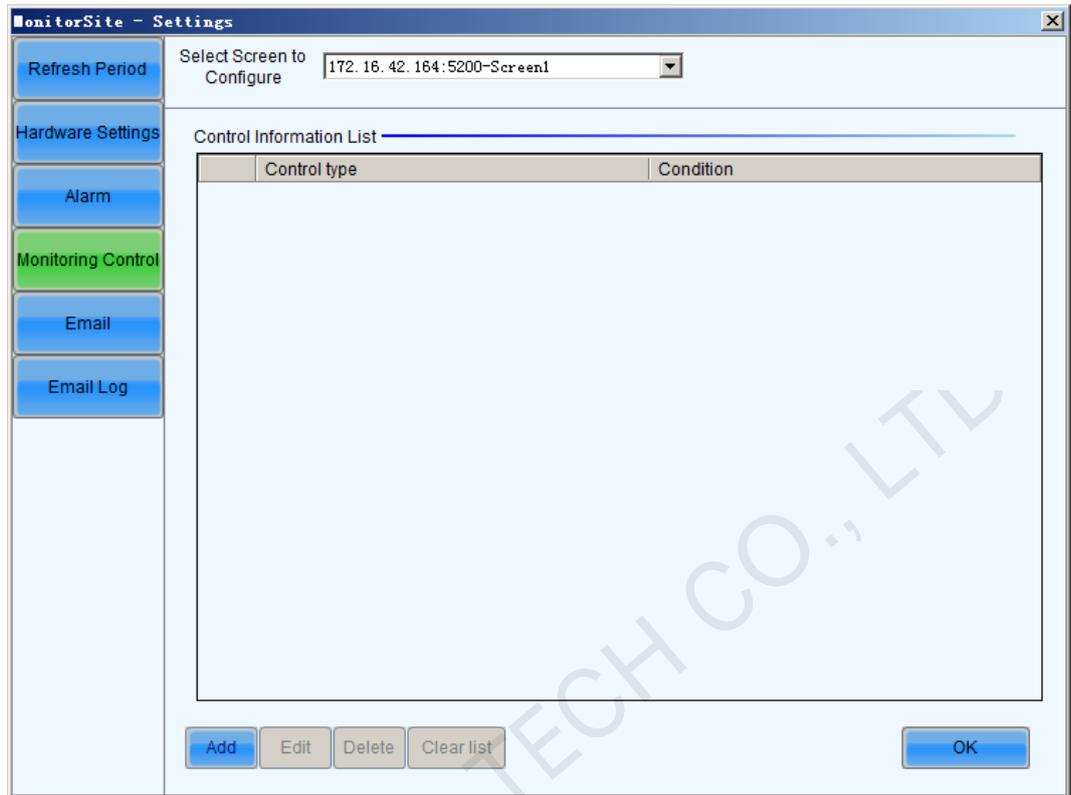
Figure 5-70 Data alarm configuration
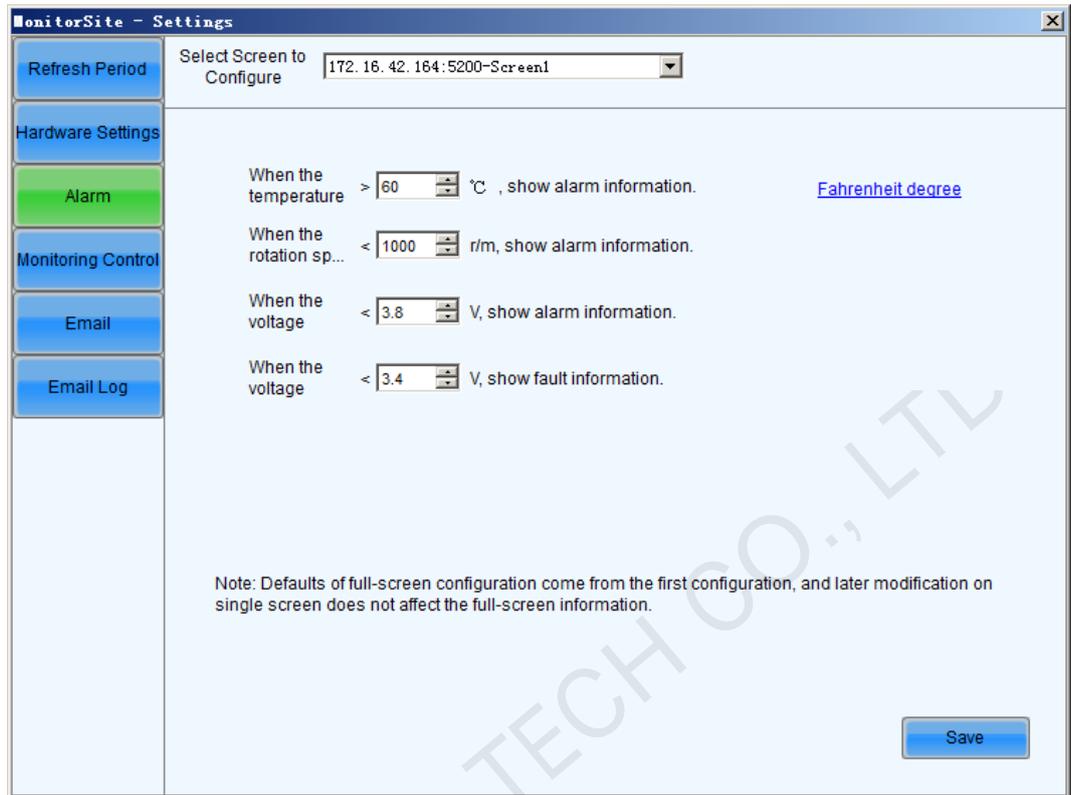
5.9.5 Control Configuration

Select one screen or all screen to perform monitoring configuration separately.
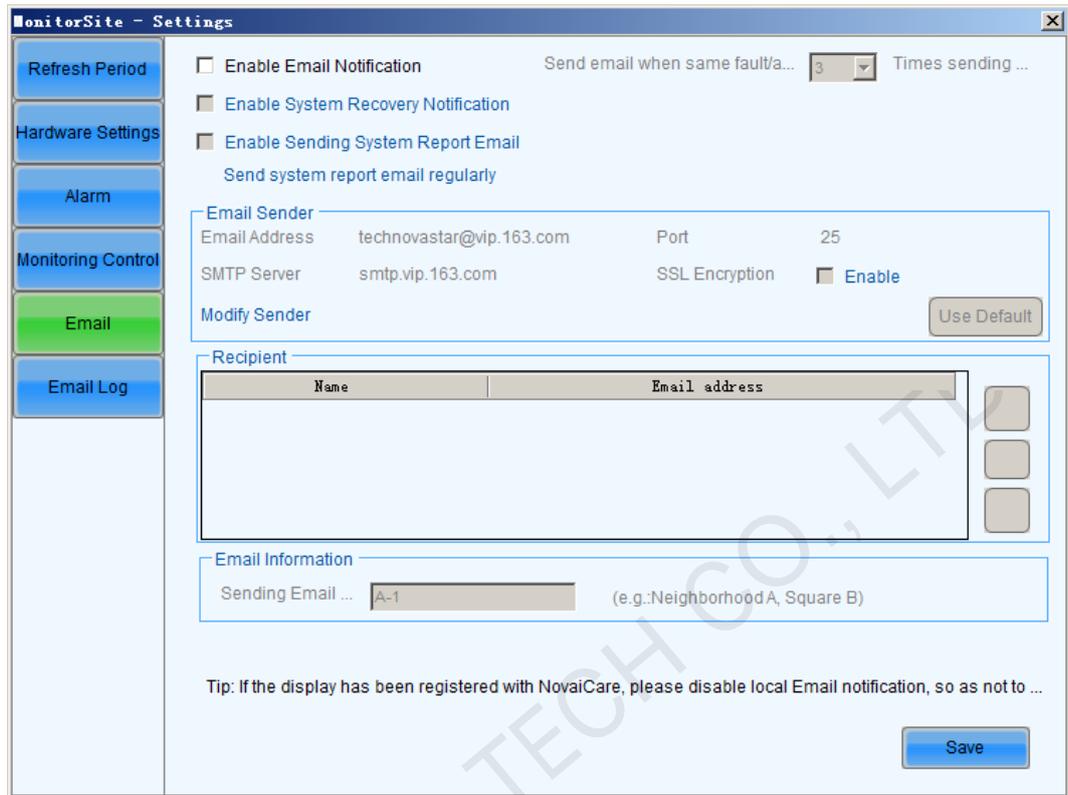
Figure 5-71 Control configuration

Click ![Add] to add control information.

5.9.6 Email Setting

Operation procedures

Select the **Enable Email Notification** option to show the related configuration items as shown in the following figure.

Figure 5-72 Email setting

− ![icon] : Add the receiver.

− ![icon] : Edit the receiver.

− ![icon] : 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.

5.9.7 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 5-73 The History window for notification emails checking
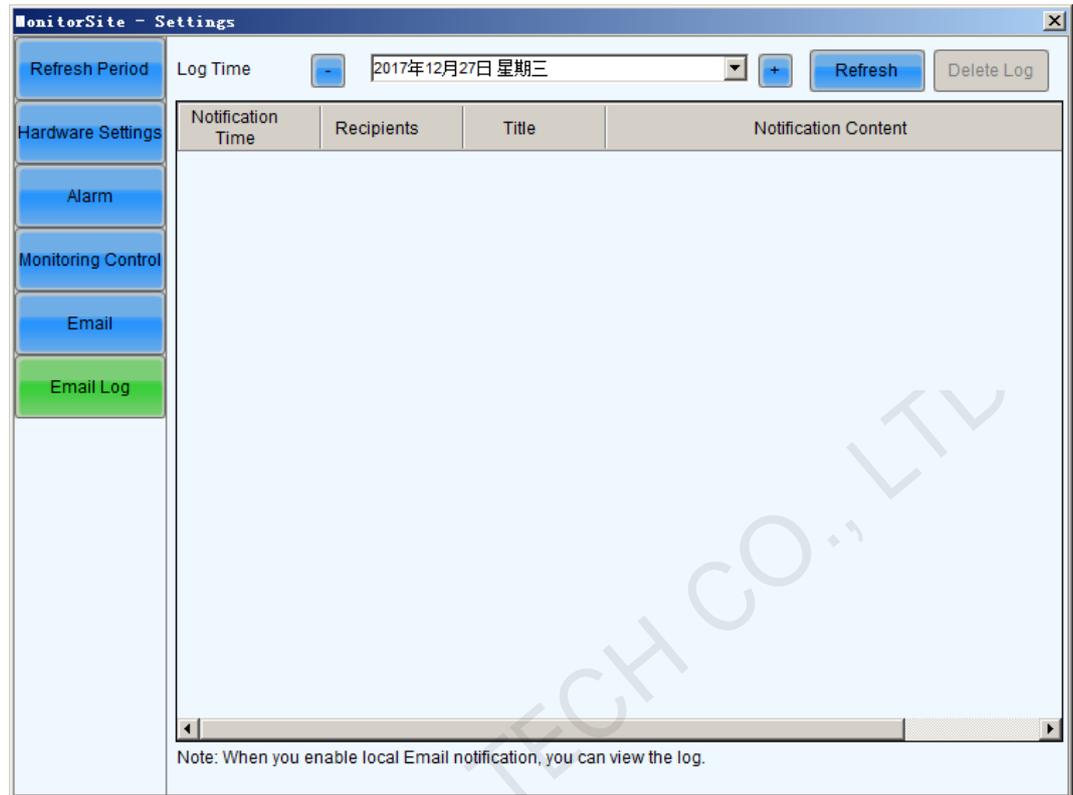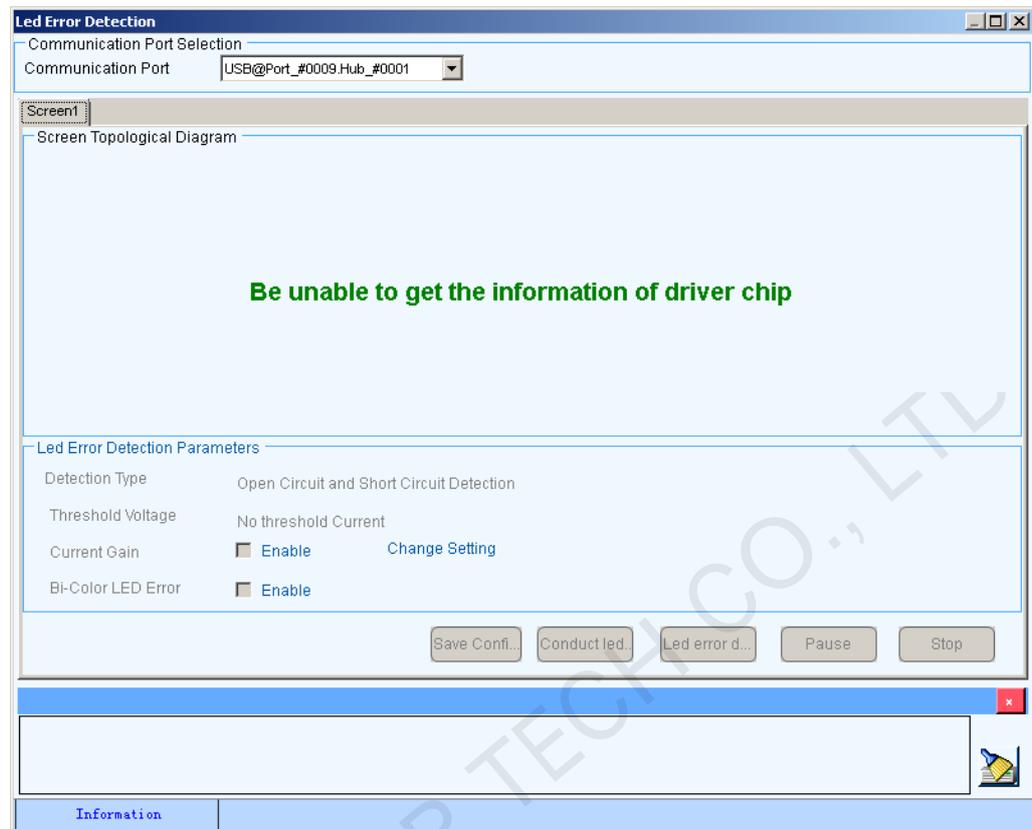

5.10 Led Error Detection

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.

> Note:
>
> • 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 the following figure.

Figure 5-74 The Led Error Detection window

- 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.

	Note:
☜	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.

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 5-75 The Led Error Detection Result of Modules
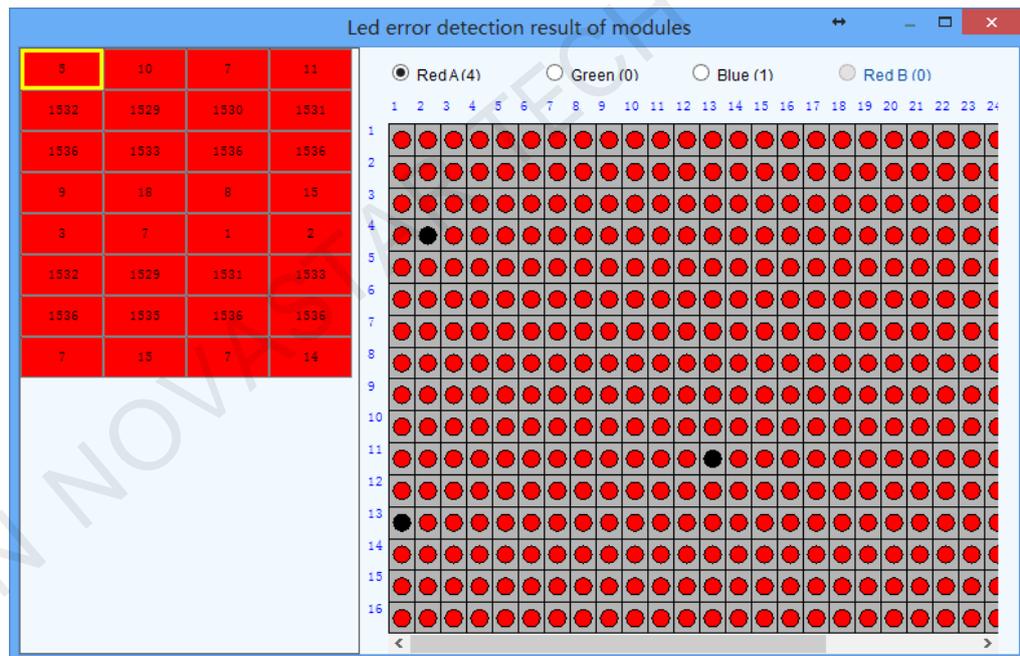
Shown on the left of Figure 5-75 is the module array of the cabinet and on the right the pixel array of the selected module in the module array.

- 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.

6 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 6-1 Setting of receiving card relay
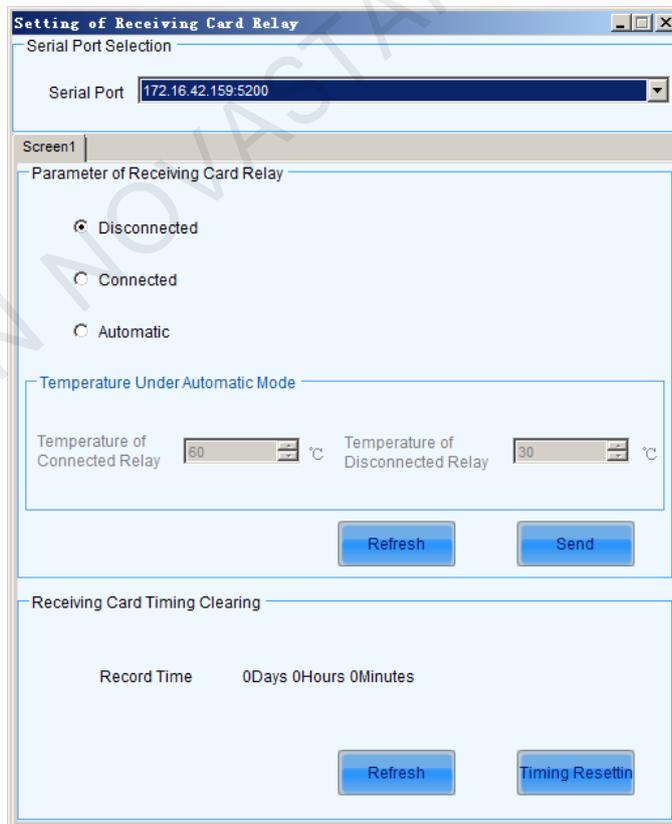
7 Configuration Information Management

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

Figure 7-1 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.

8 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.
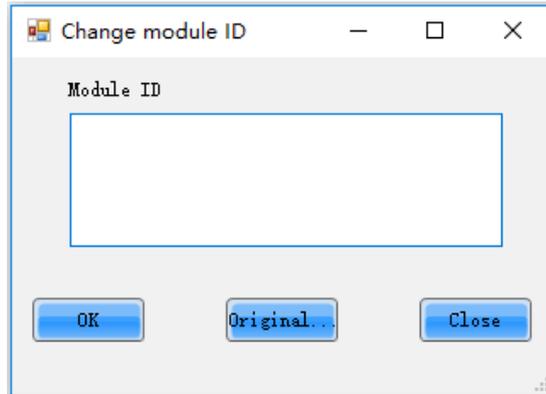
Step 3   Enter the module ID.
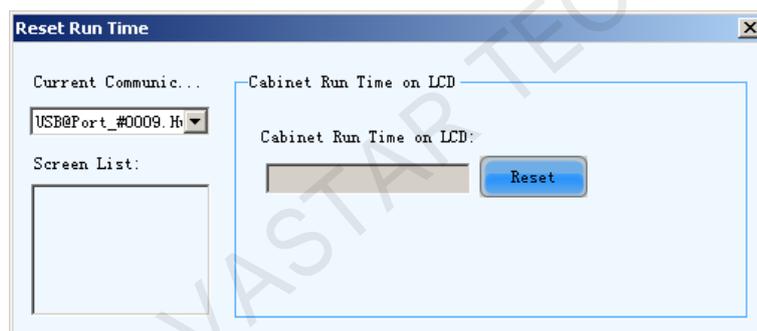
Step 4   Click **OK** to modify the selected module ID.

9 **More Functions**

9.1 Resetting Run Time

This function is used to reset the run time displayed on the LCD of each cabinet.
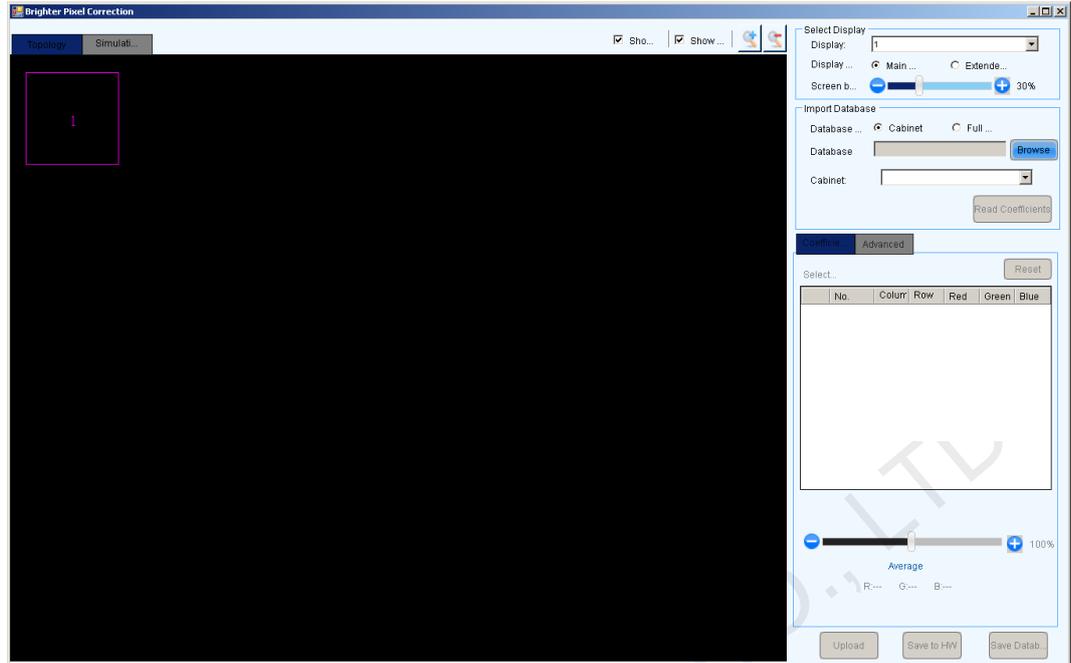
Step 1 On the home page of NovaLCT, choose **Tools** > **More** > **Reset Run Time**. The **Reset Run Time** page appears.

Step 2 Select the target communication port and click **Reset**.

9.2 Brighter Pixel Correction

This function is used to solve the problem that the brightness of the calibrated screen is not uniform.

Step 1 On the home page of NovaLCT, choose **Tools** > **More** > **Brighter Pixel Correction**. The **Brighter Pixel Correction** page appears.

Step 2 In the **Select Display** area, select the target display and set the position and brightness of the display.

Step 3 In the **Import Database** area, click **Browse** to load cabinet database files or screen database files.

Step 4 In the editing area on the left, move on to the **Simulation Diagram** tab. Click or select the target pixels for coefficient adjustment.

Step 5 Click **Save Database**, and then click **Upload** and **Save to HW**.

9.3 Bit Error Detection

This is used to detect data packet loss during communication between receiving cards.

Step 1 On the homepage of NovaLCT, choose **Tools** > **More** > **Bit Error Detection**. The **Bit Error Detection** page appears and the bit error information of the current communication port is refreshed automatically.

Step 2 (Optional) Select **Auto Refresh** and set refresh cycle or click **Manually**.
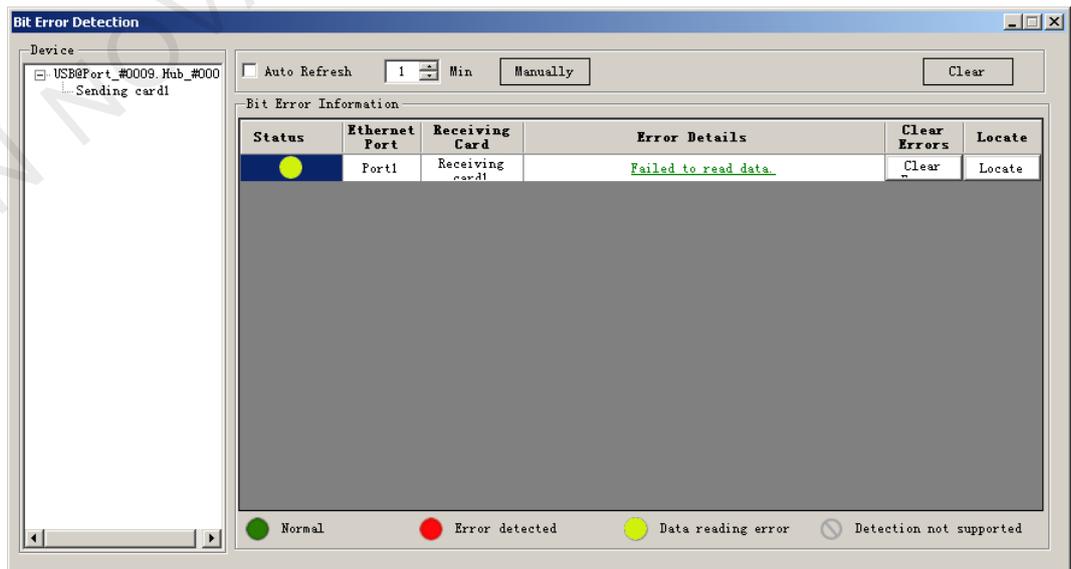
10 **Troubleshooting**

10.1 NovaLCT shows "No Hardware" on corresponding pages

Check whether the hardware system is powered on.

Check whether the cable connection is good.

10.2 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.

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

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

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

Check whether the row and column numbers set in Figure 10-1 are consistent with the actual row and column numbers of the cabinet.

Figure 10-1 The page of Smart Setting Step 1
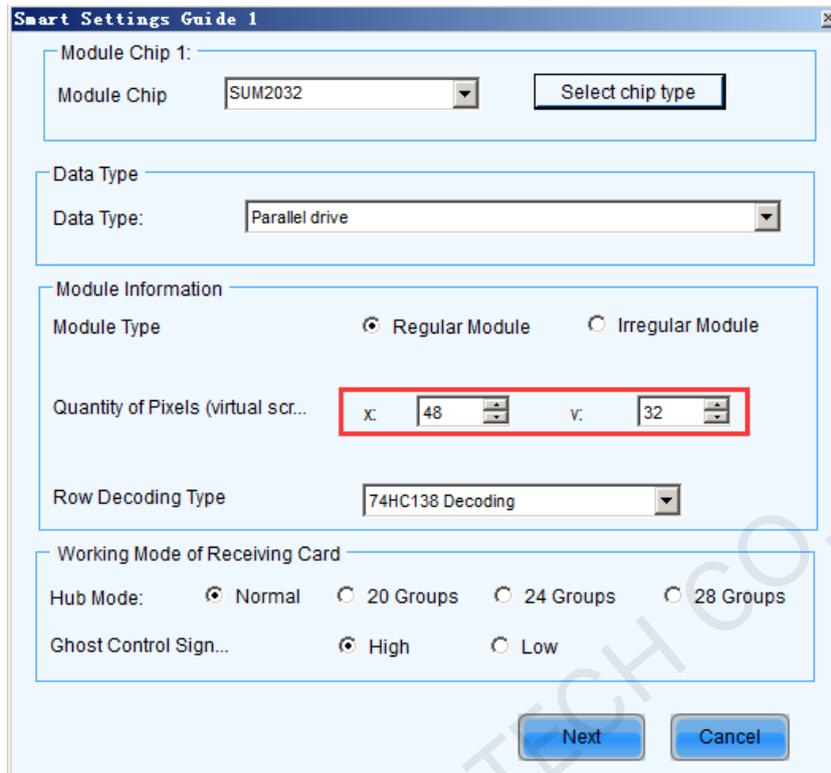
10.5 Permission Error

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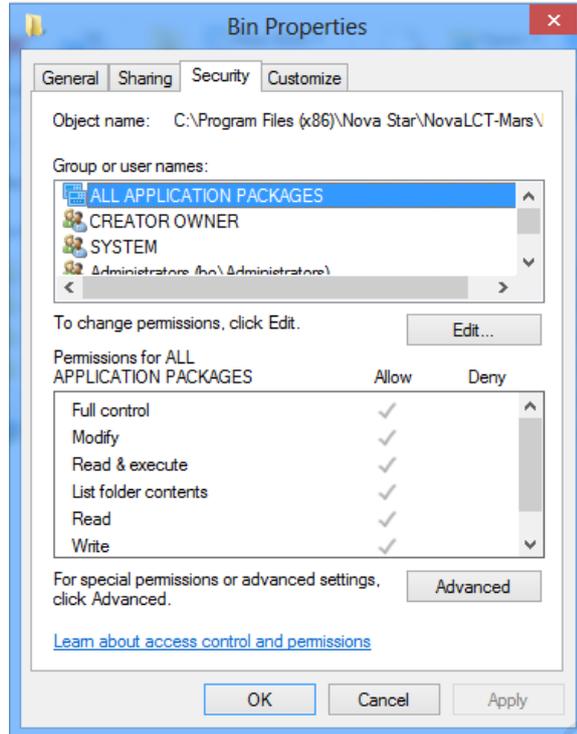
Step 4   In the group or username, check whether there is current user or Everyone. If not, skip to step 5. If there is, click to check whether the "allow" corresponding Permissions below has been checked; if not, check it, and then click "OK" to finish Permissions setting.

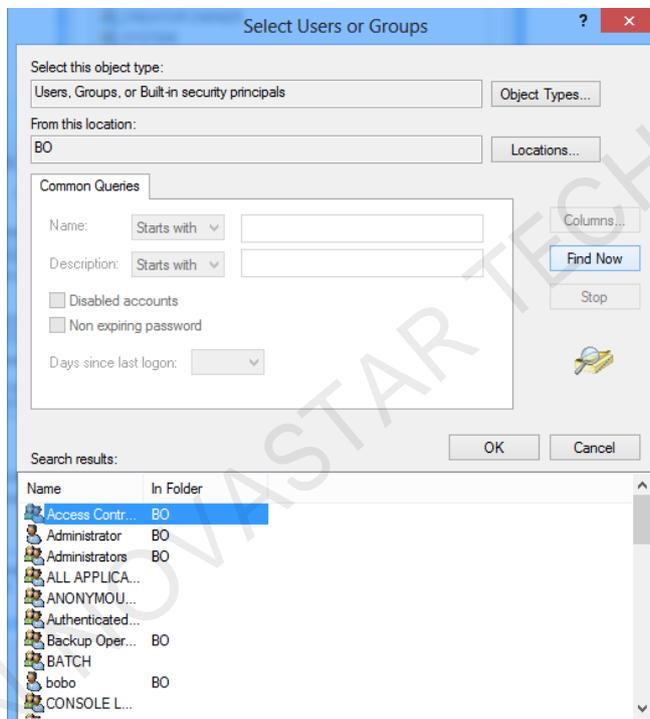Step 5   Add Everyone user for the directory.
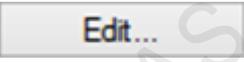
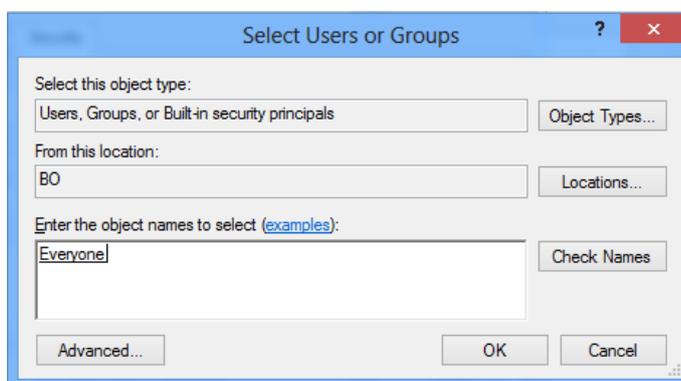Step 6   Click [Edit....] to enter the following interface.
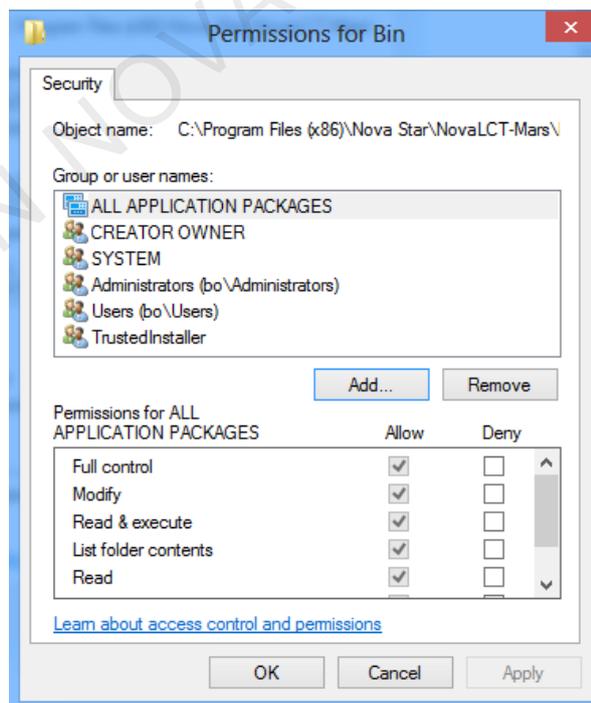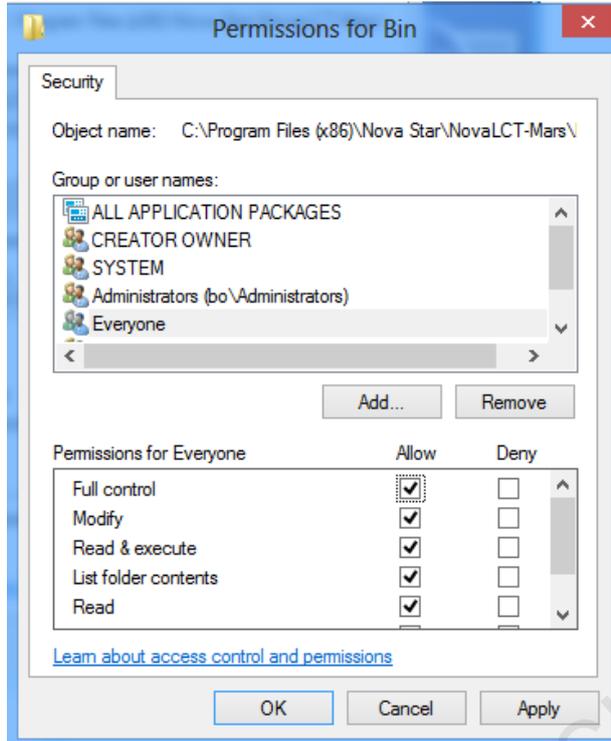
Step 7   Click **Add**.
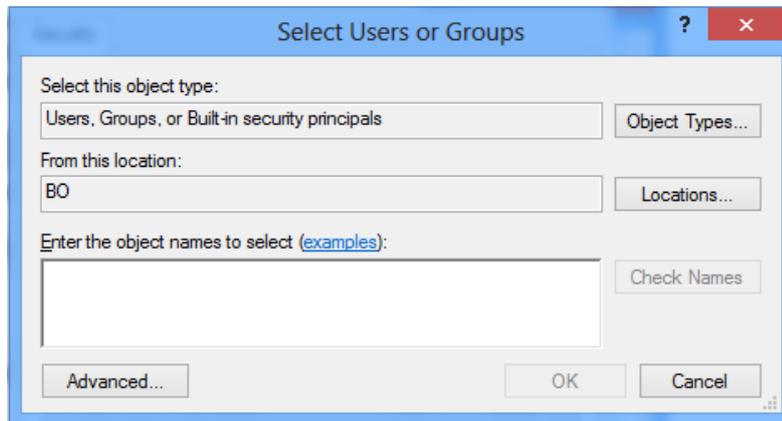
Step 8   Click **Advanced**, find Everyone in the search result. Select it and click **OK**.

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.

10.6 Failure 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.