User's Manual

Pluto Control System

Rev5.0.0 NS120100130

Statement

Dear users,

Welcome to use NovaPluto software. This manual is intended to help you to understand and use the product. For accuracy and reliability, this manual may be revised or modified any time without notification. Any problems in using this manual or any good suggestions, please contact us through ways provided in the manual. We will try our best to solve the problems and evaluate and adopt the suggestions as soon as possible. Thank you very much!

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1 System Overview

NovaPluto is a set of LED display centralized playback control program that can remotely release play programs, monitor playback and screen body state, and remote control. This program has flexible network structure, so that it can be easily deployed in the local area network and wide area network, supports the server-free, single-server, and multi-server architectures, and suits different scale projects under different situations. The NovaCloud software is required when a server is available. For details, see related materials about NovaCloud.

NovaPluto program mainly includes three parts which are the display configuration software NovaLCT-Pluto, centralized playback control software (PlutoManager), and asynchronous controller PBOX100.

PluotManager is a play and management software for Pluto asynchronous control system, it can connect to the asynchronous control card via LAN or internet. The main functions include client management, Play-Program editing, Play-Program transmission, play status remote monitoring etc.

NovaLCT-Pluto software, referred to as LCT hereinafter, mainly controls the LED display's smart setting, performance parameter setting, brightness adjustment and calibration, to achieve the best performance of it.

1.1 Configuration list

Description	Model/Version	Function
A Controller	PBOX100	Core control card
Configuration software NovaLCT-Pluto		Parameters configuration, display calibration, and hardware monitoring
PlutoManager		Program publishing and play status monitoring
Accessories		Accessories

1.2 System structure

Fig. 1-1 Architecture of server-free system

2 Operation Requirements

In order to ensure the stability and security of the system operation, following requirements are recommended:
The computer of MC-go mainly runs management software, to achieve play program production, remote release, remote monitoring and other functions.

Requirements for computer hardware configuration:

- CPU： Dual-core, over 2.4GHz;
- Hard disk drive：SCSI interface， with over 500GB capacity;
- Video card：Independent video card, 3D hardware acceleration, over 1G video memory.

MC-go Computer software:

- Operation system environment：windows XP SP3 and Windows7 32 bit;
- Installation component：Microsoft .NET Framework;
- MC-go software NovaPluto.

3 Hardware Introduction and Connection

1) PBOX100 control card interface

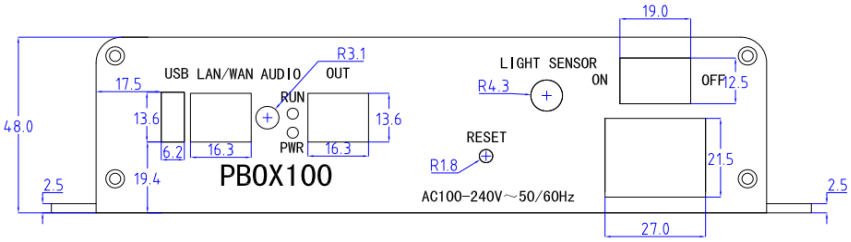


Fig. 3-1 PBOX100 interface digram

【LIGHT SENSOR】: Light sensor interface for LED display brightness adjustment according to environment;

【USB】: Connect to common USB disks available in the market;

【SD】: Insert SD card;

【Audio】: Audio input interface;

【LAN/WAN】: Megabyte Ethernet port, Connect to internet;

【OUT】: Gigabyte Ethernet port, Cascading to M3 receiving card (scan board) (MRV/200/MRV210/MAR220/MRV300/MRV320/MRV330/MRV340/MRV350/MRV360/MRV365), or multi-function card（MFN300）;

2) PBOX100 control card dimensions

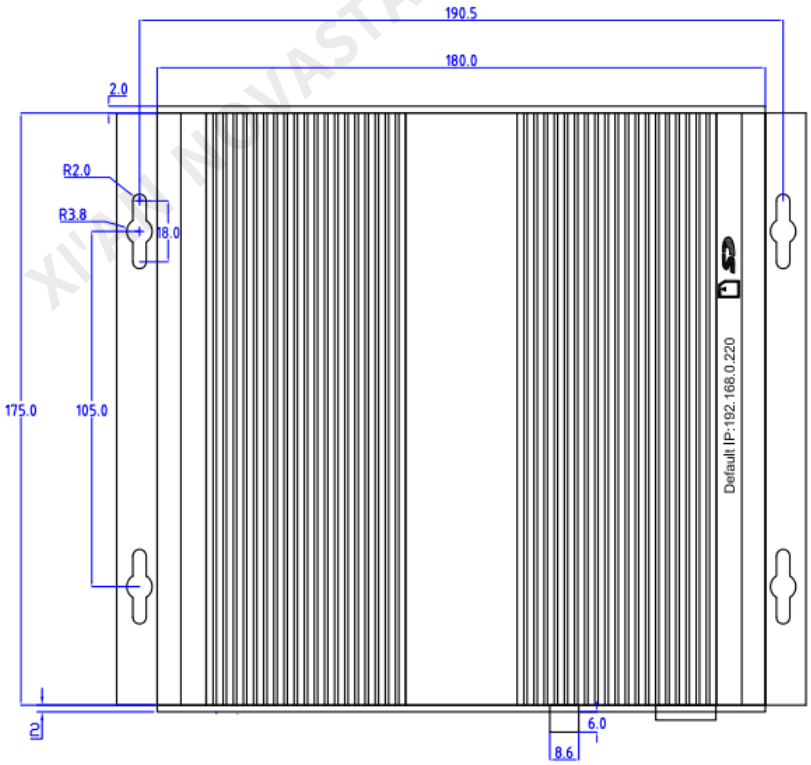


Fig. 3-2 PBOX100 dimensions

4 Software Installation

Installation of NovaLCT-Pluto、PlutoManager is the same to other common software applications. Operate according to the installation wizard.

***Attention**:*

If notification of anti-virus software or firewall pops up, please allow it, because the installation process may require to install serial port driver.

5 Network Deployment

This section introduces several common network set-up solutions, so that users can deployment their network according to their specific requirement and the local network environment. In order to ensure regular running of the system, the operator is recommended to obtain some network knowledge before use.

5.1 Hardware connection

The Pluto system default IP is "**192.168.0.220**", before the network connection, set the network parameters of each a synchronism card on the software NovaLCT-Pluto, it is recommended to adopt the direct network cable connection to connect local computer and clients.

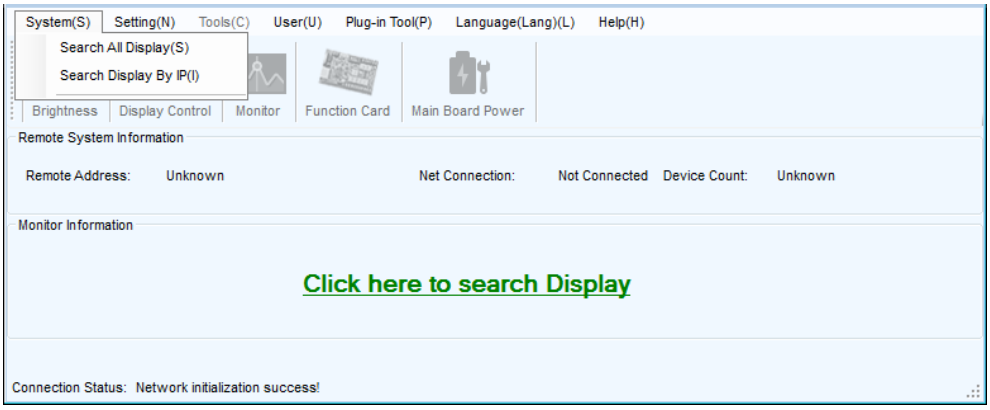
Fig. 5-1 Hardware Connection of NovaLCT-Pluto Configuration

***Attention**:*
The local computer shall be directly connected to the 100Mpbs network port.

5.2 System IP setting

Run Nova LCT-Pluto on the local computer；

1) Click on **System(S)→ Search All Display(S)**, LCT will search the Current Connected Pluto systems.



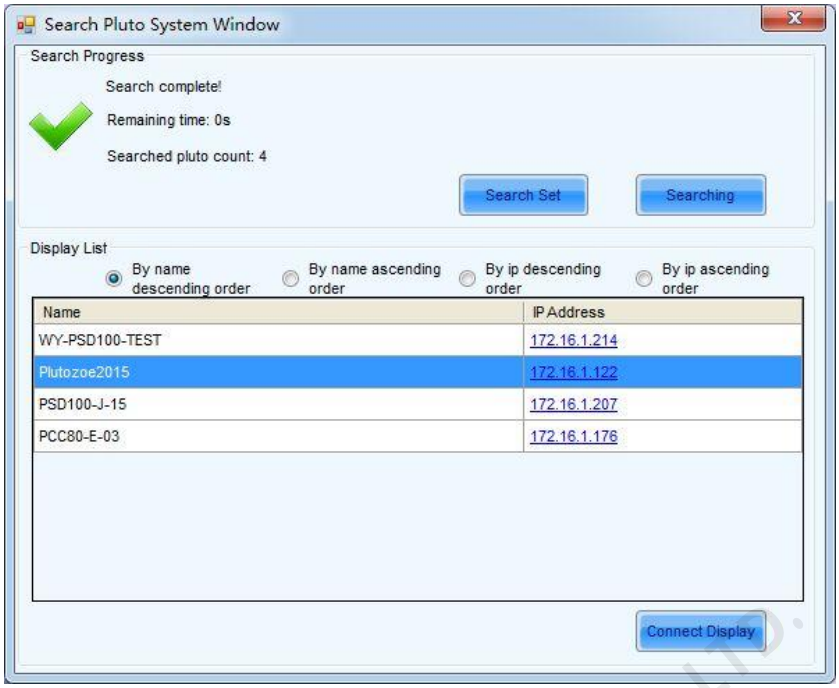
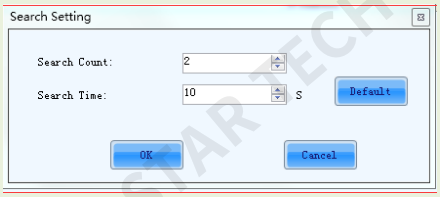


Fig. 5-2 Search Pluto system window

Note: *Click "Search Setting" to set search criteria, as shown in the following figure:*



2) Click "**Client**"to check whether it is in the same network segment, and double click to modify the IP address; (**Skip this step for the first direct-connection.**)

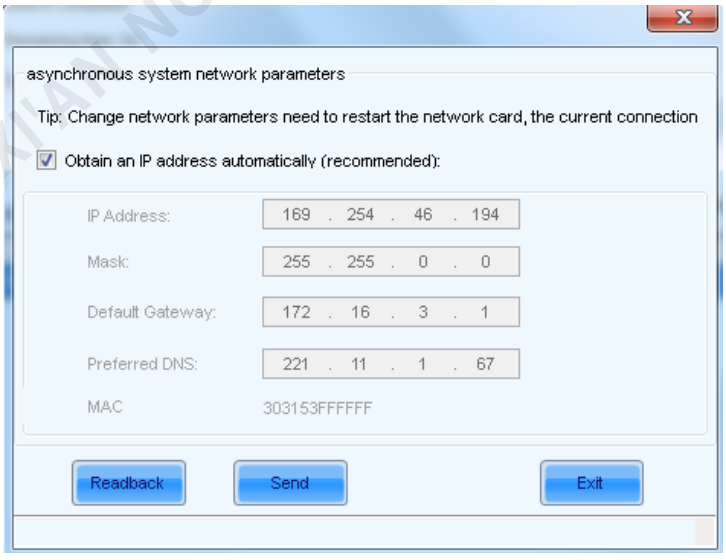


Fig. 5-3 IP address modification

3) Click "**Client**" and then 【**Connection System**】;

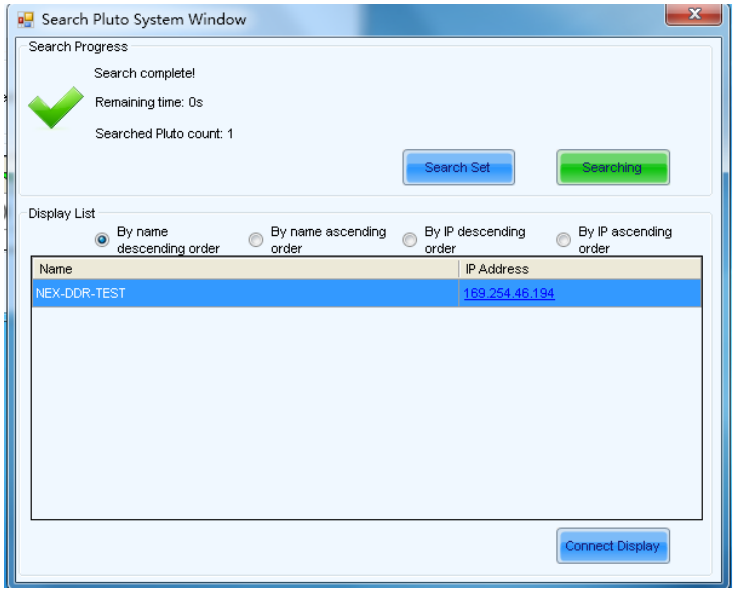
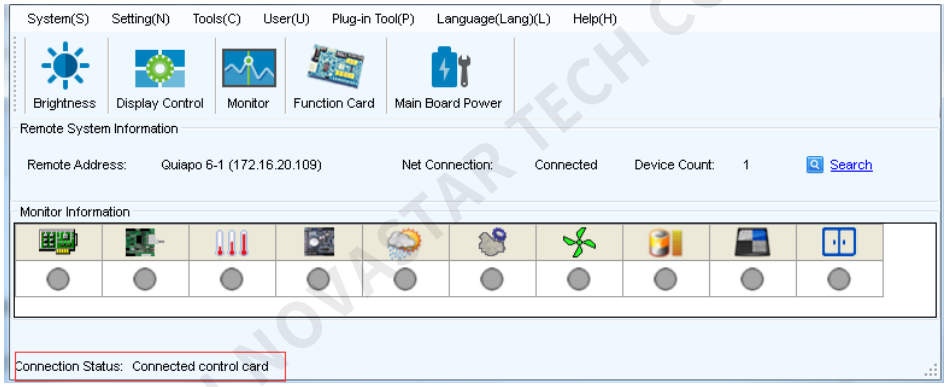
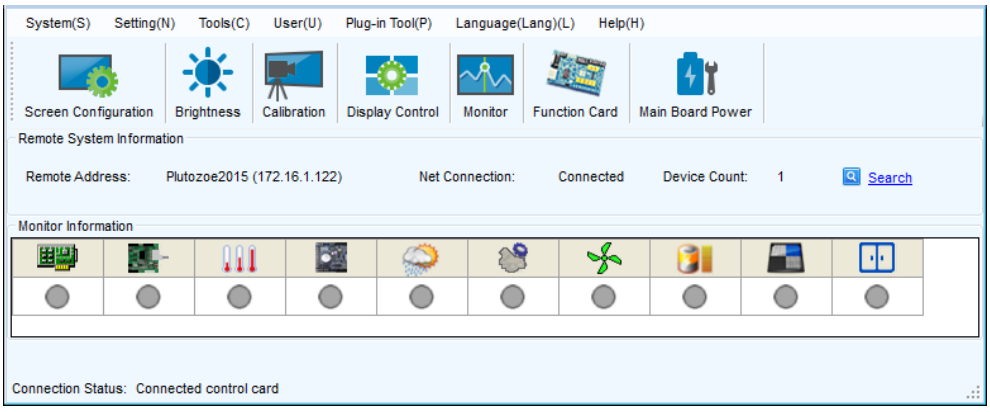


Fig. 5-4 System connection

✧ Connection status is displayed on the operation interface after the connection is successful. **Buttons on the LCT interface cannot be enabled until screen parameters rereading has been completed.**



4) Click **User (U)→Advanced login (A)**， to pop up the user login interface, and then enter the password "admin"，click【**Login**】，to enter advanced user interface;



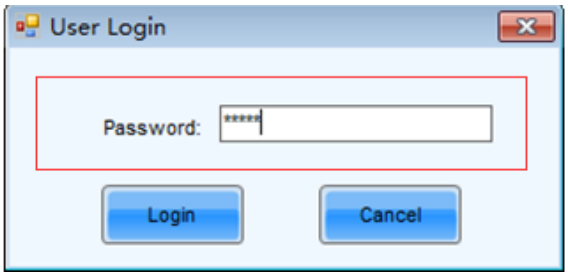


Fig. 5-5 Advanced login

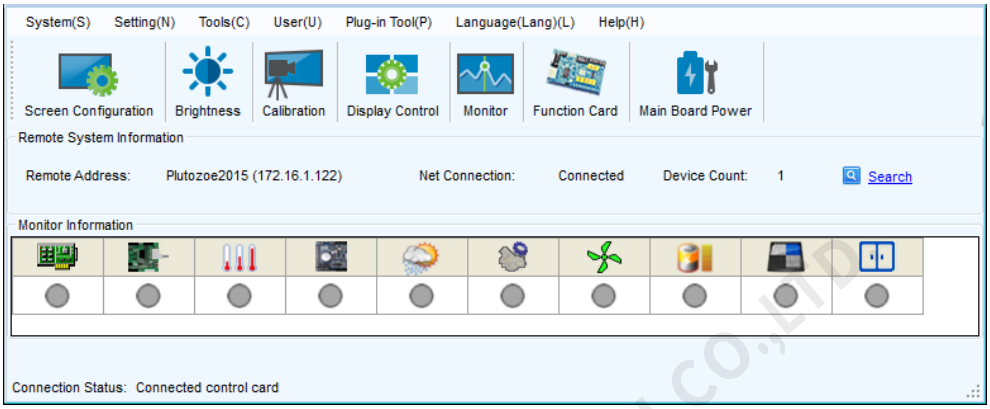


Fig. 5-6 Advanced interface

5) Click **Setting (N)→Display Configuration (C)→Net Configuration (E)**，to enter the interface as follows：

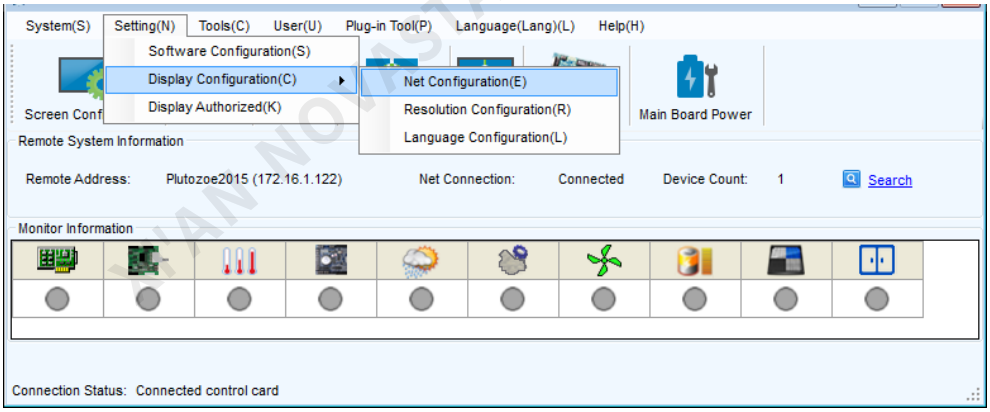


Fig. 5-7 Network parameter settings

6) Tick **【Configure the asynchronous system information】**, so that the user can modify the system name, and an easily recognizable system name will bring convenience to your later operation;

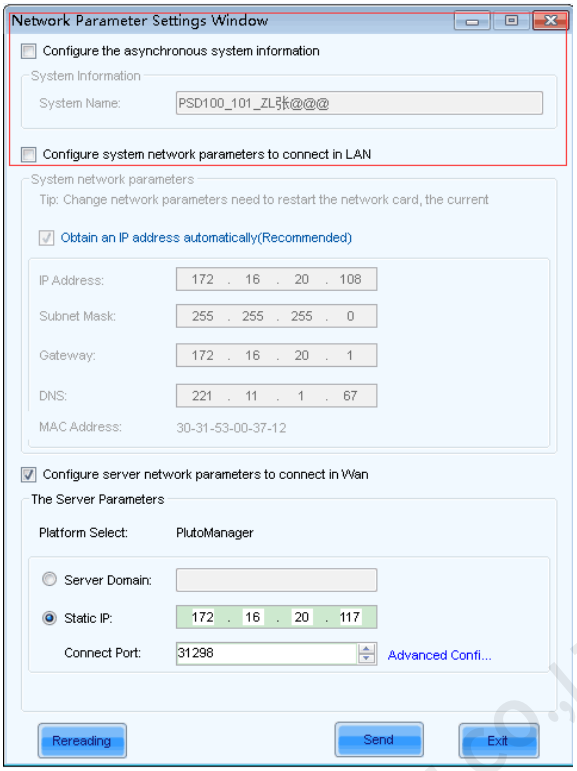


Fig. 5-8 Setting system information

7) Tick the option 【**Configure system network parameters to connect in the LAN**】and 【**Obtain an IP address automatically**】.

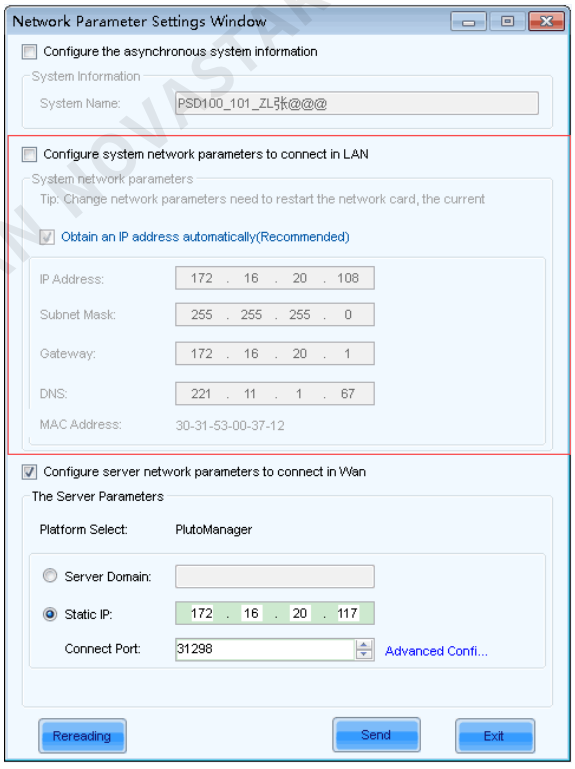


Fig. 5-9 Configure system network parameters to connect to LAN

8) Tick 【**Configure server network parameters to correct to Wan**】, Set **Server Domain**, **Static IP** and **Connect Port**, and click **Send**.

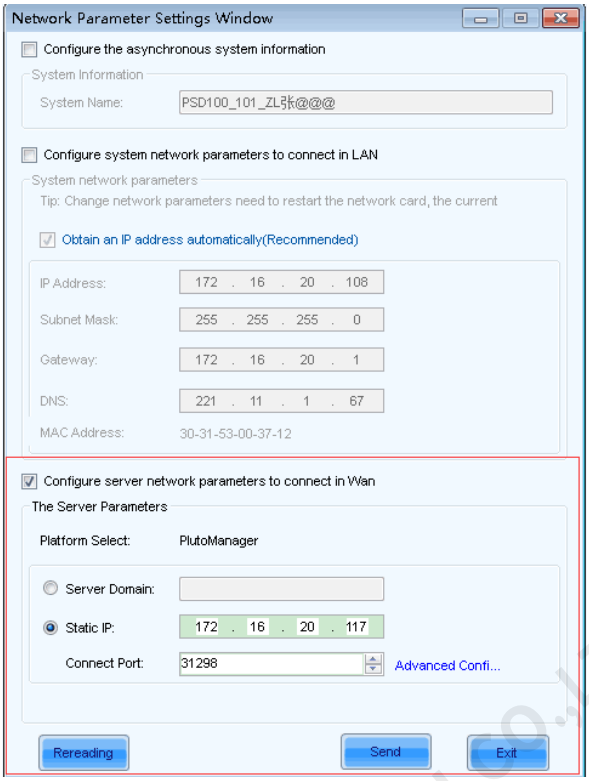


Fig. 5-10 Configure system network parameters to connect to WAN

Respectively set the network parameters of each asynchronous card according to the above mentioned steps.

6 Introduction to NovaLCT-Pluto

NovaLCT - Pluto software integrates functions of LED display configuration, brightness adjustment, comprehensive working status monitoring, LED lights open/short circuit status checking and etc. NovaLCT-Pluto also plays an important role in the pixel level LED display brightness/chromaticity calibration by working with NovaCLB to fulfill the operation. With cabinet database and configuration files in use, it simplifies user's operation.

6.1 Main interface of NovaLCT-Pluto

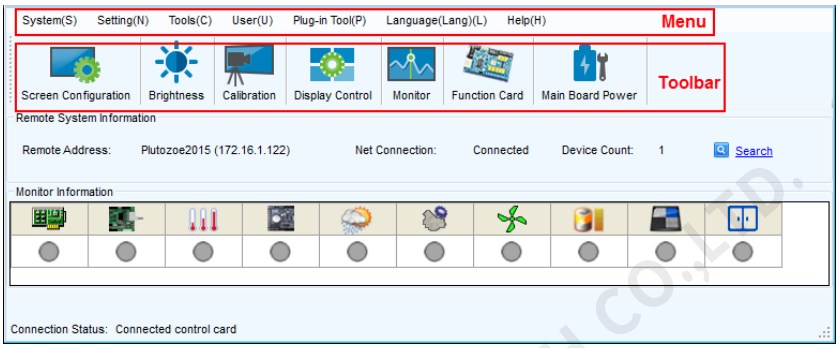


Fig. 6-1 Main interface of NovaLCT-Pluto

Title: Shows software name and version info;
Menu/Toolbar: See the next section for detailed description;
Remote System information: Shows related information of the currently connected clients;
Monitor information: Shows the overall monitoring results. Red point indicates error detected, and green indicates no error. Click on the red point to access the alarm window which contains corresponding error info. shown as below:

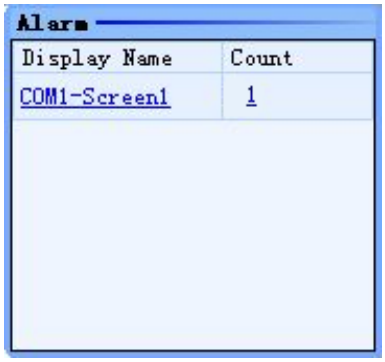
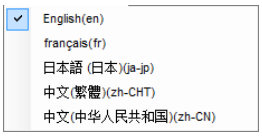


Fig. 6-2 Alarm window containing error info

6.2 Menu/Toolbar

Table. 6-1 Description of Menu/Toolbar

Menu/Toolbar			Function
System	Search All Displays		Search Pluto system through the network
	Search Display by IP		Search specific display by IP address
Settings	Software Configuration		Set connection IP (current computer IP) Set connection port (avoid port conflict with other applications)
	Display Configuration	Net Configuration	View current IP of Pluto system, and configure network parameters of it
		Resolution Configuration	Readback、Configure current Resolution
		Language Configuration	Readback、Configure current language
	Display Authorized		Encrypt the client, and generate the authorized file
Tools	Screen Configuration		Configure the display. (Accessible to advanced users only)
	Brightness		Adjust the brightness of LED display. Three modes available: manually, scheduled and automatically.
	Cabinet Database Management		Manage existing cabinet database or create a new one. (Accessible to advanced users only)
	Calibration		Connect to NovaCLB software for display calibration, including calibration coefficients uploading and adjustment. (Accessible to advanced users only)
	Display Control		Show blank, lock an image, and continue the playing
	Monitor		Enter the monitoring page to access monitor settings and results
	Function Card		Enter the function card page to configure
	Hardware Information		View hardware info of currently connected control system
	Point Detect		Enter point detect page to check LED open/short

			circuit status. (working only after LED display configuration)
	Color Restore		Adjust color gamut
	Main Board Power		Clocked, immediate off/on of terminal power
Plug-in Tool	Test tool		Open Nova display test tools which contains all the contents of LED display test
	Calculator		A shortcut to the calculator application of Windows
User	Advanced User Login		Password: admin
Language			Switch language
Help	User Documents		User manual
	About		View the version of software, company name and other info
	Check for Updates		Check for updates

7 NovaLCT-Pluto Operations

7.1 LED display start

7.1.1 Start with system configuration file

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

Requirement: Configuration file of same type LED display exists.

Operating steps:

1) Click Screen Configuration button to open the window shown as below:

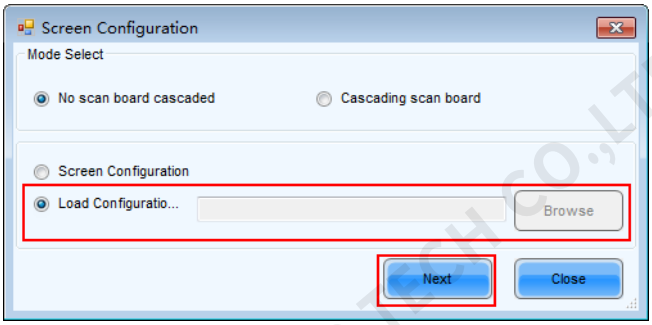
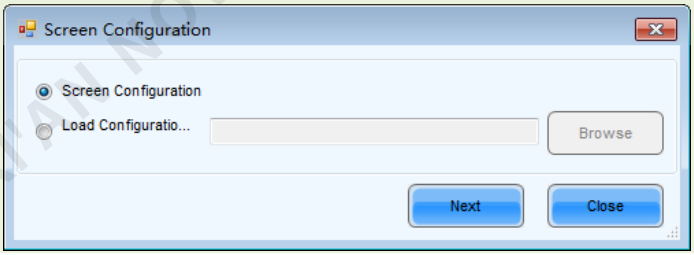


Fig. 7-1 Select screen configuration mode

Attention:

If the connected card is X6 series /X130/PBOX150/PSD80，there will not be Mode Select in the dialog box.



2) Click **Load Configuration File**, Click **Browse** to load the configuration file.
3) Click **Next**, and wait for the load finished.

Attention:

*The loaded performance parameters from the configuration file can be adjusted if they are not suitable. Please refer to **7.1.4 Adjust the performance** for details about how to adjust the performance parameters.*

7.1.2 Manual start

7.1.2.1Input Source Configuration (Only for X6 series/X130/PBOX150)

Click "**Screen Configuration**" in the main interface and select **Screen Configuration** to enter the "**Send Card**" interface.

Choose between **Manual Operation** and **Timing Operation** to control the input source control, as shown below.

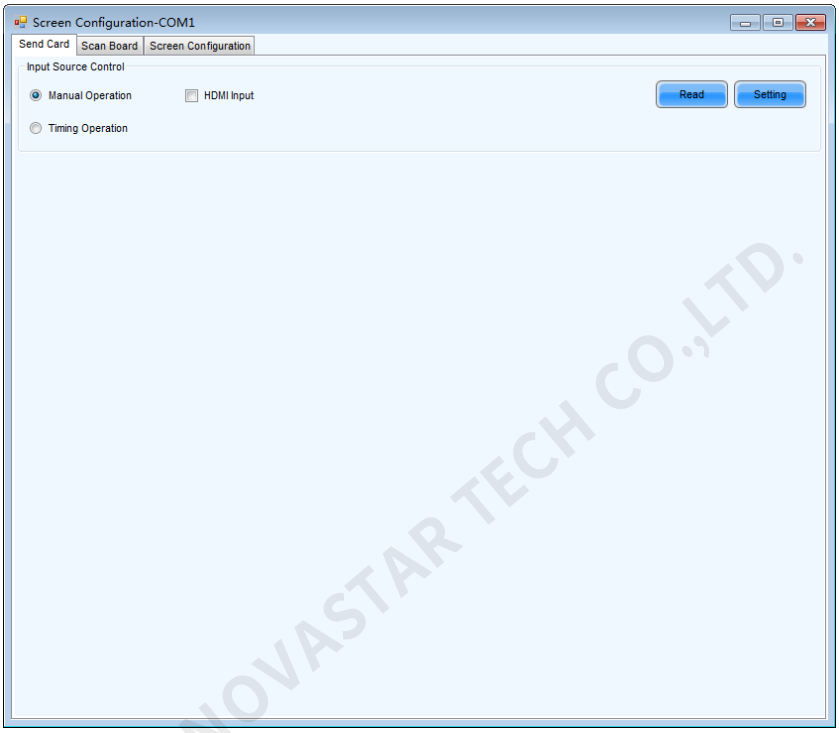


Fig. 7-2 Input source control

Manual Operation:

If the **External Input Source** is not checked, the asynchronous mode will be applied.

If the **External Input Source** is checked, the asynchronous mode will be applied as shown. The resolution of input source can be set.

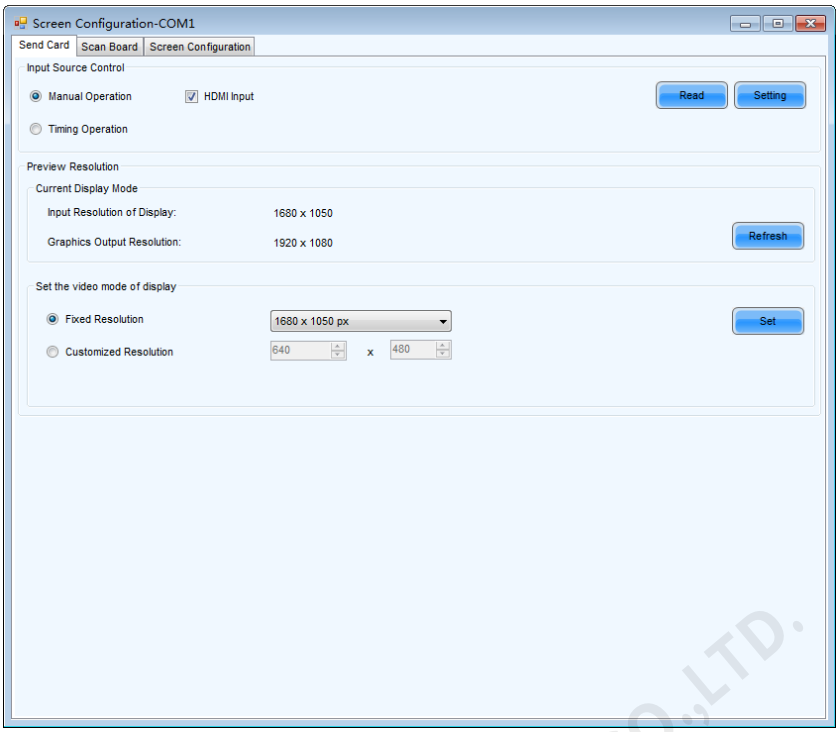


Fig. 7-3 Set the resolution

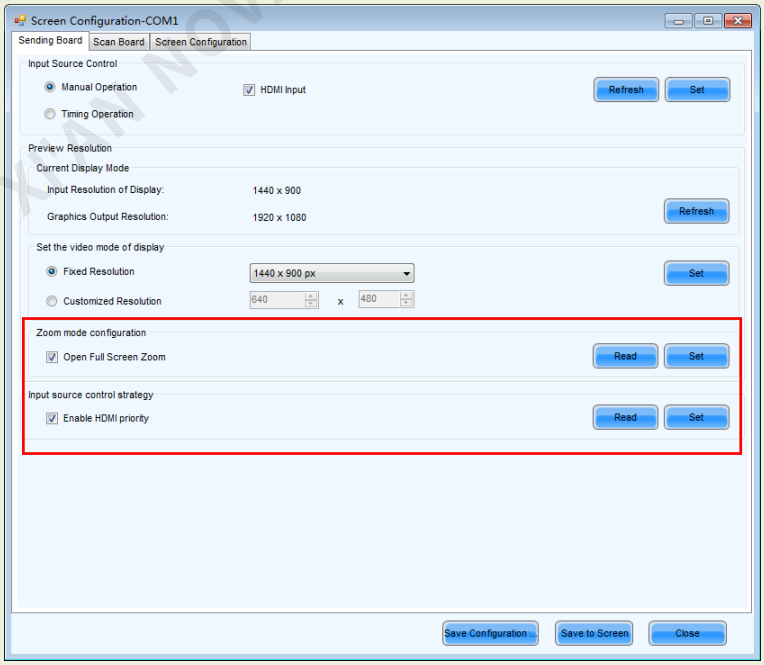
The video source is an HDMI input source. Get the pictures from PC and Synchronous display.

Set the video mode of display:

Fixed Resolution: Users can choose one of the fixed values.

Customized Resolution: Users can set the value by themselves.

Attention: *the interface is as follows when connecting PBOX150:*



Now it supports the functions of full screen zooming and HDMI precedence:

Full screen zooming: after opening the function, the input source will be displayed in full screen zooming based on the resolution of LED display; currently;

HDMI precedence: after opening the function, it will switch to synchronous mode when HDMI reinsertion and asynchronous card restart, i.e. precedence HDMI input source.

Timing operation:

Set the timing rule for automatically switching of input source based on time, as shown below.

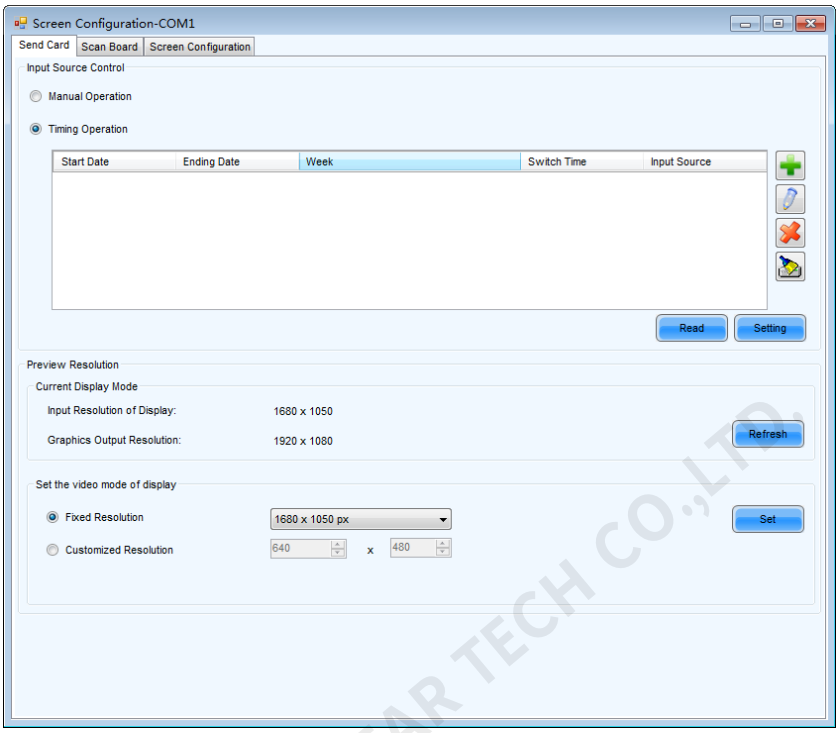


Fig. 7-4 Timing operation

Click  to add the concrete schemes of input source switching.

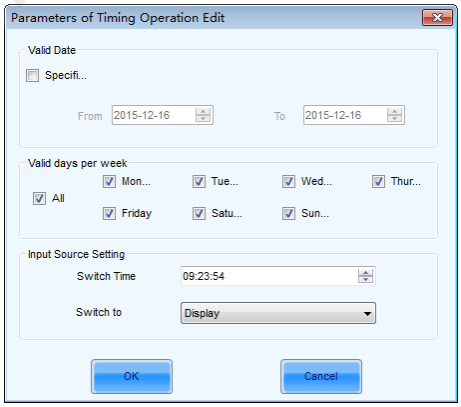


Fig. 7-5 Parameters of timing operation editing

Click **OK** after finishing the settings.

Attention: *Timing operation is adjusted based on time, so the time of X65/X130 must be correct.*

7.1.2.2Smart setting

Operating steps:

1) Select“**Screen Configuration**”option in the Fig.7-1, and click ”**Next**”, enter Scan Board window, as shown.

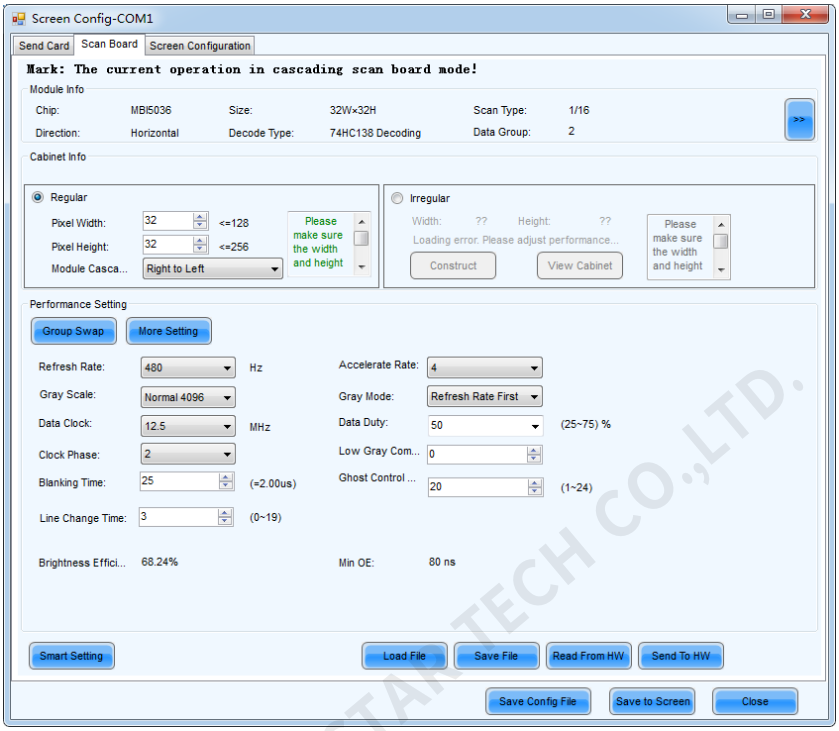


Fig. 7-6 Screen configuration page for manual configuration of LED display

2) Click“**Smart Setting**”button in“**Scan Board**”page and to open the Smart Setting dialog as shown below,

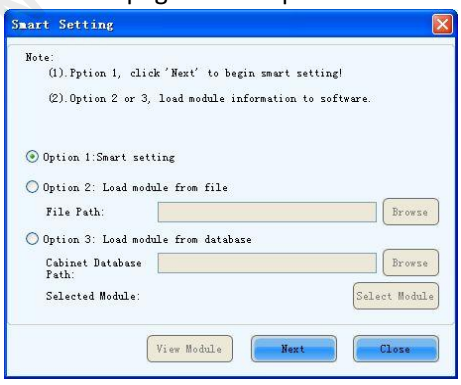


Fig. 7-7 Smart setting dialog

3) Select“**Option 1: Smart setting**”and click ”**Next**”to activate smart setting wizard. The Smart Setting Step 1 page will appear, as shown in Fig. 7-8,

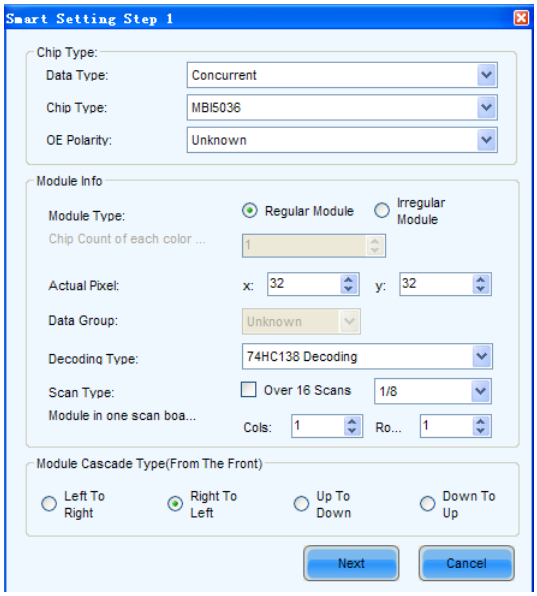


Fig. 7-8 Smart setting step 1

Data Type

the options have parallel drive, three-color 1-dot series, three-color 8-dot series, three-color 16-dot series, four-color 1-dot series, four-color 8-dot series, and four-color 16-dot series.

Chip Type

Select the drive chip type from the list according to what is actually used for the cabinets, e.g. MBI5036, MBI5042 etc.

OE Polarity

This option can be High Effective, Low Effective or Unknown.

Module Tpe

The option can be regular module or irregular module. (Irregular module is not supported by this version)

Actual Pixel

This is the size of the real pixel array of a module. X represents the width and Y the height.

Decoding Type

The options can be Static, 74HC138 Code or Straight Decoding, choose according the type LED display module actually used.

Scan Type

The options could be any scan rate between 1 scan and 1/16 scan or unknown.

Rows and columns of the Module in one scan board (also named receiving card)

This is the size of the module array in the cabinet which is being configured by smart setting.

Module Cascade Type

Select the corresponding option according to the module connection routing. Note that the cabinet should be observed from the front when considering the cascading direction.

Attention:

A. 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).

B. 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).

4) Click“**Next**”in“Smart Setting Step 1”page to enter ”**Smart Setting Step 2**”page as shown. Select according to the module status,

Fig. 7-9 Smart setting step 2

Attention:

This step will be skipped if module OE polarity is known and set in Smart Setting Step 1.

5) Click“**Next**”in“**Smart Setting Step 2**”page to enter ”S**mart Setting Step 3**” page as shown,

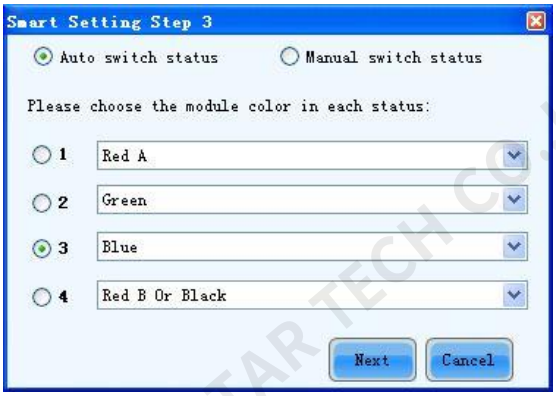


Fig. 7-10 Smart setting step3

6) Click ”Next”in“**Smart Setting Step 3**”page after selection to enter ”**Smart Setting Step 4**”page as shown, and enter the number of LED rows that are lightened in a module.

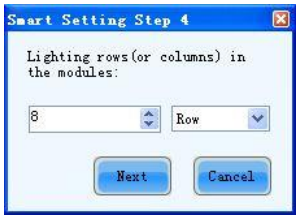


Fig. 7-11 Smart setting step 4

7) Click“**Next**”in ”**Smart Setting Step 4**” page to enter **“Smart Setting Step 5**”page as shown, Enter the number of LED columns that are lightened in a module.

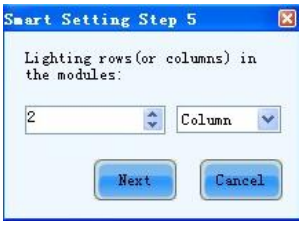


Fig. 7-12 Smart setting step 5

8) Click“**Next**”in ”**Smart Setting Step 5**" to enter **“Smart Setting Step 9**”page as shown, Click the corresponding grids according to the position of the lightened LEDs until no LED is lightened any more. A line of the lightened LEDs routing will be drawn at the same time. A message indicating the finish of the Smart Setting

Step 9 will be shown when enough LEDs have been processed.

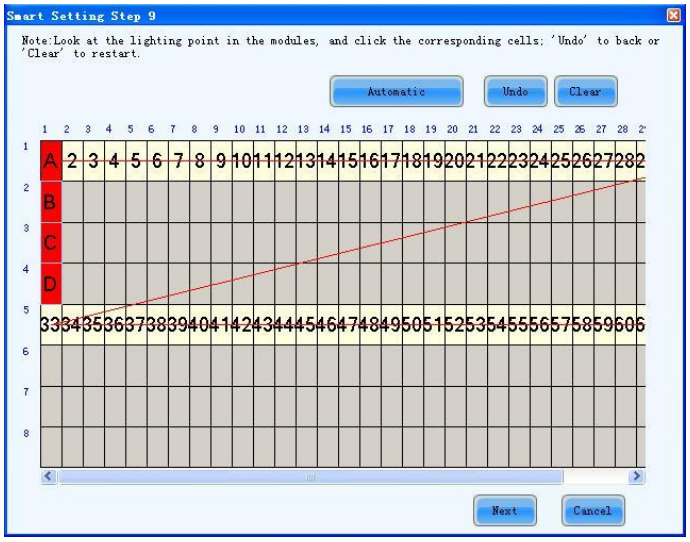


Fig. 7-13 Smart setting step 9

Attention:

Press left button and drag the mouse to accomplish quick routing drawing.

Use "Automatic" button to accomplish drawing routing lines of the same pattern.

9) Click"Next"In"**Smart Setting Step 9**"page to open **"Save Module**" dialog which is for saving the settings set for the module through all the smart setting steps. The "**Save Module dialog**" is shown below. Saving the module settings to files (module configuration files or cabinet database 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 (Choose Option 2 or 3 in "**Smart Setting dialog**" in Step 2), select corresponding files and modules and smart setting is done.) Click "Finish" to finish smart setting after saving the settings. Click"**Finish**"directly if you don't want to save the settings.

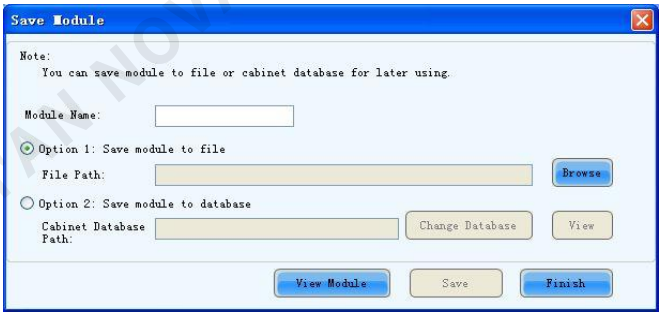


Fig. 7-14 Save module dialog

Attention:

The saved module settings can be used in Fig. 7-4 by choosing option 2 or 3 to simplify smart setting process.

7.1.2.3 LED Display Configuration

According to the quantity of scan board, there're two different modes for LED display configuration: **No scan board cascaded mode** or **cascading scan board mode**.

1) No scan board cascaded mode (one PSD100 Asynchronous card only)

Switch to "**Screen Config**" page in Fig. 7-1, interface of No scan board cascaded mode as shown below:

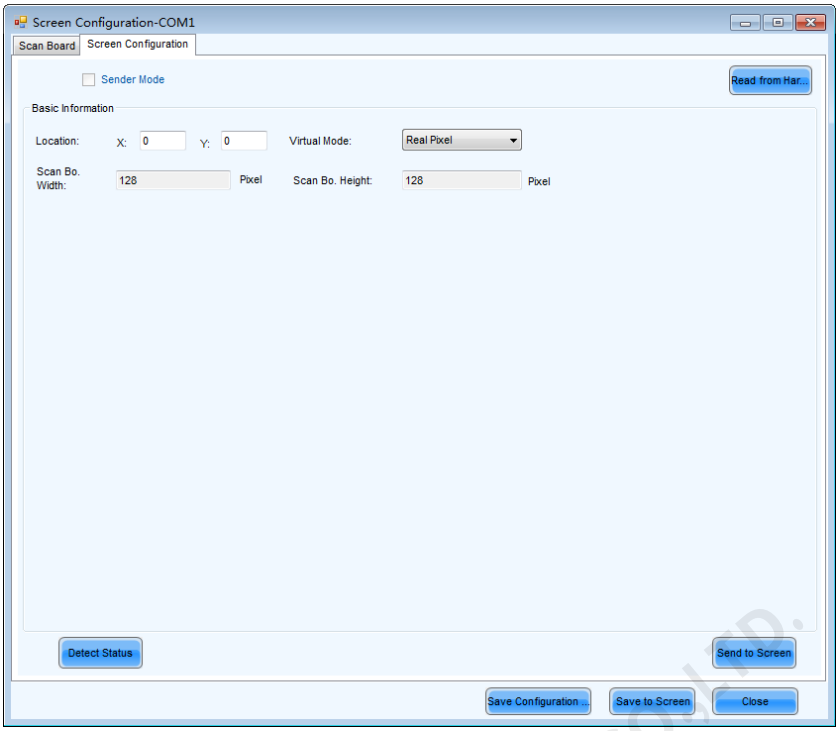


Fig. 7-15 Screen configuration in no scan board cascaded mode

Read form hardware

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

2) Cascading scan board mode (**PSD100 Asynchronous card cascading MRV300/MRV320 scan board**)

The mode of cascade receiving card is divided into **sending card mode** and **multi-display configuration**. The former is asynchronous card without box carrier, equal to sending card. Multi-display configuration is usually used for dual panels. Both panels play the same picture. Multi-display mode does not support correction.

There are three LED display types, which are simple screen, standard screen and complex screen. These options will be shown at the top of each screen page in the Screen Configuration page. Choose a screen type before any configuration operation. Configurations for different type of screen will be given respectively as follows.

a) Simple screen configuration

Simple screen means each scan board drives same pixel array, edit items below according to LED display status.

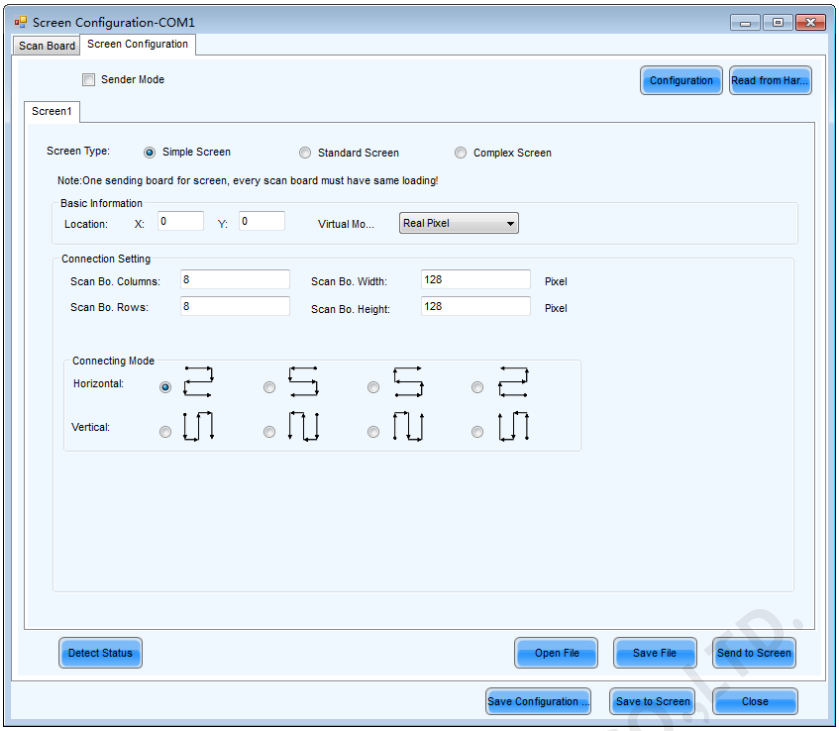


Fig. 7-16 Simple screen configuration page

Sender Mode

If asynchronous card carries no box carrier, please tick this item;

Location

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 LEDs or virtual 4 LEDs.

Scan Board Columns/Rows

These are the quantity of columns and rows of the scan boards (receiving cards) array of the LED display.

Scan Board Width/Height

These two parameters in the Scan Board Info panel refer to the width and height of the pixel array driven by a scan board (receiving card). They must be set the same as those set in the Scan Board page.

Open File

This is used for the application to load the LED display configuration settings from a file.

Save File

This is used to save the LED display configuration settings to a .scr file.

Send to Screen

This is used to send the LED display configuration settings to the connected PSD100 Asynchronous card.

Save to Screen

This is used to save the settings to a FLASH chip. The saved data won't be lost even the hardware is powered off.

b) Standard screen configuration

Configure scan boards connection routing manually, and each scan board could drive different pixel array.

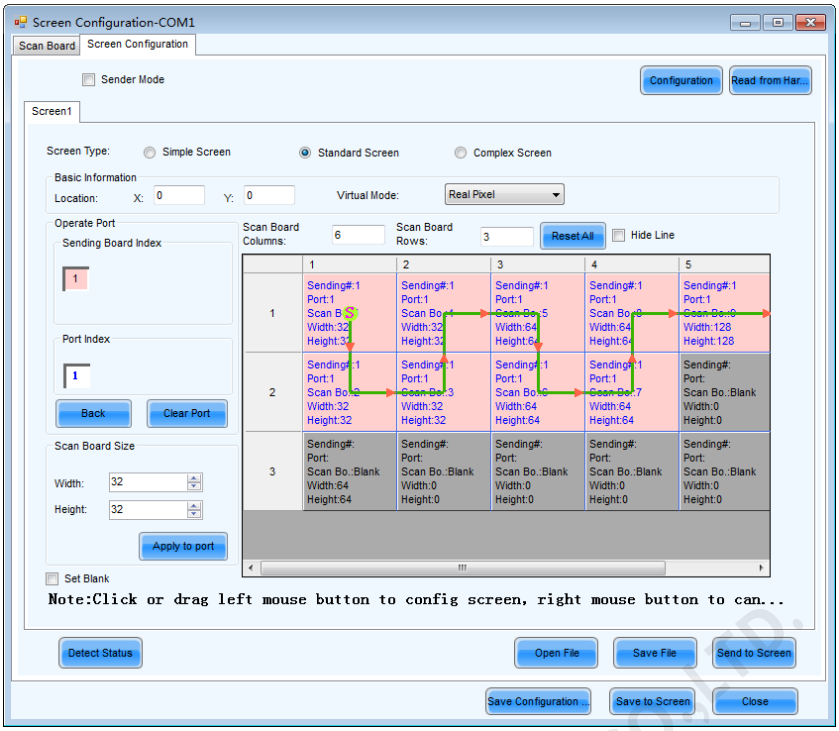


Fig. 7-17 Standard screen configuration page

【Location】	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 type of the LED display. The option could be real pixel or virtual 3 LEDs or virtual 4 LEDs.
【Scan Board】 【Columns/Rows】	These are the quantity of columns and rows of the scan board (receiving card) array of the LED display. A sketch map of the scan board array as Fig.8-13 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.
【Clear Port】	This button is used to clear all settings related to the current Ethernet port.
【Width】	It is the width of the pixel array drove by the sending card.
【Height】	It is the height of the pixel array drove by the sending card.
【Apply to Port】	Click this button to set the pixel array sizes of all scan boards connected to the current Ethernet port the same as that of the current scan board.
【Set Blank】	Select this if the current position (pixel array of the current scan board) needs to be left unset.
【Set Relay】	The current scan board 'size is "0".

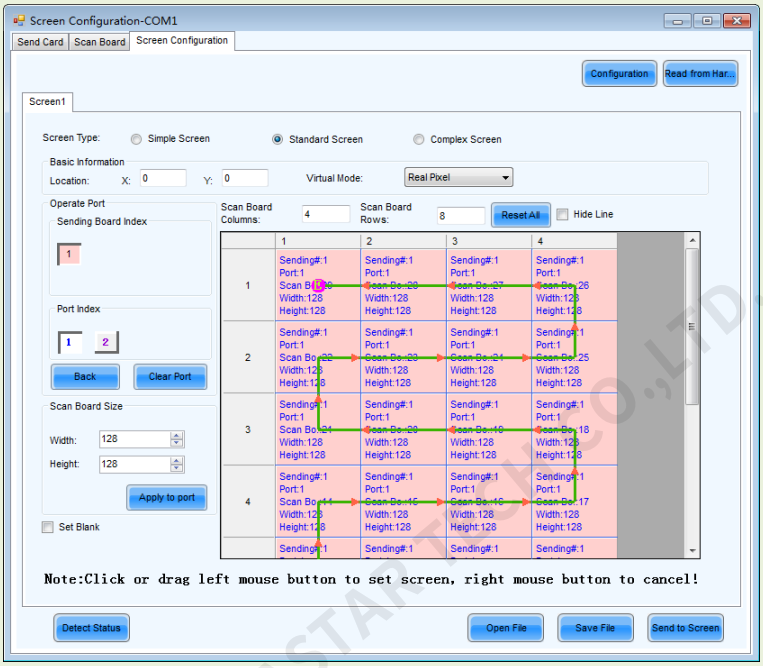
Standard screen configuration method:

The configuration operation is easy. First, set the index as 1 for the receiving card (scan board) directly connected to the asynchronous card through an Ethernet port and input values for other parameters. And then set the index

as 2 for the receiving card which is connected to the first (index 1) receiving card and also input values for other parameter for the No.2 receiving card. Do the same configuration operation until all receiving cards are set. The configuration is completed by then. The pixel array sizes of the receiving cards can be different from each other, and can also be left unset. After configuration, click corresponding button to send the configuration information to the receiving card or save it in the computer.

Attention:

X130 supports two output ports, so there are two ports when it is used, as shown below.



c) Complex screen configuration

Need to configure each scan board's starting Coordinates and pixel array respectively.

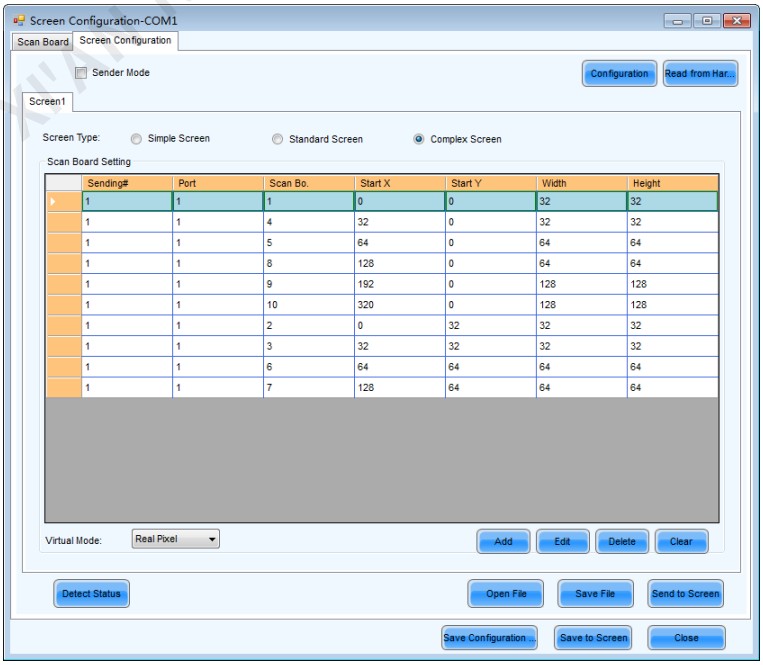


Fig. 7-18 Complex screen configuration page

Add

Click Add to access the page for scan boards information setting, such as Ethernet output ports, mapping areas, pixel array sizes and so on. The setting will be shown in the list.

Edit

To edit the information that has been set for scan boards.

Delete

To delete the selected scan board from the scan boards list.

Clear

To delete all scan boards from the list.

7.1.3 Set the cabinet information

Switch to Scan Board page,

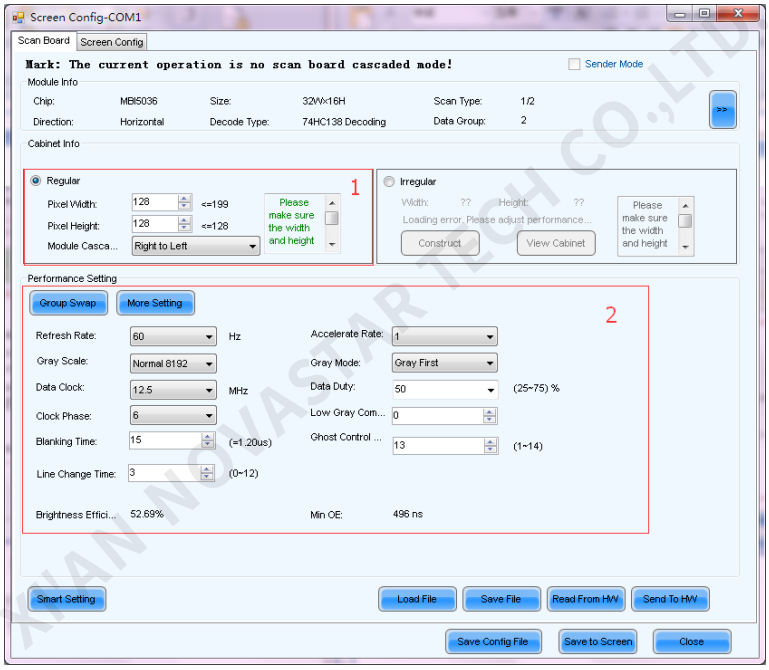


Fig. 7-19 Set the cabinet info

Cabinet information

Pixel array size and module cascade direction can be set in this panel. Note that the Regular panel is for regular shape cabinet parameters setting and the Irregular panel is for irregular shape cabinet parameters setting. (Irregular shape cabinet is not supported by this version) Shown in Fig. 7-20 is the Regular Cabinet Info panel which is circled and marked as area 1 in Fig. 7-19.

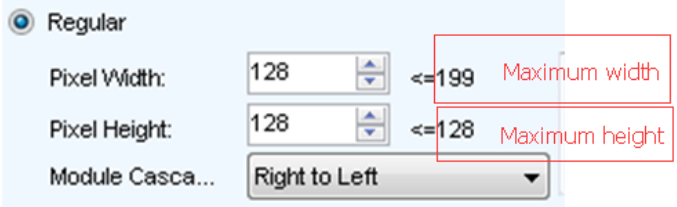


Fig. 7-20 The regular cabinet info panel

Width/Height

These two items specify the width and height of the cabinet pixel array. Note that the two numbers circled are the maximum values that can be set, which is also named as Maximum Width and Maximum Height.

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 higher 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 drive chips and module design, the maximum width is also limited.

Maximum Height

The Maximum Height depends on the module design.

Attention:

A. 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.

B. 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.

7.1.4 Adjust the performance parameters

To achieve the best performance, performance parameters should be set properly. Performance parameters setting can be through the performance setting panel which is circled and marked as area 2 in Fig. 7-19.

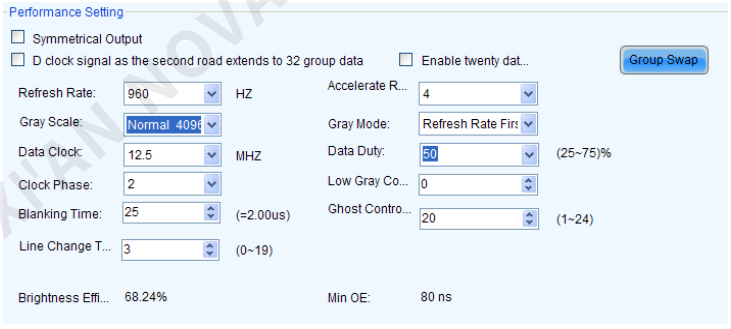


Fig. 7-21 Performance setting panel

Data groups exchange: adjusts the order of data groups;

More settings:

1) Symmetrical/Data Group Extension

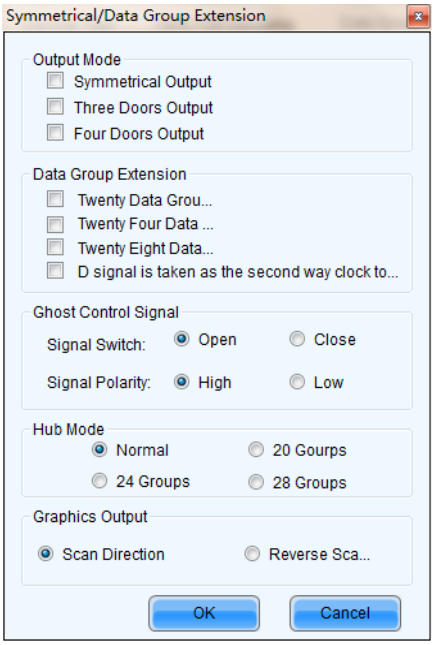


Fig. 7-22 More setting

- **Output Mode**
  - **Symmetrical Output**
    If selected, the two 50pin output ports of a scan board will work for the left and the right half of the cabinet pixel array respectively.
  - **Three doors output**: being optional, and after being selected, the loaded box will be divided into three parts from left to right.
  - **Four doors output:** being optional, and after being selected, the loaded box will be divided into four parts from left to right.
- **Data Group Extension**
  - **Twenty data group mode**
    If selected, the scan board will provide 20 sets of output data for the cabinet. This mode and D clock as the second road extended to 32 sets of data can't be selected at the same time.
  - **Twenty Four data group mode**
    If selected, the scan board will provide 24 sets of output data for the cabinet. This mode and D clock as the second road extended to 32 sets of data can't be selected at the same time.
  - **Twenty Eight data group mode**
    If selected, the scan board will provide 28 sets of output data for the cabinet. This mode and D clock as the second road extended to 32 sets of data can't be selected at the same time.
  - **D clock as the second road extended to 32 sets of data**
    If selected, the scan board will provide 32 sets of output data for the cabinet. This mode and Twenty Data Group Mode can't be selected at the same time.
- **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.

2) **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.

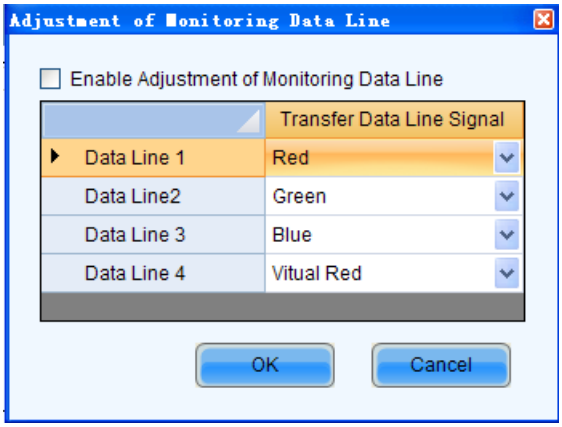


Fig. 7-23 Monitoring card data line adjustment

3) **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.

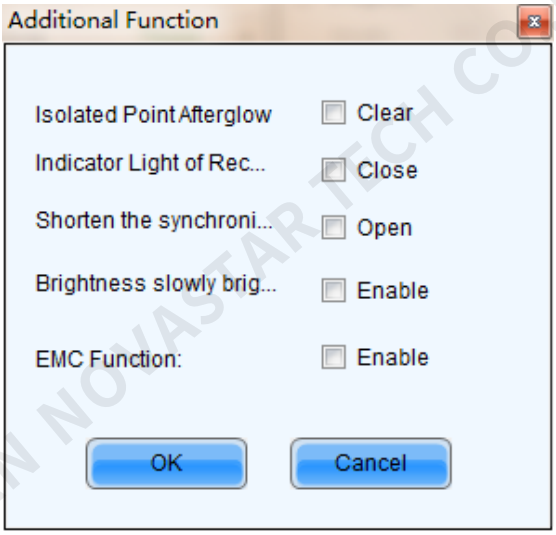


Fig. 7-24 Additional Function

4) Flash Arrangement

Fig.7-25 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.

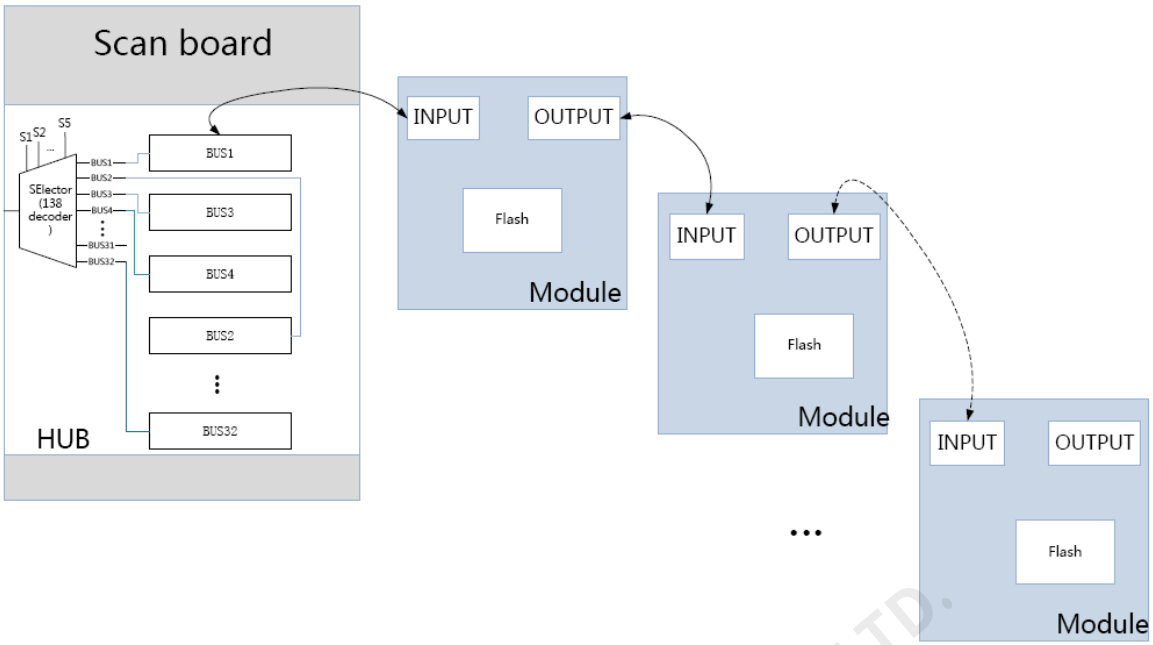


Fig. 7-25 Physical connection schematic diagram of flash

As shown in Fig. 7-26, 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.

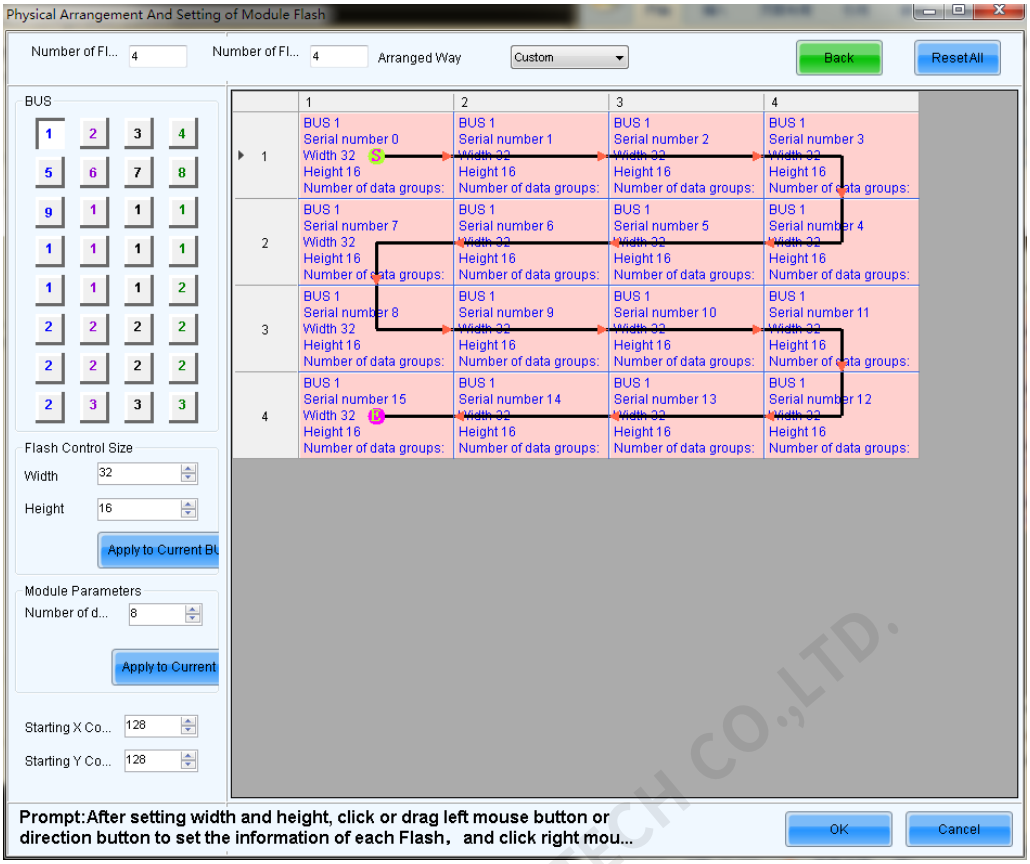


Fig. 7-26 MOM pysical setting

Refresh Rate

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

Gray Scale

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

Gray Mode

There are four options for Gray Mode, Brightness First, Refresh Rate First, Gray Firsthand Performance balance.

- **Brightness First:** Brightness First mode is for normal use and it has lower brightness loss.
  Refresh Rate First: image refresh rate can be greatly increased, but the cost is 8% of brightness loss.
- **Gray First:** Gray First mode will cost 50% brightness to get a better gray when display with low bright.
- **Performance balance**: Balance between gray scale and refreshing, and promote refresh rate of low gray level.
- **Accelerate Rate**
  This parameter is used to increase the refresh rate. If N is selected, the refresh rate will be increased by N times.

Data Clock

This is the shift clock frequency. The shift clock frequency depends on the performance of driver chips and the circuit design of the modules. The higher the driver chip performance is and the better the module circuit is designed, the higher the shift clock frequency can be. A higher shift clock frequency will results in a larger pixel array, more gray levels or higher refresh rate that a receiver card can support.

Data Duty

This is the duty cycle for the shift clock. The shift clock frequency can be increased by changing this parameter. Normally, the duty cycle should be set as 50%.

Data Phase

By phase here refers to the time relation between the shift clock and the corresponding data to be shifted. This parameter can be used to eliminate the errors due to the phase, such as image dislocation and flashing pixels.

Low Gray Compensation

For driver chips that cannot respond to narrow pulse signals, the Low Gray Compensation parameter can be used to improve the image quality of low gray levels.

Blanking Time

This is the line blanking interval. This parameter can be used to weaken the decoy. Increase the value of this parameter if decoy is serious.

Ghost Control

This refers to the time to end the process for weakening decoy. It is used in conjunction with Blanking Time and Line Change Time to weaken the decoy.

Line Change Time

This parameter refers to the time to switch to the next row. It is used in conjunction with Blanking Time to weaken the decoy of scan mode LED displays.

The steps of performance parameters adjustment are as follow.

- **Step 1**

Adjust the parameters in the Performance Setting panel (Fig.7-21) until the Maximum Width and Height shown in the Cabinet Info panel (Fig.7-20) are larger than the pixel array size of the cabinet. Then click the **Send To HW** button on Fig.7-19.

Attention:

If the message as follow appears after clicking the **Send To HW** 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 HW** button again.

- **Step 2**

If all parameter settings are acceptable, the dialog as shown in Fig.7-27 will appear after clicking the **Send To HW** button.

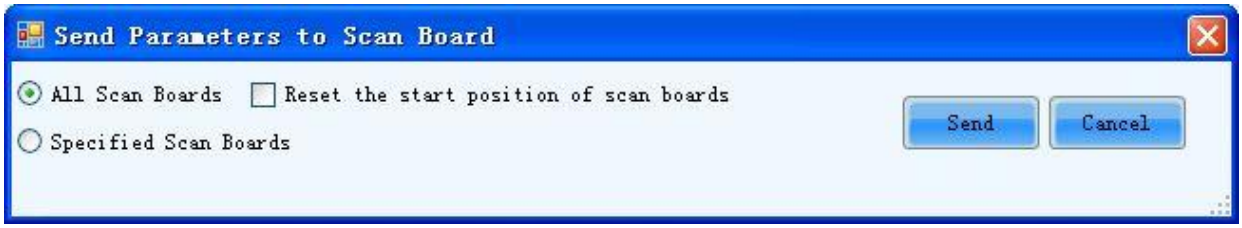


Fig. 7-27 The dialog for specifying receiver cards to send the parameter settings to

All Scan Boards

When this option is selected, parameter settings will be sent to all receiver cards (scan boards) that are connected to the current serial port through the sending boards that are connected with the current serial port.

Reset the start position of scan boards

This option is available when **All Scan Boards** is selected. When this option is checked, start positions of all relating receiver cards (receiver cards that are connected to the current serial port through the sending boards that are connected with the current serial port.) will be set as (0,0). Thus all relating receiver cards will show (on their pixel arrays) the upper left corner image of the computer display.

Specified Scan Boards

This option is for sending parameter settings to specific receiver cards. There are two ways for sending parameter settings to specific receiver cards,by address and by sketch map. Corresponding pages are shown in Fig.7-28 and Fig.7-29.

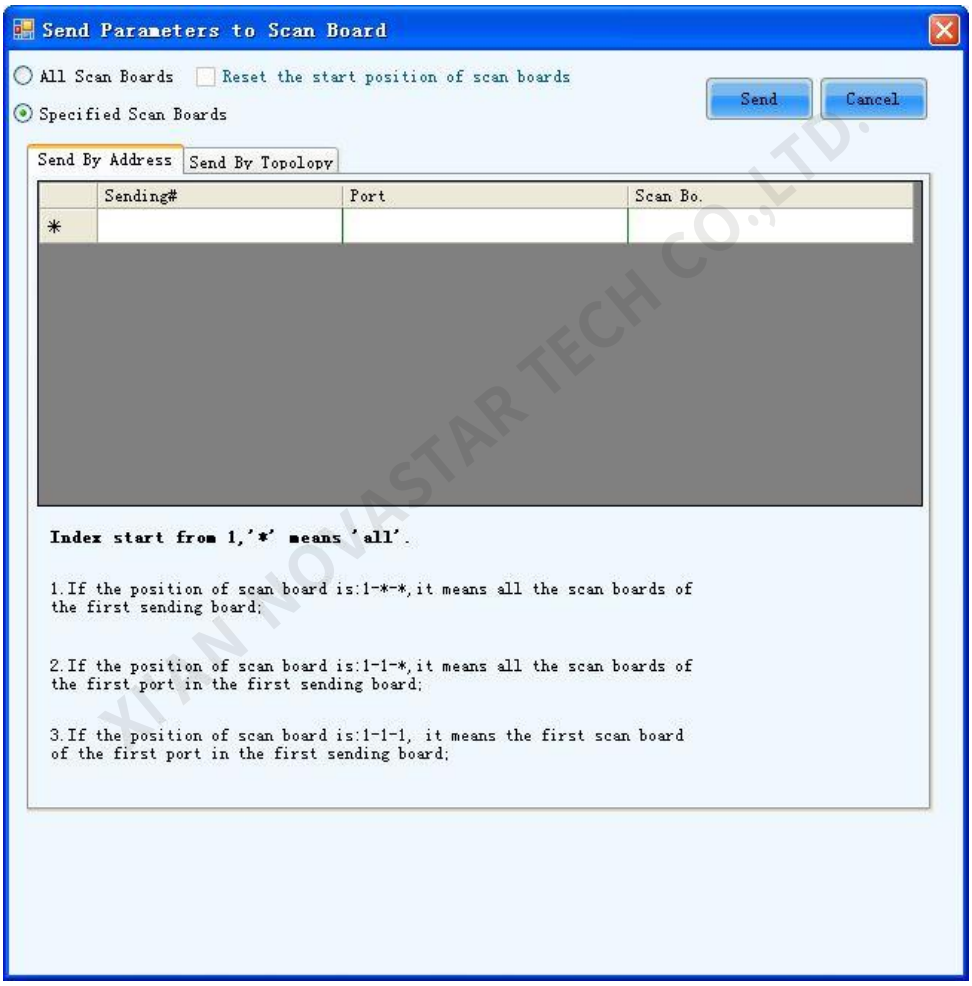


Fig. 7-28 The send by address page

Shown in Fig.7-28 is the Send by Address page. The Sending#, Port and Scan Bo are used to specify the receiver cards to which the settings will be sent. Set these three parameters according to the instructions given at the lower half of the page.

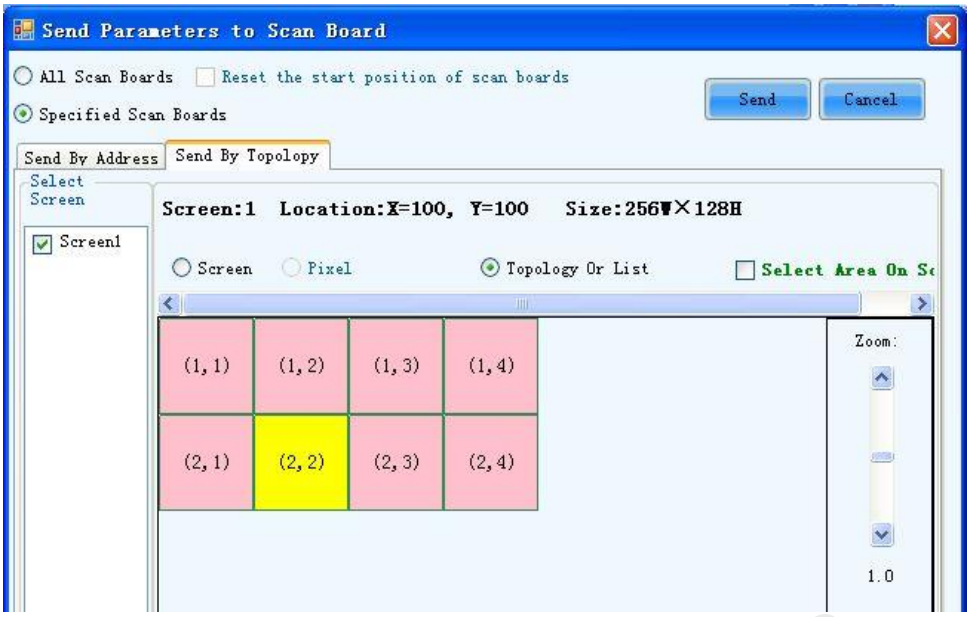


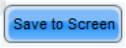
Fig. 7-29 The send by topology page

Shown in Fig.7-29 is the Send by Topology page. The sketch of the receiver cards layout is show in this page. Select the receive cards from the sketch. To select multiple scan boards, press the left button and drag the mouse.

➢ **Step 3**

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

7.1.5 Save settings to flash

Once data is saved in the FLASH chips of the hardware, the saved data won't be lost even the hardware is powered off. To save the settings to FLASH, click the 

in the Screen Config page (Fig. 7-19).

Attention:

Please save the settings to FLASH (click the Save to Screen button) after sending settings of the LED display configuration, performance parameters and hot backup to hardware.

7.1.6 Save/Load configuration files

There are four types of configuration files at present, the module configuration file, the scan board 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.

Scan board Configuration File

Saved in a scan board configuration file are the settings of scan boards. Scan board 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 scan boards 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 is a system configuration file is the complete setting information of a LED display control system. It can be used to quickly recover a LED display control system from error, or to quickly start a LED display.

1) 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 (please refer to 0

Smart setting -> 9) for details). Shown is the dialog for saving module settings to a module configuration file.

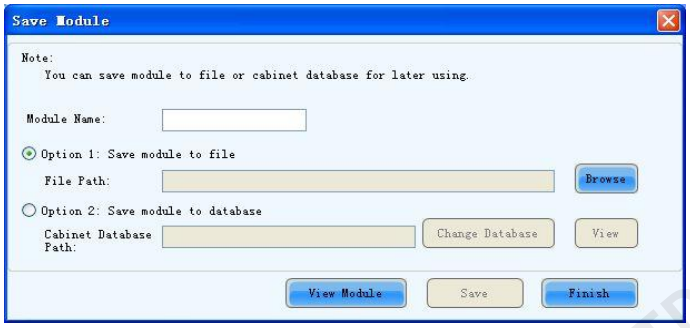


Fig. 7-30 Dialog for saving module settings to module configuration file

The other way is to click  button in the Module Info panel of the Scan Board page. The module settings can be saved to a module configuration file through the opened dialog. Shown in Fig. 7-31 is Module Info panel of the Scan Board page that the  button is on.

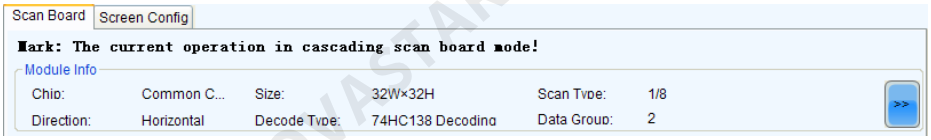


Fig. 7-31 Module info panel

2) Load a module configuration file

In smart setting step 2 (Please refer to 0

Smart setting -> 2), select Option 2: Load module from file in the Smart Setting dialog and follow the instructions.

3) Save a scan board configuration file

To save settings to a scan board configuration file, click 

at the bottom of the Scan Board page in the Screen Config window and follow the instructions. Shown in Fig. 7-32 is the Scan Board page.

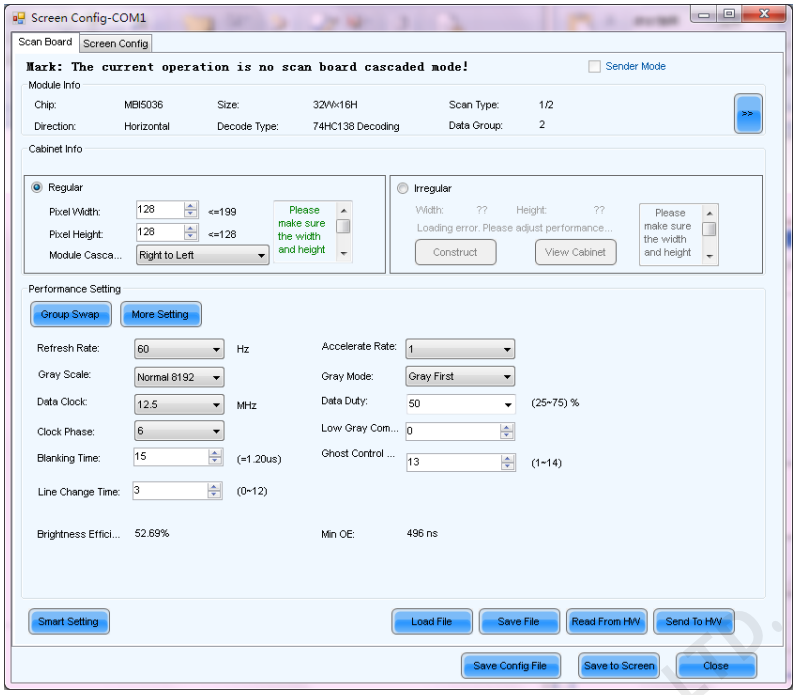


Fig. 7-32 Scan Board page

4) Load a scan board configuration file

To load a scan board configuration file, click Load File at the bottom of the Scan Board page in the Screen Config window and follow the instructions.

5) Save a LED display configuration file

To save settings to a LED display configuration file, click Save File at the bottom of the Screen Config page of the Screen Config window and follow the instructions. Shown in Fig. 7-33is the Screen Config page.

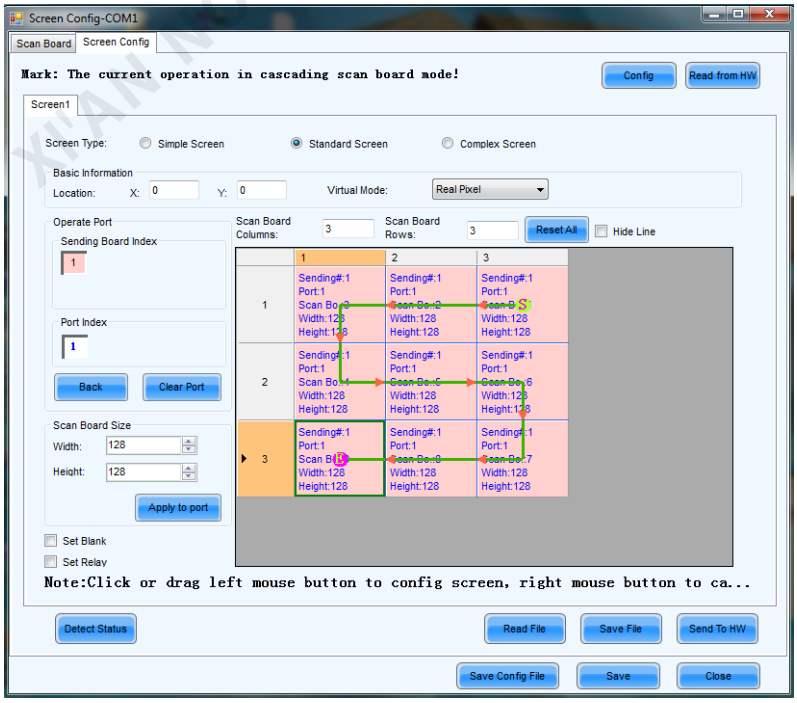


Fig. 7-33 Screen config page

6) Load a LED display configuration file

To load a LED display configuration file, click 

at the bottom of the Screen Config page in the Screen Config window and follow the instructions.

7) Save a system configuration file

To save settings to a system configuration file, click 

at the bottom of the Screen Config window and follow the instructions.

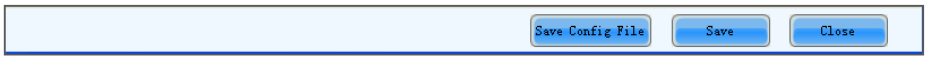


Fig. 7-34 Screen config window

8) Load a system configuration file

Please refer to 7.1.1 Start with System Configuration Files for details.

7.2 Brightness adjustment, display quality, gamma and current gain

Click **Brightness** button from the toolbar or select **Tools**->**Brightness** from the main menu of the NovaLCT-Pluto application main interface to open the Display Adjustment page for brightness, display quality, Gamma and current gain adjustment. Shown in Fig. 7-35 is the Display Adjustment page.

7.2.1 Manual adjustment

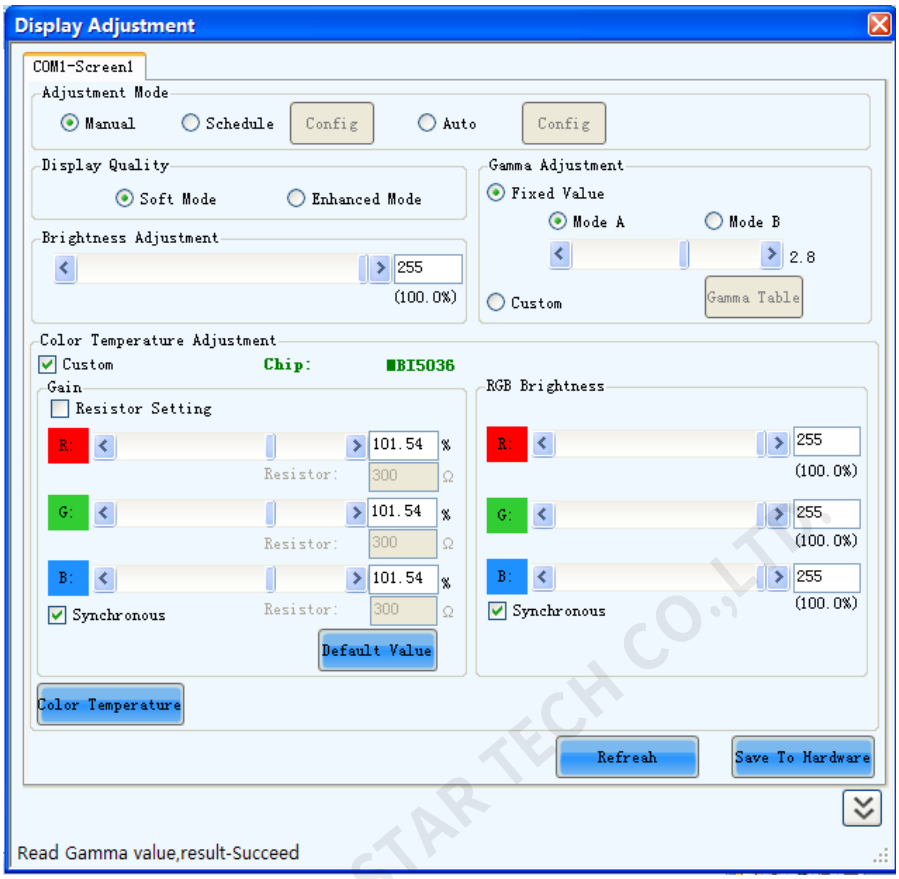


Fig. 7-35 Manual adjustment page of display adjustment

Display Quality

There are two modes for display quality, **soft mode** and **Enhanced Mode**, Use soft mode for the situation that the environment brightness is not very high. Enhanced Mode is better when the background is very bright.

Gamma Adjustment

If **Fixed Value** is selected, the Gamma coefficient can be any value between 1 and 4. And the default value is 2.8. Select Custom to manually define the Gamma table.

Brightness Adjustment

Brightness can be adjusted by the slide bar. All together there are 256 levels of brightness.

Color Temperature Adjustment

Color temperature adjustment can be done in two ways, **customization** and **color temperature table.** Choose one as you want. Select Custom and the color temperature can be adjusted through the brightness and current gains of Red, Green and Blue components. Click Color Temperature button to open the dialog for color temperature table configuration. Color temperature can be adjusted by changing the items in the table.

Attention:

A. Current gain adjustment option won't be available if the LED drive chips do not support current gain adjustment.

B. Professional equipment is necessary to find out the current gains and brightness of red, green and blue for different LED display brightness of certain color temperature, so that if the color temperature table has been

set, NovaLCT-Pluto will adjust the LED display settings according to the current brightness setting and keep the color temperature unchanged.

Configure the Color Temperature Table

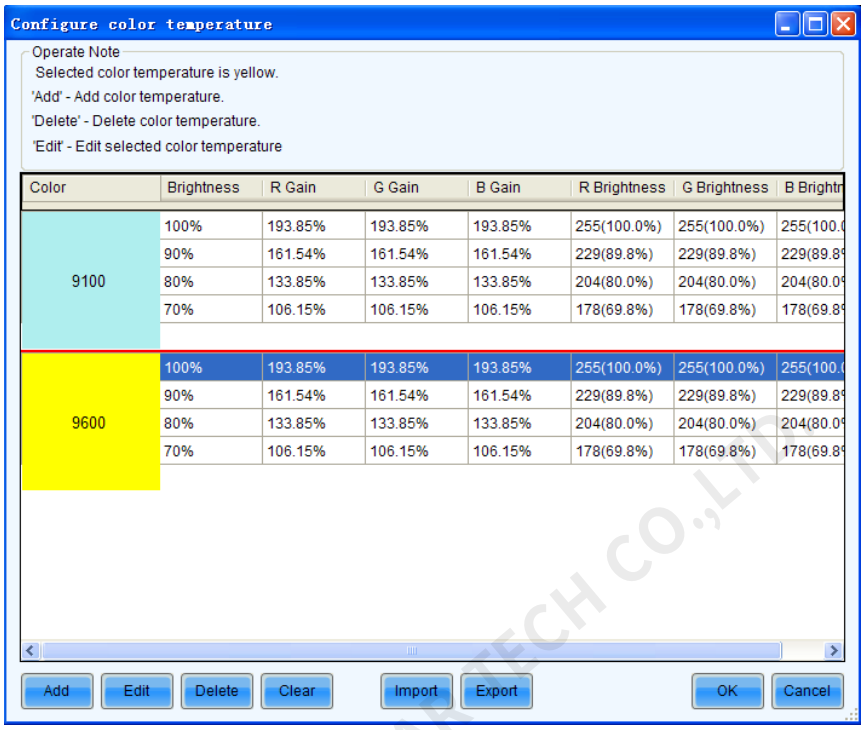


Fig. 7-36 Color temperature table configuration page

7.2.2 Schedule adjustment

Fig. 7-37 Schedule adjustment

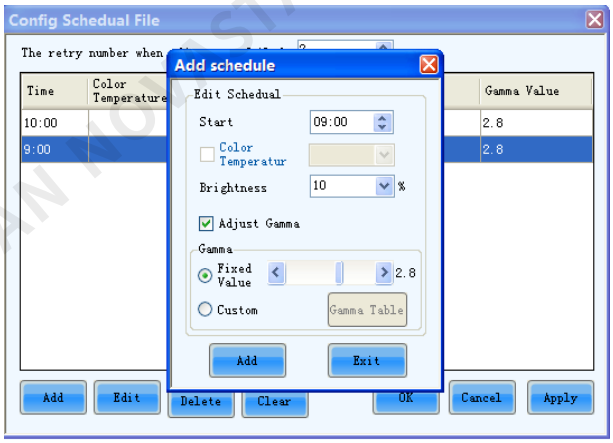


Fig. 7-38 Adding information about the schedule adjustment

Select Schedule in the Display Adjustment page to open schedule adjustment page. Schedule adjustment is to generate a time table and the LED display brightness, Gamma, color temperature will be adjusted according to the time table.

Attention:

The time of the computer on which NovaLCT-Pluto is running is the base of the schedule. If the computer time is not correct, the adjustment operation will not be performed at the expected time.

7.2.3 Automatic adjustment

Select **Schedule** in the “Adjustment Mode” panel to open auto adjustment page. Then click **Config** button.

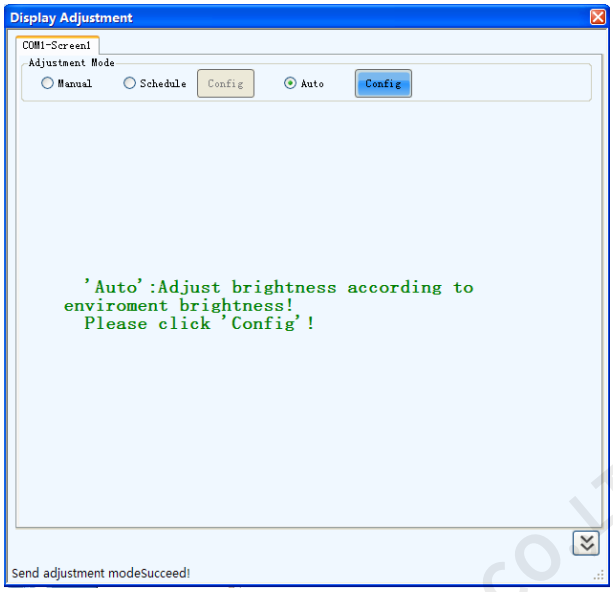


Fig. 7-39 Auto adjustment page

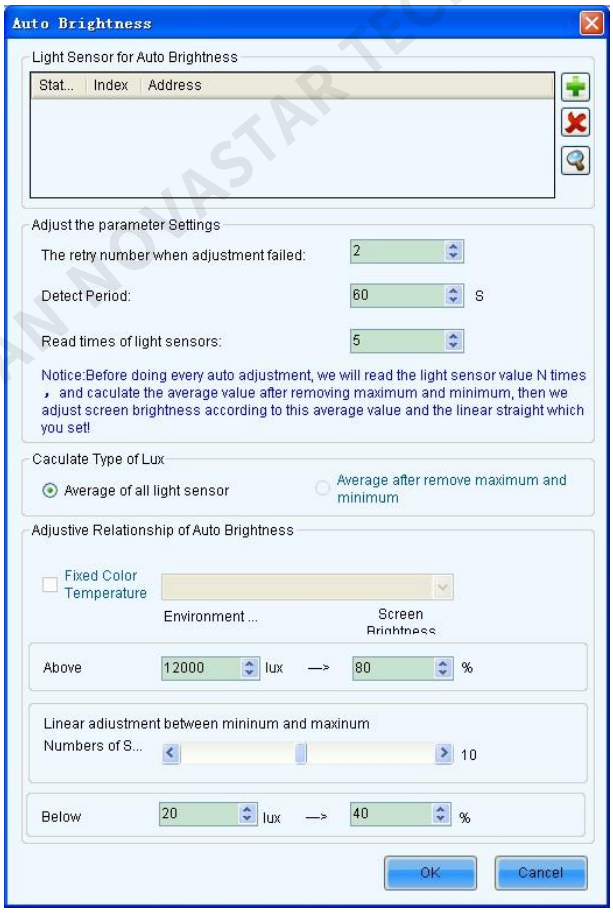


Fig. 7-40 Auto Adjustment settings

The LED display control system uses light sensors to get the environment brightness.

Add light sensor

Click  button in Fig. 7-40 and NovaLCT-Pluto will automatically detect light sensors that are connected to asynchronous cards and add them to the lightness sensor list, as shown in the following figure.

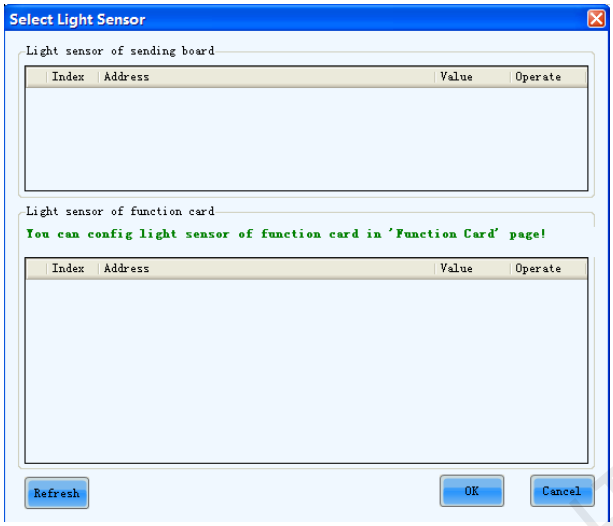


Fig. 7-41 Light sensor list page

The retry number when adjustment failed

If NovaLCT-Pluto fails in auto brightness adjustment, it will retry the adjustment again. The number set here is times NovaLCT-Pluto try to adjust the brightness before it give up.

Detect Period

The time period the light sensors measure the environment brightness.

Read times of light sensors

The times that NovaLCT-Mars reads the measurement results of the light sensors.

Auto brightness timeinterval

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-Mars 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.

Calculate Type of Lux

This is to specify how the final result is calculated from the measurement results of all light sensors.

Fix Color Temperature

If this option is selected, the LED display brightness will be adjusted according to the color temperature table and the environment brightness.

Number of Segments

Thresholds need to be set for automatic brightness adjustment. When the environment brightness is higher than the high side threshold, a high brightness level will be set for the screen, for example 100%. And while the environment brightness is lower than the low side threshold, a low brightness level is set. The interval between the high and low threshold of environment brightness is linearly divided into subsections with subsection number equals the Number of Segments. So does the interval between the high and low LED display brightness levels. If the environment brightness is in certain subsection, the corresponding brightness level will be set for the LED display. The maximum number is 10.

Attention:

A. The information of the multifunction card light sensor list is from the multifunction card configuration settings.

B. NovaLCT-Pluto first generates the environment brightness value from measurement results of all available light sensors according to certain calculating algorithm. And then NovaLCT-Pluto uses the generated environment brightness to adjust the LED display brightness according to the parameter settings, such as brightness thresholds, segment numbers.

7.3 Cabinet database

This is to manage the existing cabinet libraries or creating new cabinet libraries. It helps in quick configuration of the cabinets and modules.

1) Click **Tool** -> **Cabinet Database** to open the library management page. If it is the first time to open the page, the dialog as shown in Fig. 7-42 will appear for open or create a library:

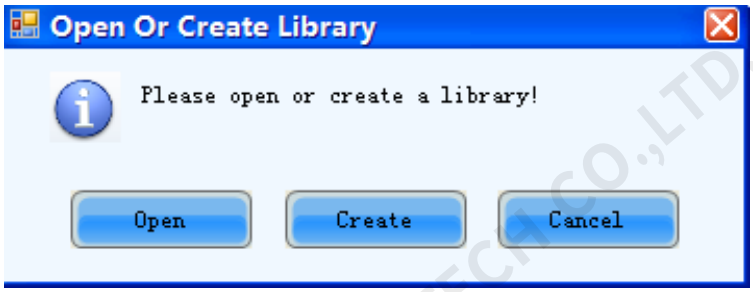


Fig. 7-42 Dialog for opening or creating a library

Open: Click this button to open an existing library.

Create: Click this button to create a new library.

2) Module Management:

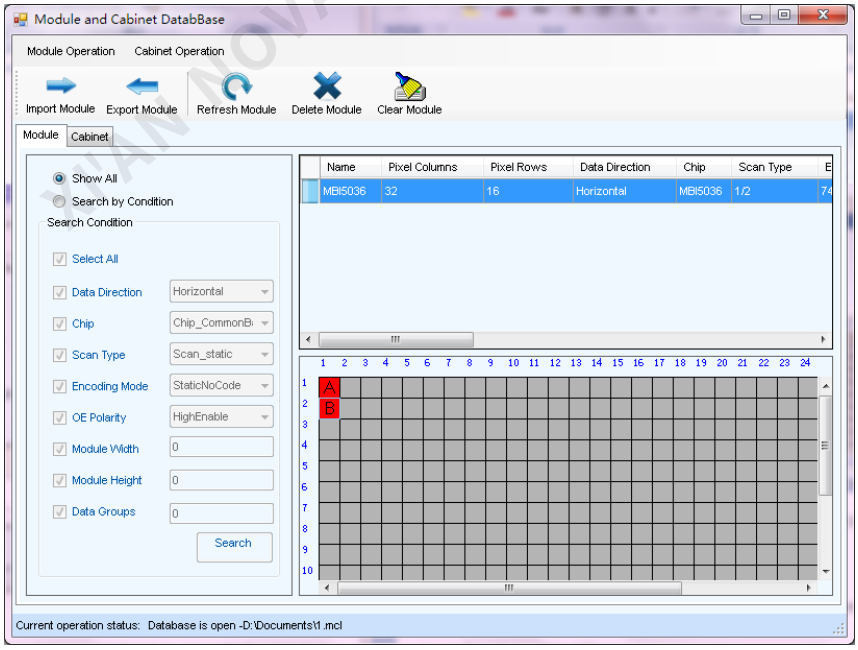


Fig. 7-43 Module management page

Import Module

Click this button to import the module configuration files generated during the Smart Setting procedure to a

cabinet library.

Export Module

Click this button to export the module configurations from a cabinet library to a module configuration file. Module configuration files help in speeding up the Smart Setting procedure.

Show All

Select this option to request NovaLCT-Pluto to show module configurations of all cabinets in the list.

Search by Condition

Select this option to shown all module configurations that meet the requirements set in the Search Condition panel in the list.

3) Cabinet Management:

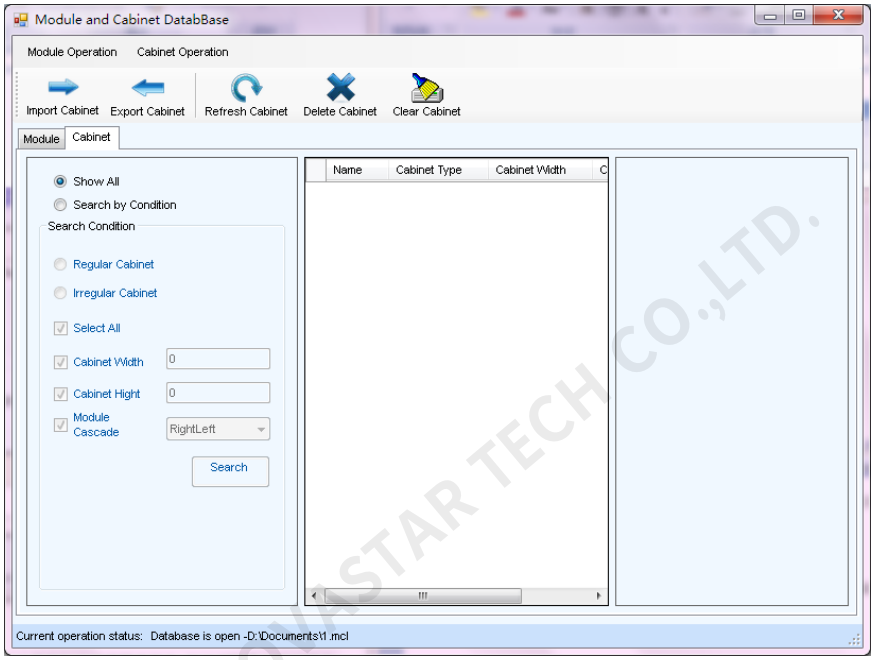


Fig. 7-44 Cabinet management page

Import Cabinet

Click this button to import a cabinet configuration file to a cabinet library.

Export Cabinet

Click this button to export the cabinet configurations from a cabinet library to a cabinet configuration file.

Show All

Select this option to shown in the list all cabinets' configurations in the library.

Search by Condition

Select this option to shown the configurations of the cabinets that meet the requirements set in the Search Condition panel in the list.

7.4 Display control

Click Display Control button from the toolbar or select Tools->Display Control from the main menu of the NovaLCT-Pluto application main interface to open the Screen Control page as shown below in Fig. 7-45:

Fig. 7-45 Screen control page

Kill: Show nothing on the LED display.

Lock: Always show the current image frame of the LED display.

Run: Switch the LED display back to normal from Kill or Lock.

7.5 Monitor the system

Monitoring is one of the key features of the Mars serial LED display control systems. The monitoring subsystem performs comprehensive monitoring on the overall LED display. The monitored parameters and status include system components working status, cabinet door status (open/close) and temperature, humidity, smoke, fans status and power supply. The monitoring subsystem can also report error by email when fails detected.

Shown below is the Monitor page. The status and parameters mentioned above can all be viewed here.

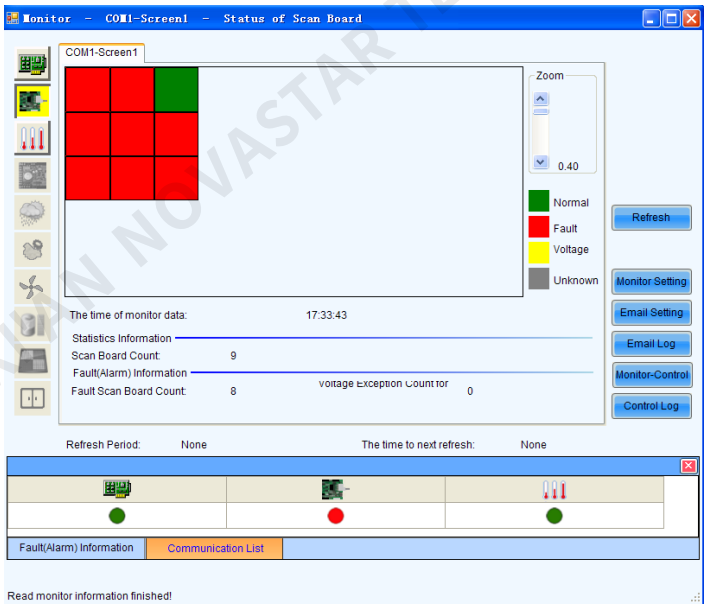


Fig. 7-46 Monitor page

Refresh

This button is used to update the monitored data.

Monitor Setting

This button is used to edit the contents to be monitored and set rules for alarm.

Email Setting

This button is used to set the email notification.

Email Log

Click this button to check the log of the report email sent by NovaLCT-Pluto monitoring subsystem.

Monitor-Control

Configure the temperature and smoke monitoring control program.

Control log

Check control scheme acting result.

7.5.1 Monitor setting

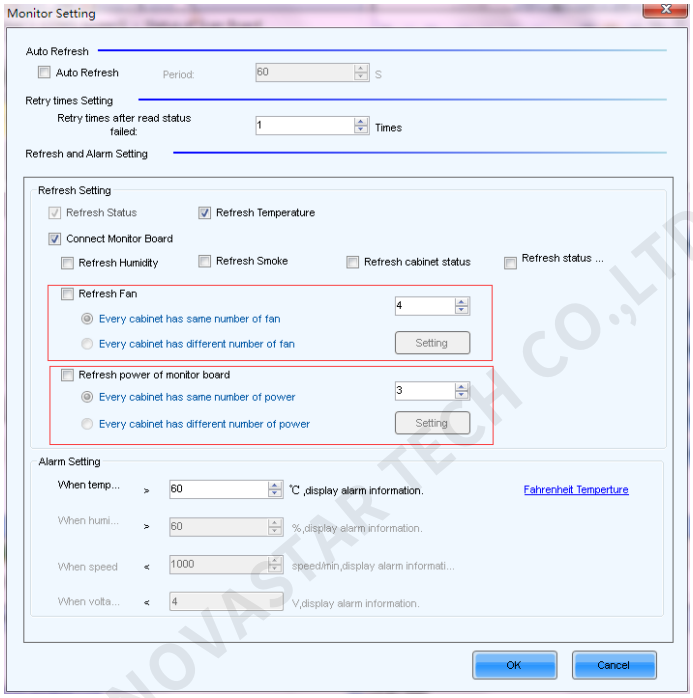


Fig. 7-47 Monitor setting page

Auto Refresh

If this option is check, NovaLCT-Pluto will automatically check the status and parameters being monitored and update the monitored data periodically according to the period setting.

Retry time after read status failed

This parameter determines how many time NovaLCT-Pluto will retry to check the status and parameters being monitored when it fails in doing so.

Refresh Status

The status here refers to the working status of the scan boards. If this option is selected, the working status of the scan boards will be under monitoring.

Refresh Temperature

If this option is selected, the temperature within the cabinets will be under monitoring.

Refresh power of scan board

If this option is selected, the power supplies of the scan boards will be under monitoring.

Connect Monitor Board

Monitor Boards are required for certain status and parameters monitoring. Select this option to get those status and parameters under monitoring.

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 cabinet status

If this option is selected, the working status of the cabinets 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.

Every cabinet has same number of fan

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.

Ever cabinet has different number of fan

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.

Refresh power of monitor board

If this option is selected, the power supplies on the monitor board will be under monitoring.

Every cabinet has same number of power

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.

Every cabinet has different number of power

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.

7.5.2 Email notification setting

Operation steps:

1) Click **Email Settings** button in the Monitor Page of Fig. 7-48 to enter the email notification setting page shown as below:

Fig. 7-48 Email notification setting page

2) To enable email notification, email sender, recipient and email info need to be set, click **Apply** button after setting.

7.5.3 Notification email Log

If email notification is enabled in the email notification setting page of Fig. 7-48, user can view notification email log by clicking Email log in the Monitor Page of Fig. 7-49 as show below:

User can search notification email log by date or delete overdue logs manually.

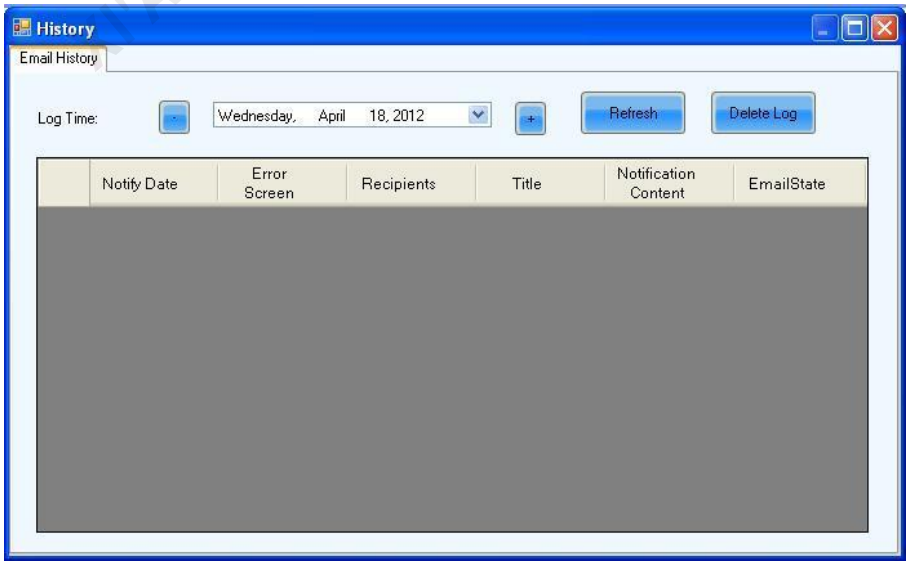


Fig. 7-49 History of notification emails

7.5.4 Monitor-control

7.5.4.1 Configure control scheme

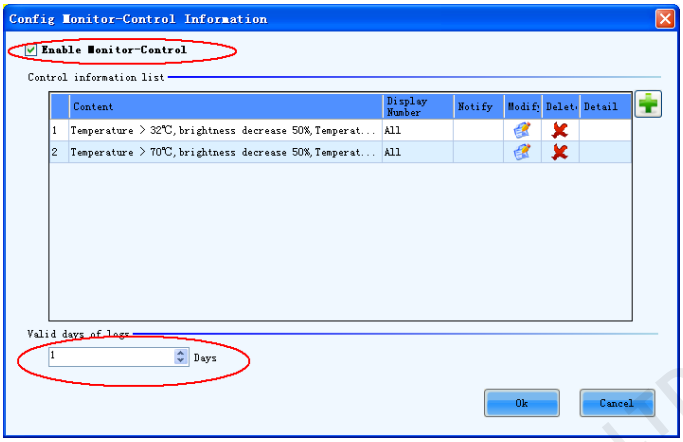


Fig. 7-50 Configuration of monitor-control

Enable Monitor-Control

The functions of Monitor-Control will work only when the option is checked.

Valid days of logs

Set the valid days of logs.

One control information can be added by clicking the button  in Fig.7-50. As it show in Fig. 7-51 is to add one temperature control information, as it show in Fig. 7-52 is to add one smoke control information.

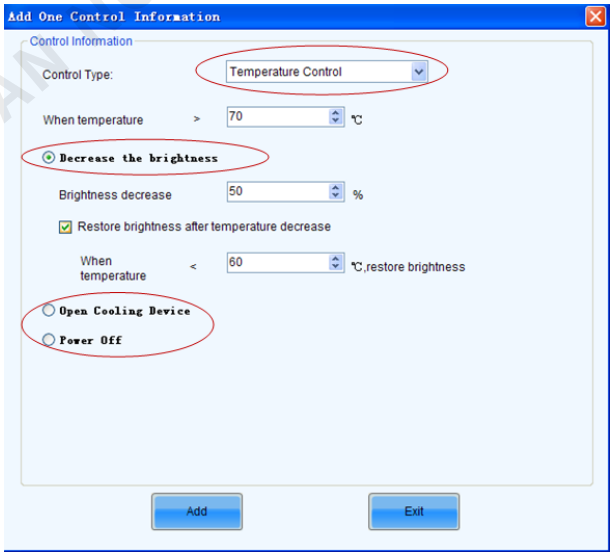


Fig. 7-51 Temperature control information

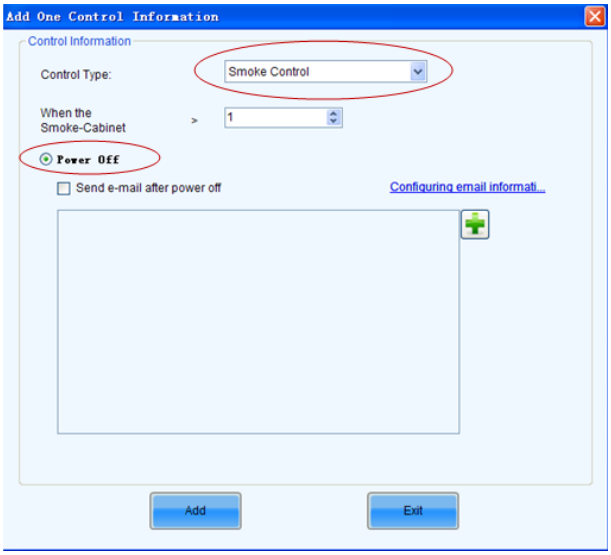


Fig. 7-52 Smoke control information

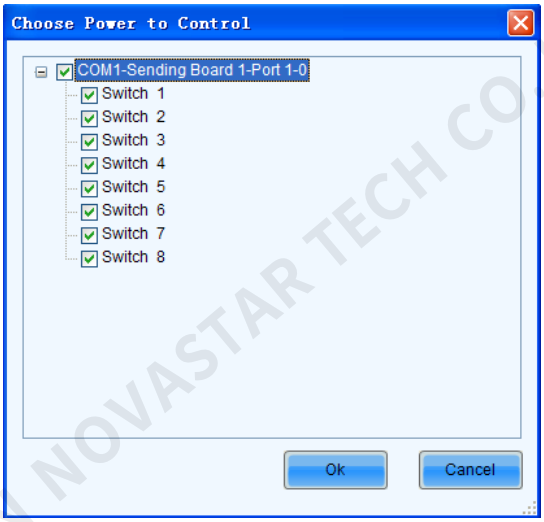


Fig. 7-53 Select the controlled power

7.5.4.2 Recovering of monitor-control

The latest control information will show in the bottom right corner in the main form and the monitor page. As it show in Fig. 7-54 is the information which comes from the last control.

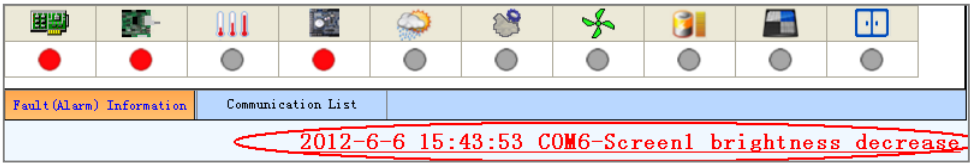


Fig. 7-54 Control information in the monitor page

Click this link label to view the controlled information list as it show in Fig.7-55.

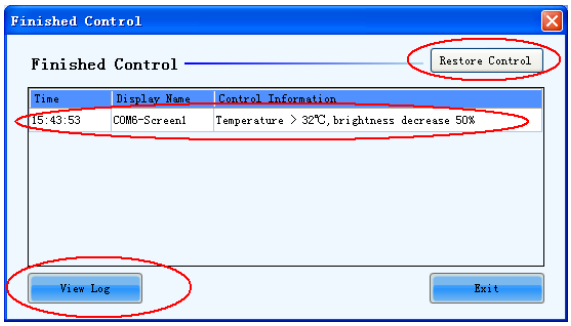


Fig. 7-55 View the control information list

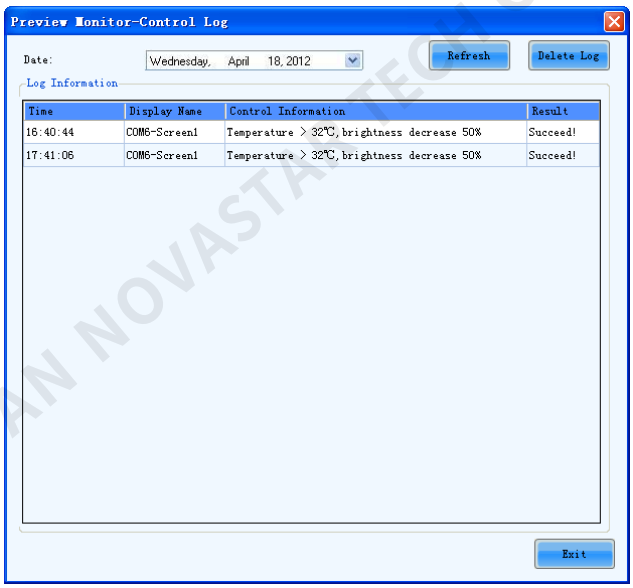
Recover Control

If the control scheme is performed（View 7.5.4.1 Configure Control Scheme to configure the control scheme）, and the user can restart monitor-control by clicking this button after dealing with the fault.

View Log

Open the log-window and view the stored logs.

7.5.5 Monitor-control log



7.6 Check the LED status

The LED status checking function, also known as point detect, is to check the working status of each LED on a LED display. NovaLCT-Pluto can detect and locate LEDs that are in open circuit or short circuit status.

***Attention**:*

A. Point detect is only available for LED displays of which the LED drive chips support LED lights open/short circuit status checking.

B. Drive chips supported by Mars serial LED display control systems and good for point detect at present are MBI5036, MBI5034, MBI5040, DM13H and MBI5030.

C. Monitor boards for Pluto LED display control systems are required for point detect.

Operating steps:

a) Select **Tool -> Point Detect** from the NovaLCT-Pluto main menu to open the Point Detect page for point detect setting. Shown in Fig. 7-56 is the Point Detect page. As shown in the figure, the LED display under point detecting has a scan boards array of 2 rows and 4 columns. (One scan board corresponds to a cabinet.) And the drive chips used are MBI5036:

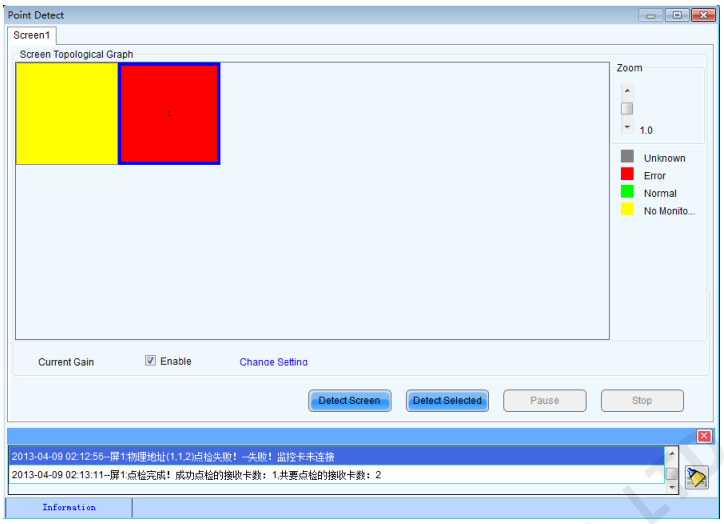


Fig. 7-56 Point detect page

Point Detect Parameters

Detect Type - this is the LED lights status type can be checked.

- Threshold Current - set the current threshold for point detect 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.

Detect Screen

Click this button to perform point detect on the whole display.

Detect Selected

Click this button to perform point detect on (the pixel array of) the selected scan boards.

Pause

Click this button to pause the ongoing point detect operation.

Stop

Click this button to stop the ongoing point detect operation.

Zoom

Drag the slide bar to zoom in or out of the LED display sketch map.

Notification panel

The information of the ongoing point detect operation will be shown in this panel.

Colors of the LED display sketch map

- **Gray** - the point detect operation result is unknown. It may be due to hardware communication failure or scan board 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 scan board (cabinet) does not connected with a monitor card.

Attention:

A. Put the curse on the sketch map of a cabinet to show its information.

B. Module specifications have effect on the point detect result. Please set the point detect parameters according to the module type.

b) In Fig. 7-56 click on the cabinet in the sketch map to open the Point Detect Result of Modules page for details about LED status information. Shown in Fig. 7-57 is the Point Detect Result of Modules page showing the LED status of the red cabinet in Fig. 7-56:

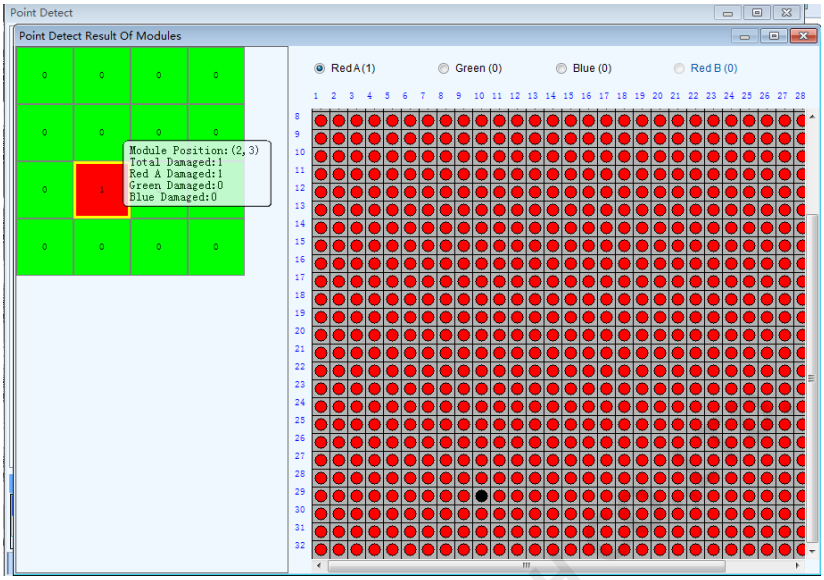


Fig. 7-57 The Point Detect Result of Modules

Shown on the left of Fig. 7-57 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 LEDs of the selected module. Select this item to view the locations of the error LEDs in the pixel array sketch. The black points in the array are the error lights.

Green

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

Blue

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

Red B

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

7.7 Brightness/Color calibration

7.7.1 Online calibration

In online calibration, NovaCLB connects with NovaLCT-Pluto through network. Data and instructions for LED display calibration are exchanged through the network. Shown in Fig. 7-58 is the online calibration page.

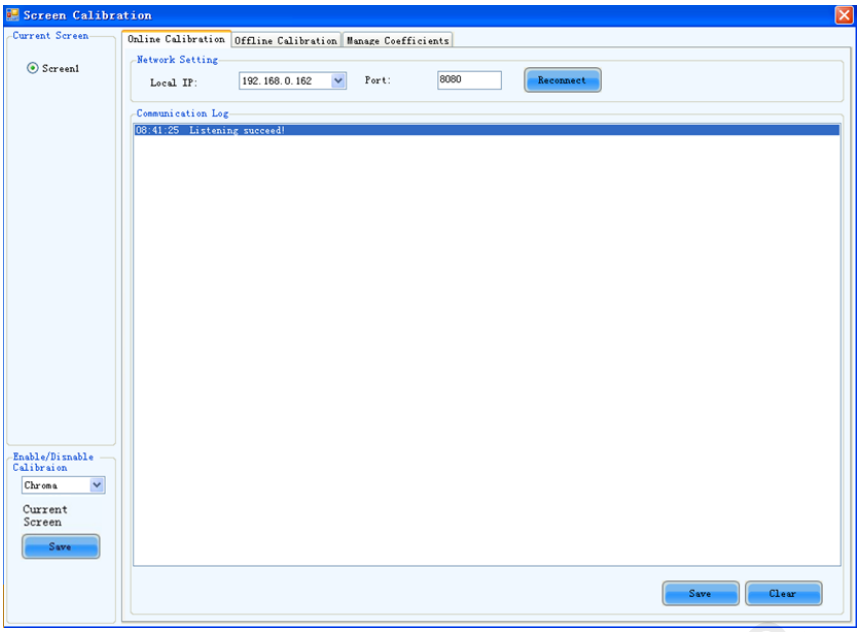


Fig. 7-58 Online calibration page

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-Pluto listens to. It is actually an IP of the computer on which NovaLCT-Pluto is running.

Port

This is the port that NovaLCT-Pluto 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-Pluto 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.

7.7.2 Coefficients management

This page is to adjust the calibration coefficients for better calibration performance. Shown in Fig. 7-59 is the Manage Coefficients page.

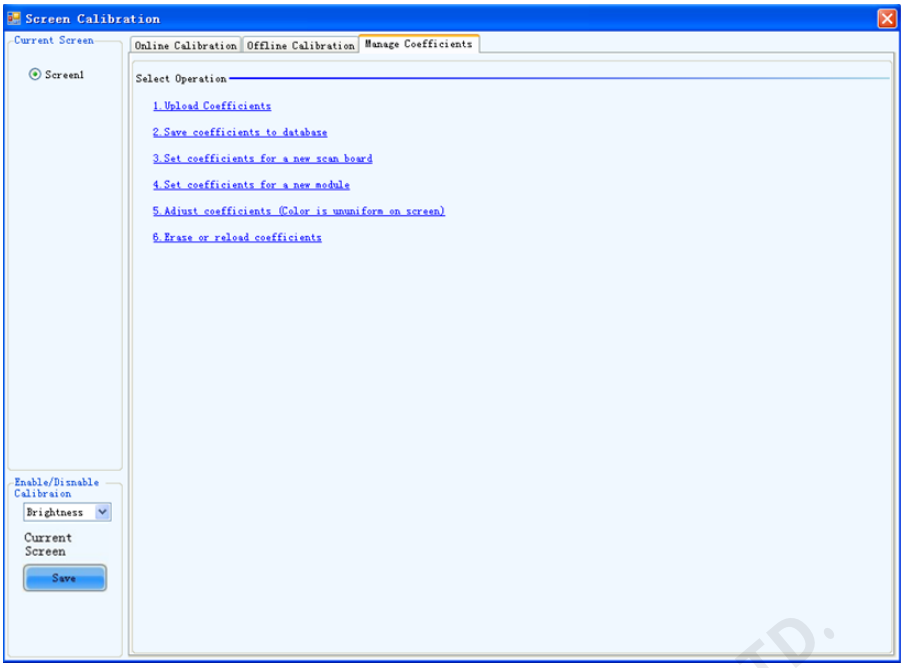


Fig. 7-59 Manage coefficients page

Upload Coefficients

Upload a calibration coefficients database to the LED display.

Save coefficients to database

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

Set coefficients for a new scan board

This option is to set the calibration coefficients for a newly placed scan board 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 Coefficients

This option is to erase the calibration coefficients of the selected LED display.

7.7.2.1 Upload Coefficients

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

Operating steps:

- Browse directory to select calibration coefficients database;

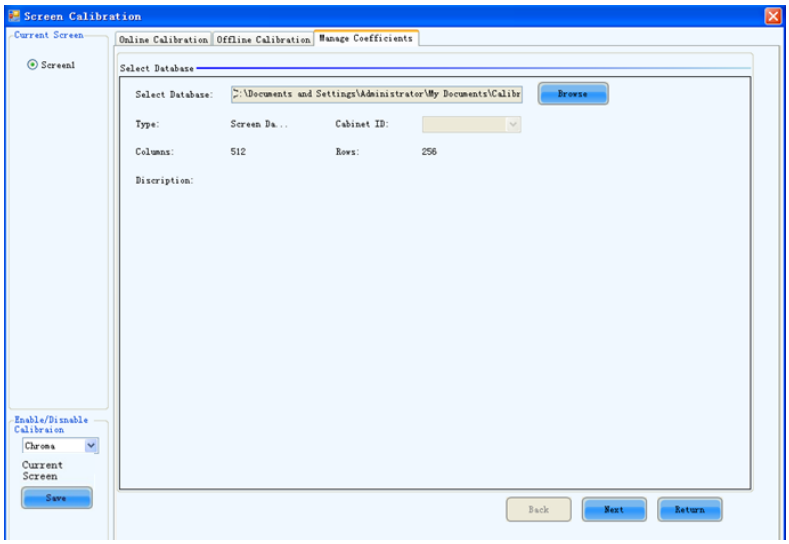


Fig. 7-60 Upload coefficients step1

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.

- Click Next button to choose upload area, there are three options, Screen, Pixel, Topology or List:
  a) Screen

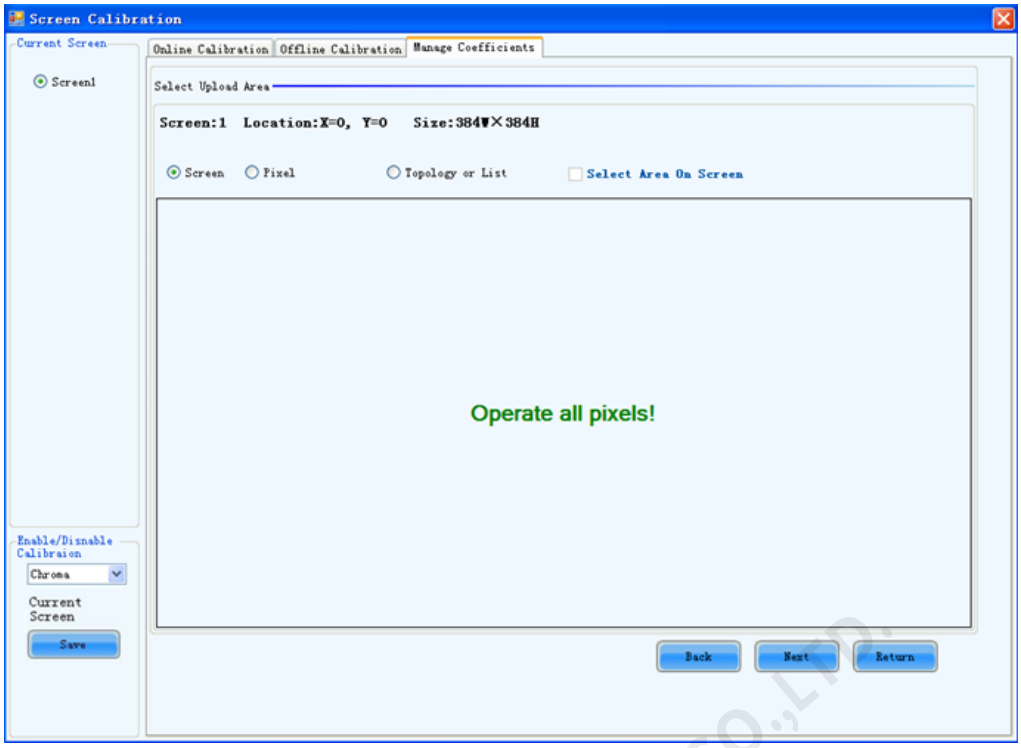


Fig. 7-61 Upload coefficient step 2- upload to screen

b) Pixel

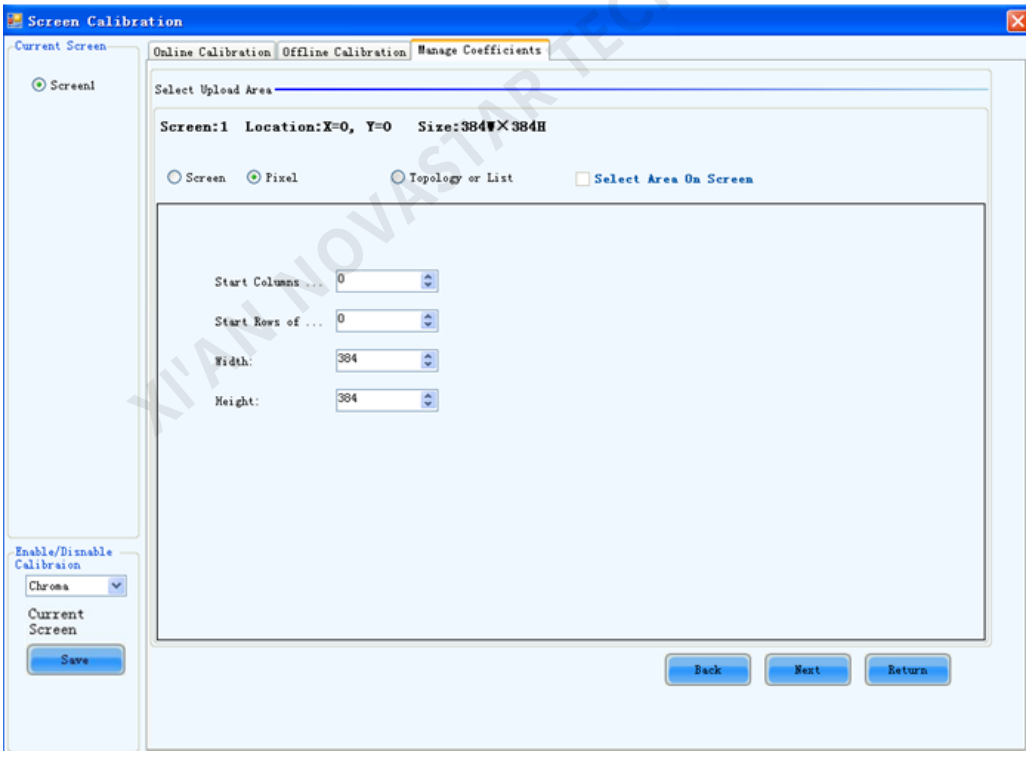


Fig. 7-62 Upload coefficients step 2- upload to specific pixel area

c) Topology or List

Fig. 7-63 Upload coefficients step 2- upload by Topology or list

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 simple or 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 shown is the cabinet list.)

Zoom

The zoom slide bar is for zoom in or out the cabinet array sketch map.

- Choose Fast upload or Stable upload, then press Upload button:

Fig. 7-64 Upload coefficient step 3

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.

7.7.2.2Save coefficients to database

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

Operating steps:

1) The calibration coefficients read back can be saved to an existing database or a new database. Shown in Fig. 7-65 and Fig. 7-66 are the pages for saving coefficients to an existing database and a new database respectively.

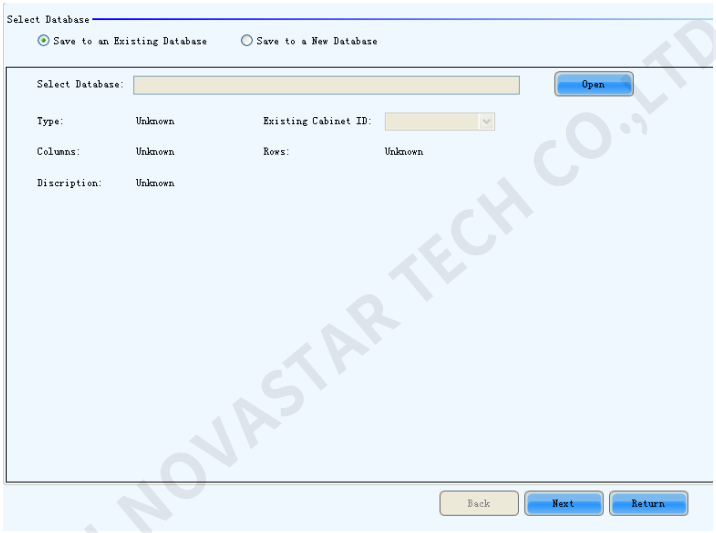


Fig. 7-65 Saving calibration coefficients to an existing database

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.

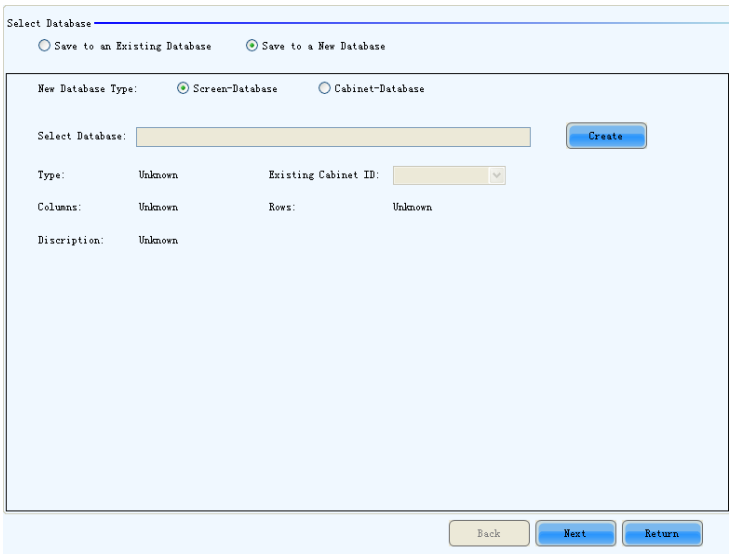


Fig. 7-66 Saving calibration coefficients to a new database

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.

***Attention**:*

A. 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.

B. 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.

2) Choose upload area, there are three options, Screen, Pixel, Topology or List.

Fig. 7-67 Page for specifying the display area for coefficient 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.

7.7.2.3 Set coefficients for a new scan board

Operating steps:

1) Specify the LED display area that the new receiving card (scan board) drives.

Fig. 7-68 Page for specifying the working area of the new scan board

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).

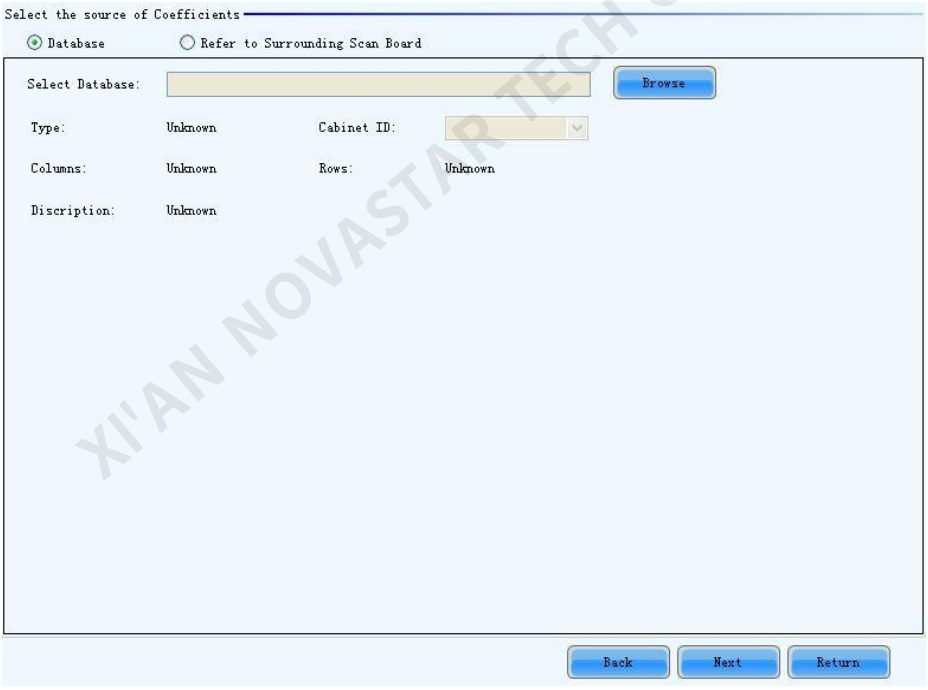


Fig. 7-69 Page for getting calibration coefficients form a database

Browse

Click this button to select the database that the calibration coefficients for the new scan board 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.

Fig. 7-70 Page for generating coefficients for the new scan board according to those of its surrounding scan boards

3) If the calibration coefficients from Step 2 are not satisfying, they can be adjusted. There are two type of adjustment, Simple and Advanced. Shown in Fig. 7-71 and Fig. 7-72 are the pages for Simple and Advanced adjustment respectively.

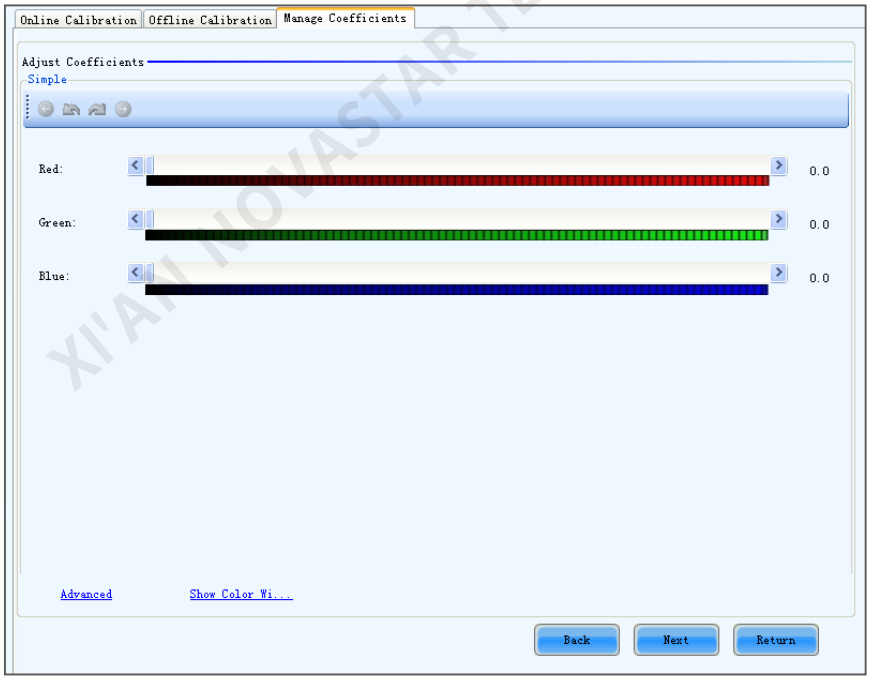


Fig. 7-71 Simple adjustment page

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.

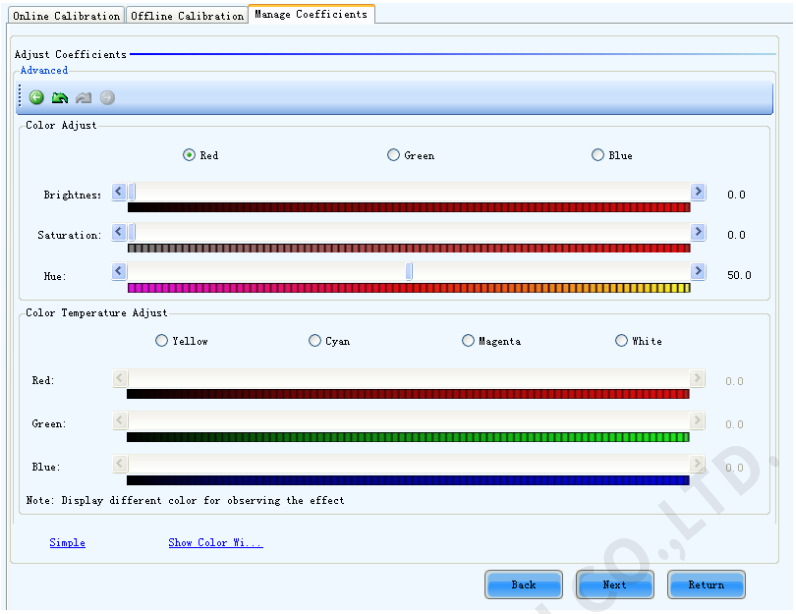


Fig. 7-72 Advanced adjustment page

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

Click this item to switch to the simple adjustment page.

The color bar under each slide bar indicates the color to be shown when adjusting.

Attention:

A. If the cabinet driven by the new scan board is only different from the surrounding cabinets in brightness, simple adjustment is sufficient.

B. If the cabinet driven by the new scan board is different from the surrounding cabinets in color, adjust the brightness, saturation and hue through the advanced adjustment page for better image quality.

C. Use the test tools in Plug In Tool - > Test Tool to require the LED display to show the color that is being adjusted.

4) Save the calibration coefficients to the hardware (FLASH) so they won't be lost when the LED display is powered off. Shown in Fig. 7-73 is the page for saving the coefficients to the hardware.
   Click the **Save** button to save the coefficients to the hardware.

Fig. 7-73 Page for saving calibration coefficients to the hardware

7.7.2.4Set coefficients for a new module

1) Specify the cabinet where the new module locates.

Fig. 7-74 Page for specifying the cabinet where the new module locates

2) Double click the selected cabinet to open the page for specifying the new module. Select the new module position in the cabinet.

Fig. 7-75 Page for specifying the new module in the cabinet

Module Size

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

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 scan board or the database are not suitable for the new module, just could be used for calibration reference.

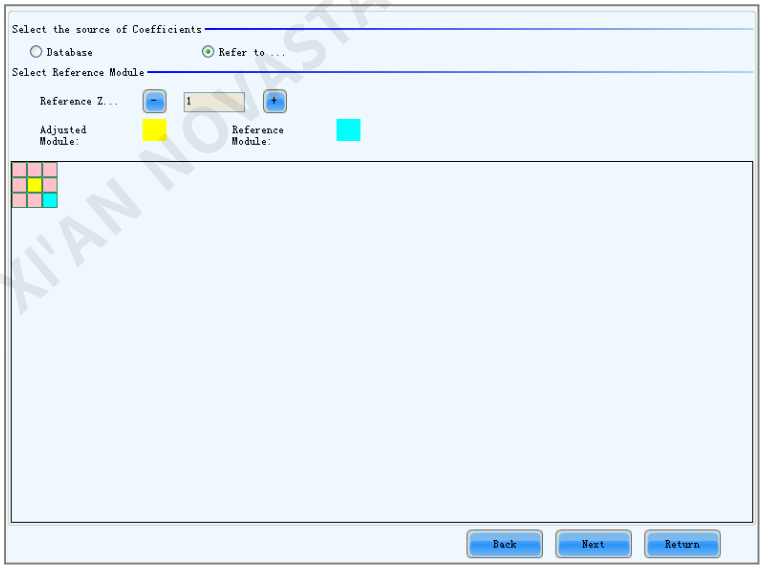


Fig. 7-76 Page for selecting the calibration coefficients source of new module

4) Adjust the calibration coefficients if the generated coefficients are not satisfying. The adjustment page is similar to that for a new scan board. Please refer to 7.7.2.3 Set coefficients for a new scan board -> step 3) for more details

5) Save the calibration coefficients to the hardware (FLASH) so they won't be lost when the LED display is powered off. The operation is similar to that for a new scan board. Please refer to 7.7.2.3 Set coefficients for a new scan board -> step 4) for more details.

7.7.2.5Adjust 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.

Operating steps:

1) Select the areas to be adjusted.

Fig. 7-77 Page for selecting the area to be adjusted

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.

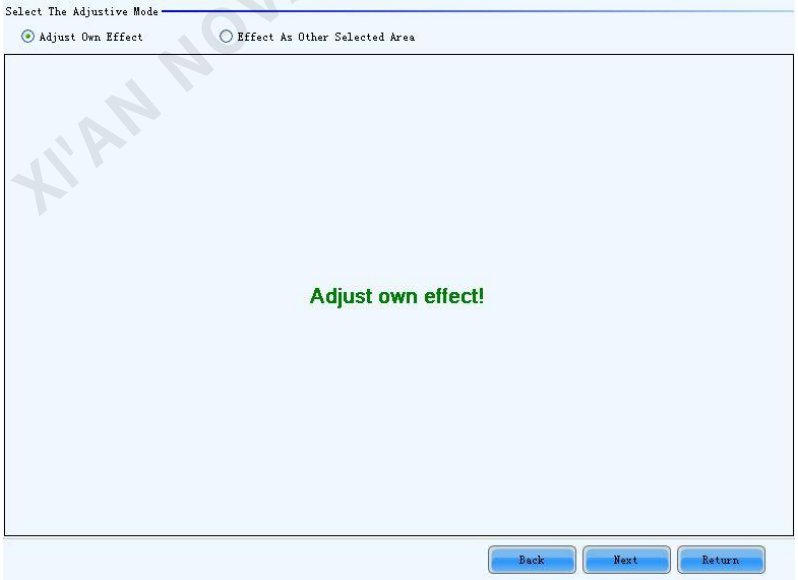


Fig. 7-78 Page for Adjust Own Effect Option

Fig. 7-79 Page for Effect As Other Selected Area

***Attention**:*

A. If Adjust Own Effect option is selected, NovaLCT-Pluto 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.

B. If Effect As Other Selected Area is selected, NovaLCT-Pluto 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.

3) Adjust the calibration coefficients. This step is similar to that for a new scan board. Please refer to 7.7.2.3 Set coefficients for a new scan board -> step 3) for more details.

4) 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.

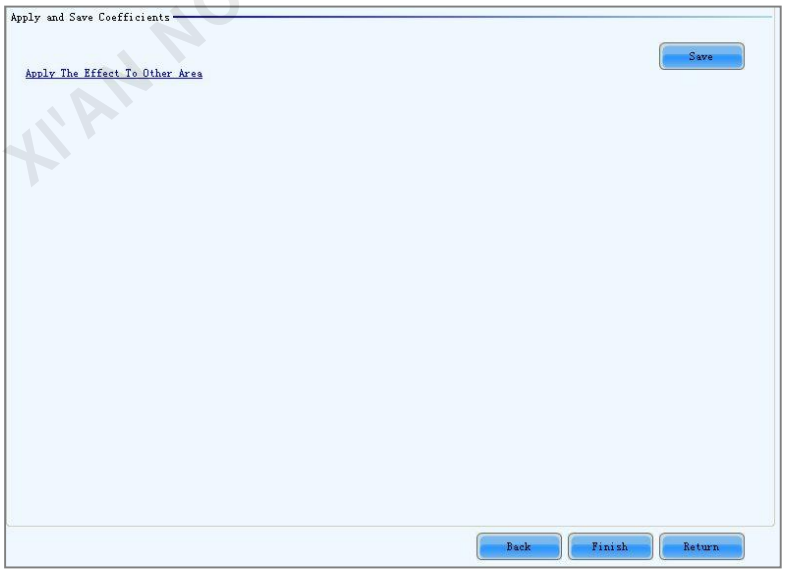


Fig. 7-80 Page for the calibration coefficients saving

The adjustment operations in Step 2) and Step 3) can also be applied to other areas that need the same adjustment. Click **Apply The Effect To Other Area** item in Fig. 7-81 to open the page for setting.

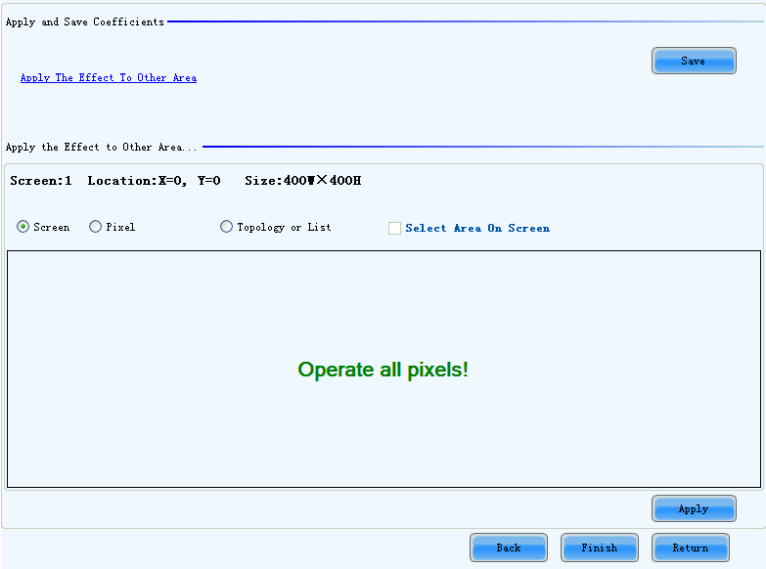


Fig. 7-81 Page for Apply the effect to other area

Apply: Apply adjustment operation to the selected area

Attention:

A. 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.

B. 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.

7.7.2.6Erase/Reload coefficients

Shown in Fig. 7-82 is the page for erasing/reload calibration coefficients

Erase coefficients: erasing calibration coefficients of the whole display or any cabinets.

Reload coefficients: reload the calibration coefficients lastly saved in hardware.

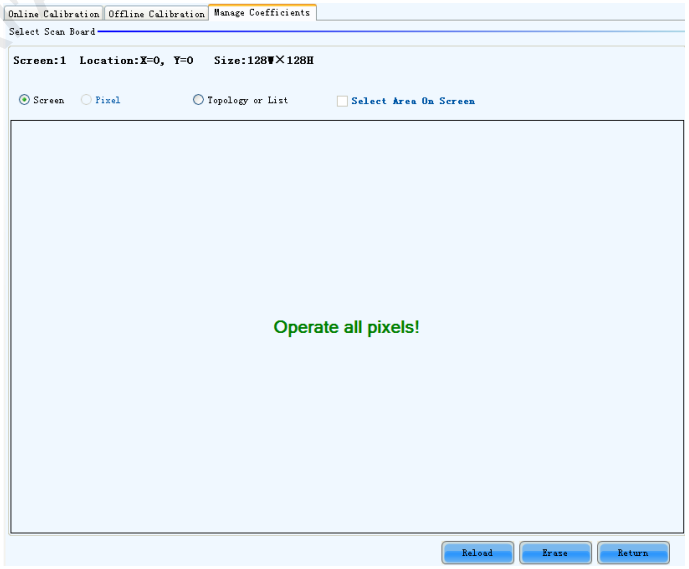


Fig. 7-82 Page for erasing calibration coefficients

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.

***Attention**:*

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.

7.8 Function card management

Management operations of the function card (also named multifunction card), such function card configuration, program loading, external device configuration, monitored data updating and power supply management, will be given in this section.

7.8.1 Power management

Click the Power Management button in the Function Card Management page to open the page for power management. The Power Management page is shown in Fig. 7-83 Circled in the page is the Power Management button

Fig. 7-83 Power management page

Function Card Time panel

- **Read** - to read the time from the function card and show in this panel.
- **Set** - to set the function card time as that of the computer.

Set Notes

Set note for each of the power supply of the current 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 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 function card time and the delay time.

Start All

This button is to start all power supplies controlled by the function card.

Emergency Stop

Click this button to stop all power supplied controlled by the 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.

Auto

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-Pluto.

7.8.1.1 Manual power control

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

7.8.1.2 Auto power control

The page for automatic power control is as shown in Fig. 7-84.

Fig. 7-84 Automatic power control page

Select the Auto option to set the power control mode into auto control mode. The time for start or stop each power supply can be set in this page. Click Send button to send the schedule to the hardware. And the hardware system will automatically start or stop the power supplies according to the schedule.

***Attention**:*

A. 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;

B. The time standard for automatic power control is the function card time. Check the function card time before setting the schedule for auto power control. To check the function card time, click Read button in the Function Card Time panel. To set the function card time, click Set button and the function card time will be set the same as that of the computer.

7.8.2 Monitor data

Click Monitor Data button in the Function Card Management page to open the page for system monitoring as shown below:

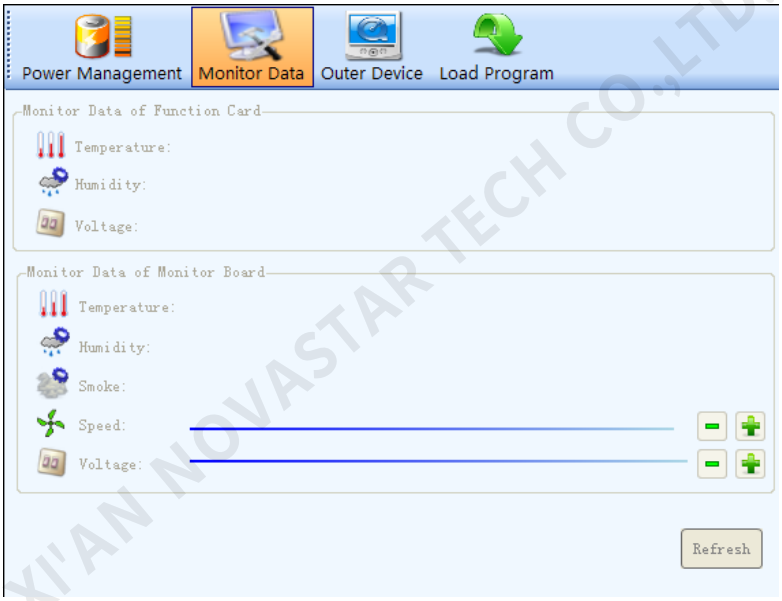


Fig. 7-85 System monitoring page

Refresh

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

7.8.3 External device management

Requirement: light sensor connected.

Click the Outer Device button in the Function Card Management page to open the page for external devices management as shown in Fig. 7-86:

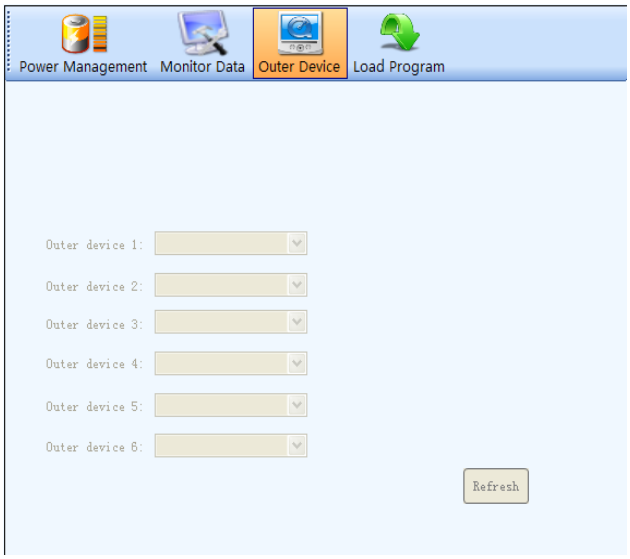


Fig. 7-86 External device management page

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.

7.8.4 Load program

Click the Load Program button in the Function Card Management page to open the page for loading program to the hardware as shown in Fig. 7-87:

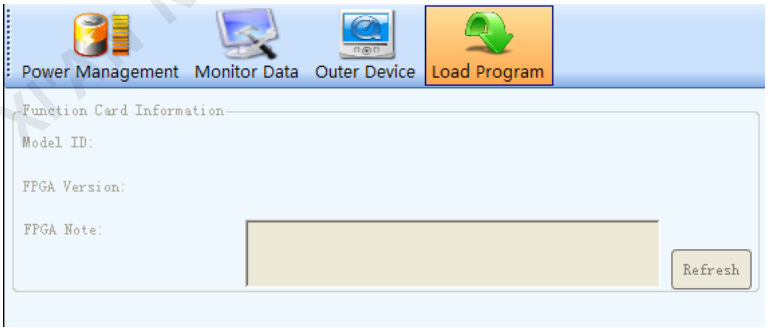


Fig. 7-87 Program loading page

Refresh

Click this button to acquire the version information of the current function card.

Input admin directly to access the options for program loading as shown in Fig. 7-88.

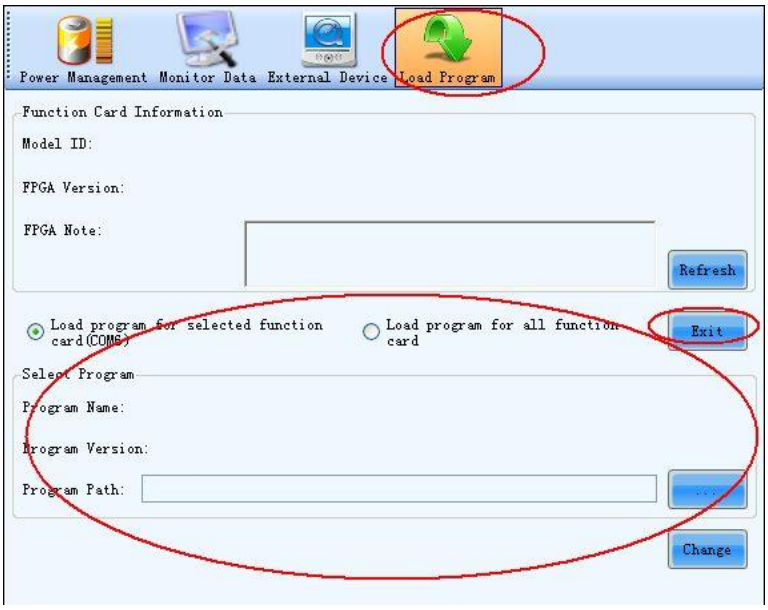


Fig. 7-88 Page with program loading options

Exit

Click this button to go back to the page shown in Fig. 7-83.

Load program for selected function card

Select this option to load program to the current function card.

Load program for all function card

Select this option to load program to all function cards.

Program Path

Select the program to be loaded here.

Change

Click this button to load the selected program to the current function card or all function cards.

Attention:

A. There isn't any place to view the typing when inputting the password. Just type in the password directly and the page shown in Fig. 8-79 will change to the one shown in Fig. 7-81;

B. Just input in the password again if the one input before was wrong;

C. Changing the program is not recommended unless there are problems with the function cards.

7.9 Main board power management

For the power control of asynchronous control card, the figure below is the main menu of power management.

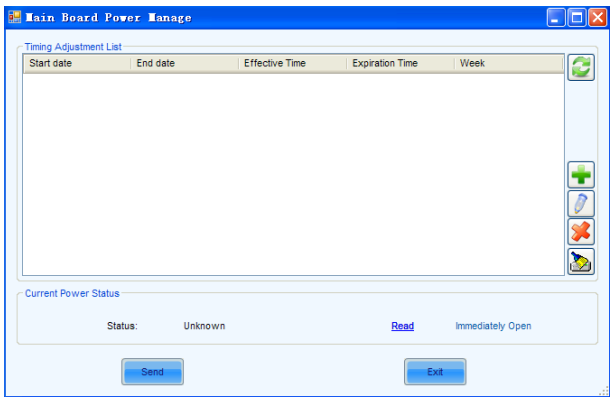


Fig. 7-89 Power Management Window of the Board

1) Immediate On/Off

Clicking “read back” can read the current power state, and the “Immediate On” or “Immediate Off” nearby can make real-time control over the asynchronous card power.

2) Clocked On/Off

Click Add button  to set, for example, effective date, effective days and effective time on the following menu, and then click “Ok”.

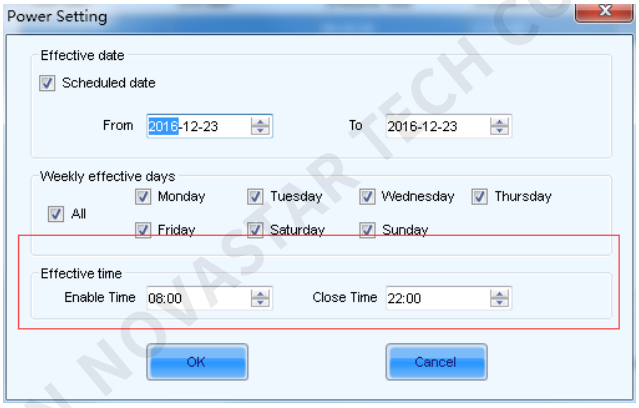


Fig. 7-90 Add Power Clocked Control

Return to the main menu of power management and click “Send” to send the clocked control command to the asynchronous card.

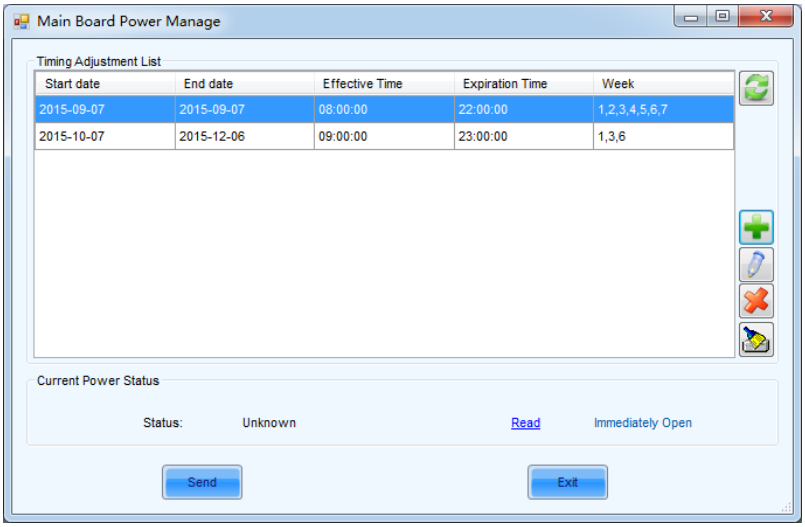


Fig. 7-91 Send the clocked power control commend to the asynchronous card

8 Introduction to PlutoManager

PlutoManager is a play and management software for Pluto asynchronous control system, it can connect to the asynchronous control card via LAN or internet. The main functions include client management, Play-Program editing, Play-Program transmission, play status remote monitoring etc. The software interface is simple and easy to learn. Main features as follows:

8.1 Software characteristics

- Supports a variety of media formats, such as video, images, text, weather, clock, countdown, Word, Excel, Txt, etc.;
- Supports Play-Program transmission via online or offline;
- Supports multi-window playing;
- Supports hiding preview window;
- Supports self-adapting window display;
- Supports multiple clients synchronous display;
- Supports multi-period display, cycle inserted display and timing inserted display;
- Supports remote restart client;
- Supports display search configuration without the IP address;
- Supports upgrading of word stock;
- Supports upgrading by service packs;
- Supports remote software upgrading;
- Features simple interfaces and easy operations;
- Support multiple languages;
- Support the secondary development, transparency, friendly interface, easy to use, and background image modification.

8.2 PlutoManager interface

Fig. 8-1 Main interface of plutoManager with no client connection

According to tips in the page, if the client is in LAN, click configuration to select add all clients or add client with specific IP.

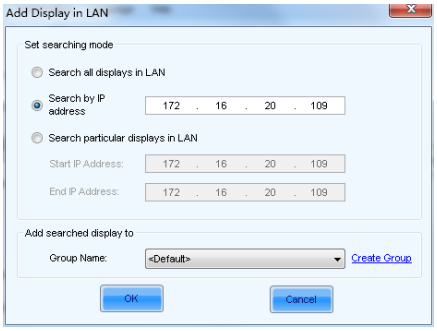
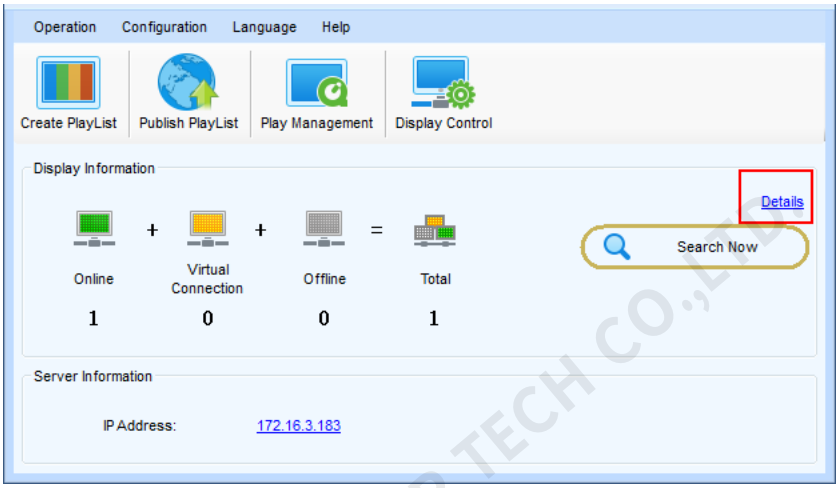


Fig. 8-2 Add client in LAN

After the connection is successful, enter the main interface of PlutoManager.



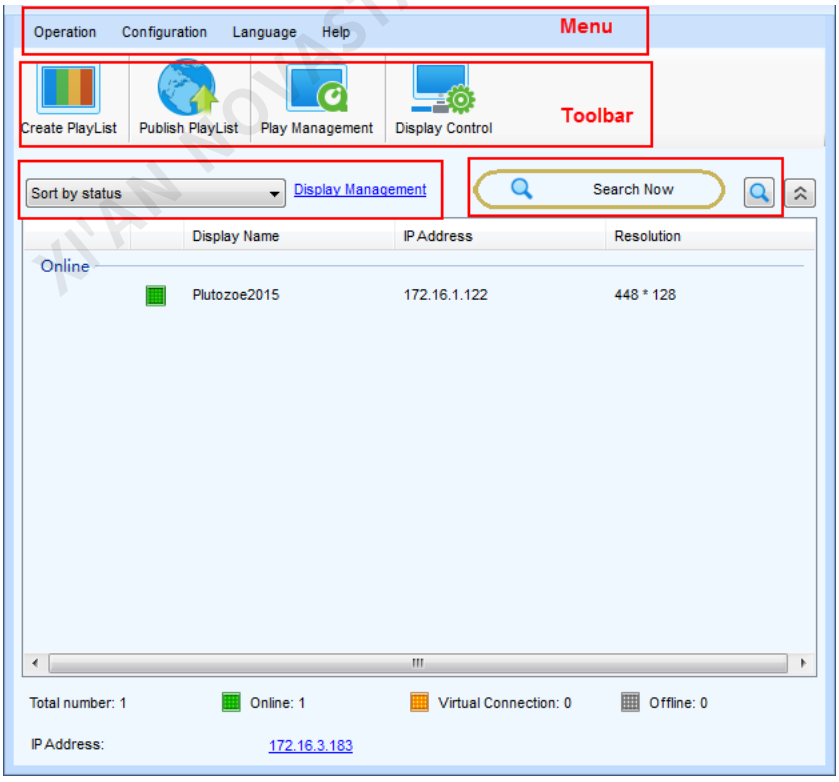


Fig. 8-3 PlutoManager main interface

✧ There are “**Online**”, “**Virtual Connection**”, and “**Offline**” for client status.

A tip pops up after clicking “Virtual Connection”, as shown in the following figure;

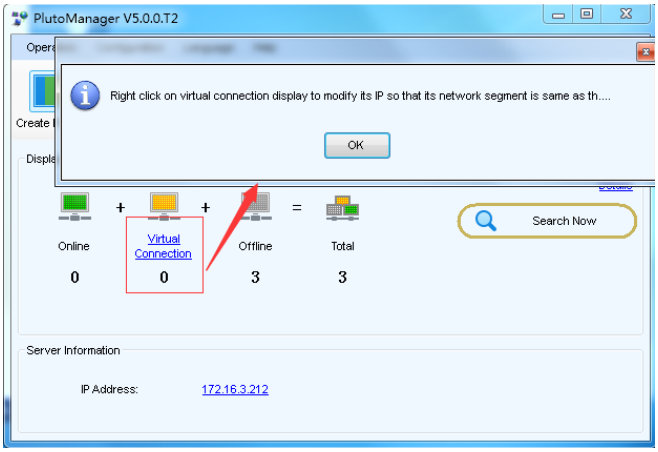


Fig. 8-4 Tips of the virtual connection

***Note**: Select and set the client in virtual connection status as required.*

✧ If you want to connect through IP addresses, all the clients connected to the LAN are displayed after searching, and select the IP address as required.

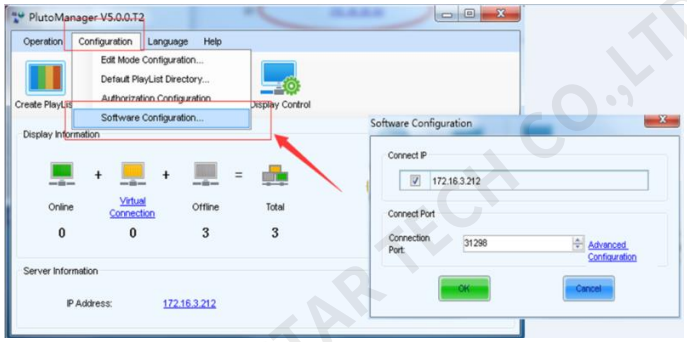


Fig. 8-5 IP Connection

Click button "**Details**"on the main interface as shown in fig. 8-3 to read the details.

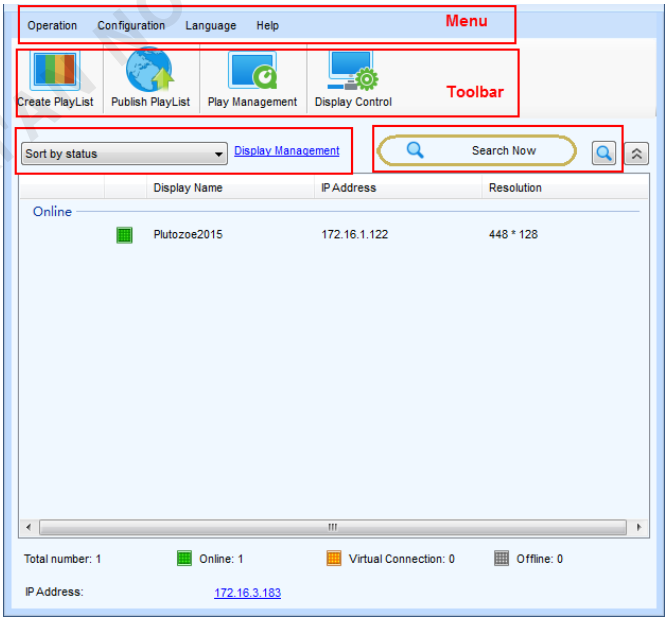


Fig. 8-6 Details of the main interface of plutoManager

Menu /Toolbar: Please refer to Table 8-1 in the next section for details;

Client list: Show clients by group, LED display size and status respectively. And also show client name, IP, corresponding LED display width and height and status;

Search now: Search client by IP or name;

Client sorting: non-sorting, ascending or descending sort by name, ascending or descending sort by IP;

IP: View the IP of current computer.

8.3 Menu/Toolbar

Table. 8-1 Menue/Toolbar of plutoManager

Toolbar		Icon	Function
Operation	Create PlayList		New Add a page Add a window Preview Save
	Publish PlayList		Play-Program conversion Online publish Offline publish Instant notification Emergency insertion
	Play management		View and manage current play info. Play log management External storage device management Time management
	Online upgrade		Version readback Online upgrade
	Terminal time synchronization		It can be set as time synchronization through PlutoManager or the Cloud server, or auto time synchronization through the terminal.
	Font management		Read the current font of the terminal Update the font of the terminal
	Language management		Readback the current language of the terminal Update the language of the terminal
	Display control		Read and set the time zone and time of the terminal; Immediately, timing to restart the terminal Set the terminal password; The terminal IP settings for wired configuration, or terminal Wifi settings and access for wireless configuration; Brightness adjustment of terminal display screen

			(manual, timing, automatic); Configuration and access of terminal parameters connected to the server;
Configuration	Software configuration		IP configuration Connecting port configuration
	Play-Program directory configuration		Play-Program storage directory configuration
	Authorization configuration		Load terminal authorization document Input terminal authorization password
Language	English(en) español (España)(es-ES) français(fr) 日本語 (日本)(ja-jp) 中文(繁體)(zh-CHT) 中文(中华人民共和国)(zh-CN)		Multi-language switching
Help	Document		Novapluto control system user manual.chm
	About		Software info
	Software Update		

9 PlutoManager Operation Instruction

9.1 Client management

Click Client Management on the toolbar of PlutoManager main interface to enter Client management page.

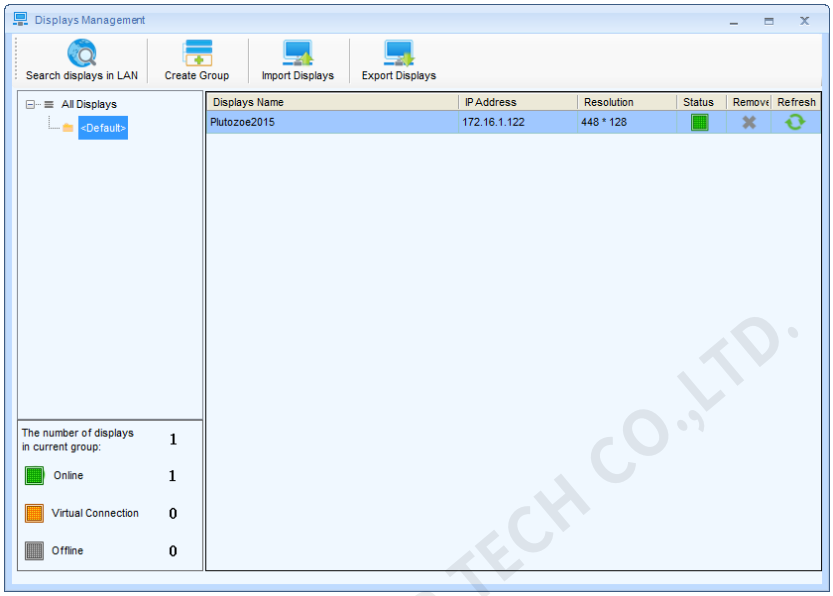


Fig. 9-1 Client management page

The following management to operations can be performed in Client management page:

Table. 9-1 Client management toolbar

Icon/Name	Function	Operation
	Search client in LAN	Click the icon; Select Connect to All or Connect to specified IP; Click Connect.
	Create group	Click the icon; Add a group name, and click OK; Rename: In the client group list, right-click the group to be renamed. In the right-click menu, click Rename and press ok after modification.
	Import client	Click the icon; Select the path of the file, and click OK. (Provided that prior the client has been previously exported. There's an existing client file.)
	Export client	Click the icon; Select save path of the file; Select the client group to be exported or choose export all clients; Click OK.

	Delete offline client	Offline clients won't be shown after clicking this button.
	Refresh	Refresh client status; Reconnect the offline terminal.

1) ADD client in LAN

Add client operation steps:

Method one: Click Client Management→Search client in LAN→Search all clients in LAN, PlutoManger will add all clients in LAN.

Method two: Click Client Management→Search client in LAN→Search by IP (the client IP must be known), only client with specific IP will be added.

Method three: Click Client Management→Search client in LAN→Search a part of client in LAN, input IP scope.

After adding client by any of above three methods, the client info can be seen in both main interface and client management page.

2) Modify the displays name

Select terminal→click right button→【**Modify Displays Name**】, fill the new client name, then click 【**Modify**】.

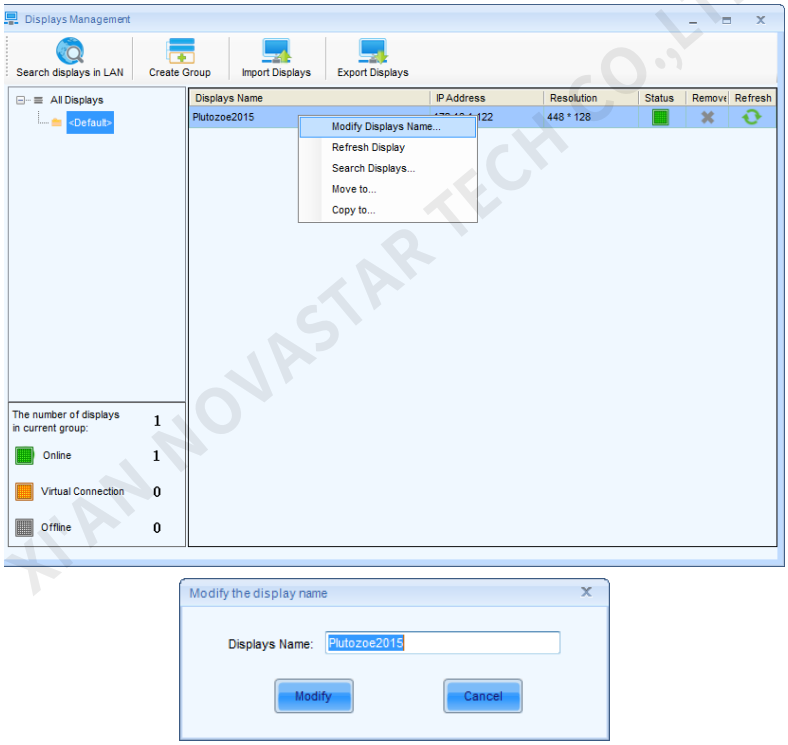


Fig. 9-2 Modify display names

3) Display group

Click 

to create a new group, and then group the clients. That is to divide clients into groups. Grouping can be done through the following two ways:

Methods one:

Select one or more clients, use the right button to click【**move to…**】. And then to choose one group in the window

of Select the Display Group, and then click **OK**.

The clients will be moved to the selected group.

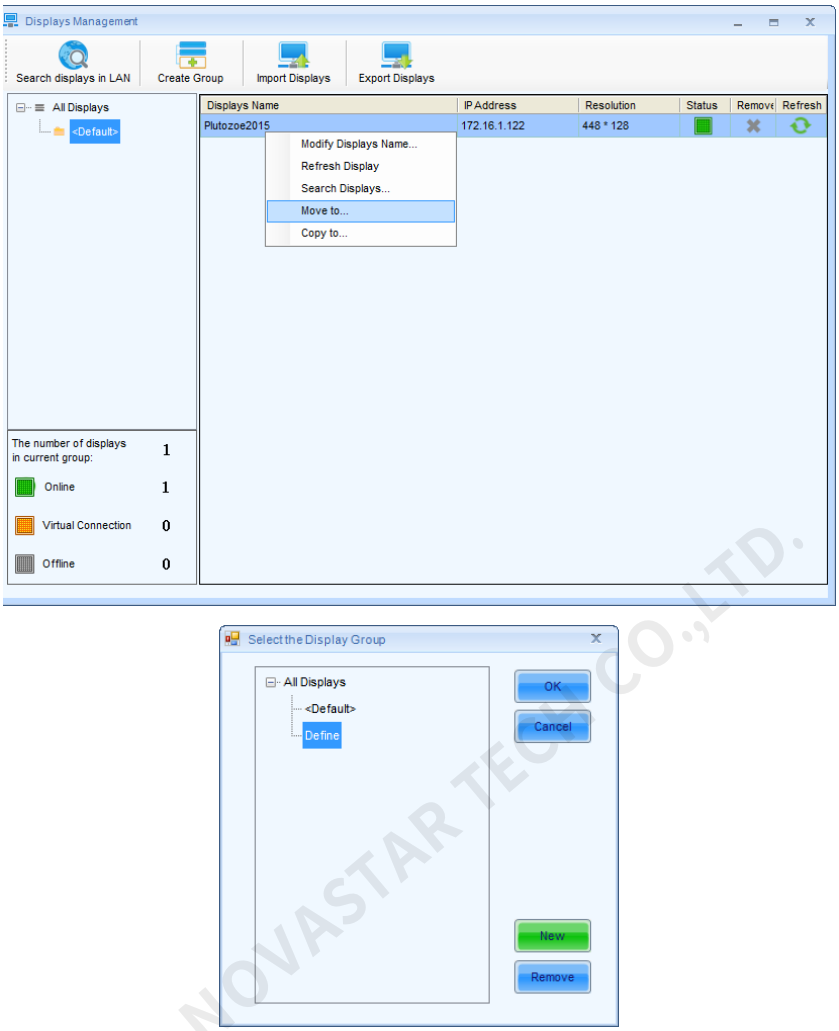


Fig. 9-3 Client grouping methods one

Methods two:

Select one or multiple terminal, and drag it to the target group.

The following fig shows dragging three screens into the Defined group.

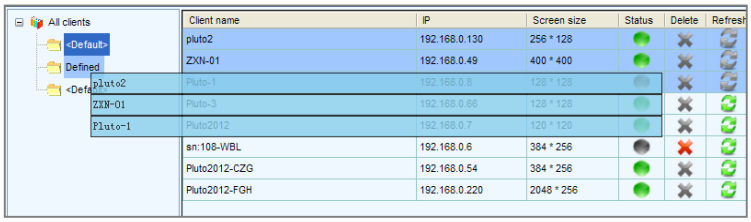


Fig. 9-4 Client grouping methods two

9.2 Create play-program

a) Click "Configuration"→"Edit Mode Configuration", check "**BillBoard**", and click "**OK**".

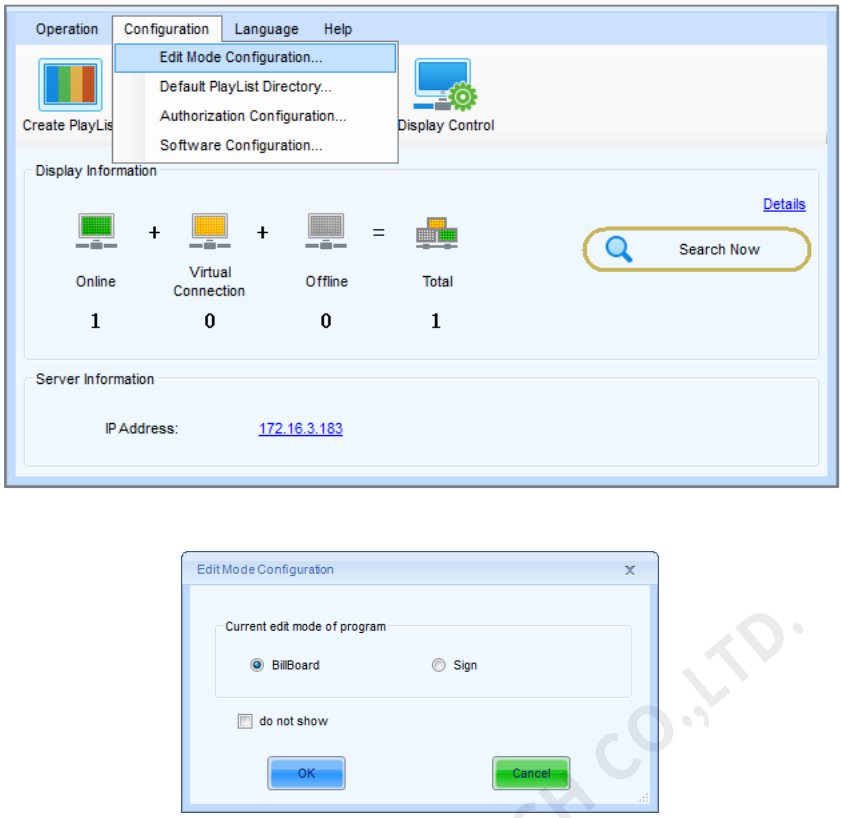


Fig. 9-5 Edit mode of program

b) Click Create Play List in the toolbar of PlutoManager main interface to enter the Play-Program creating page.

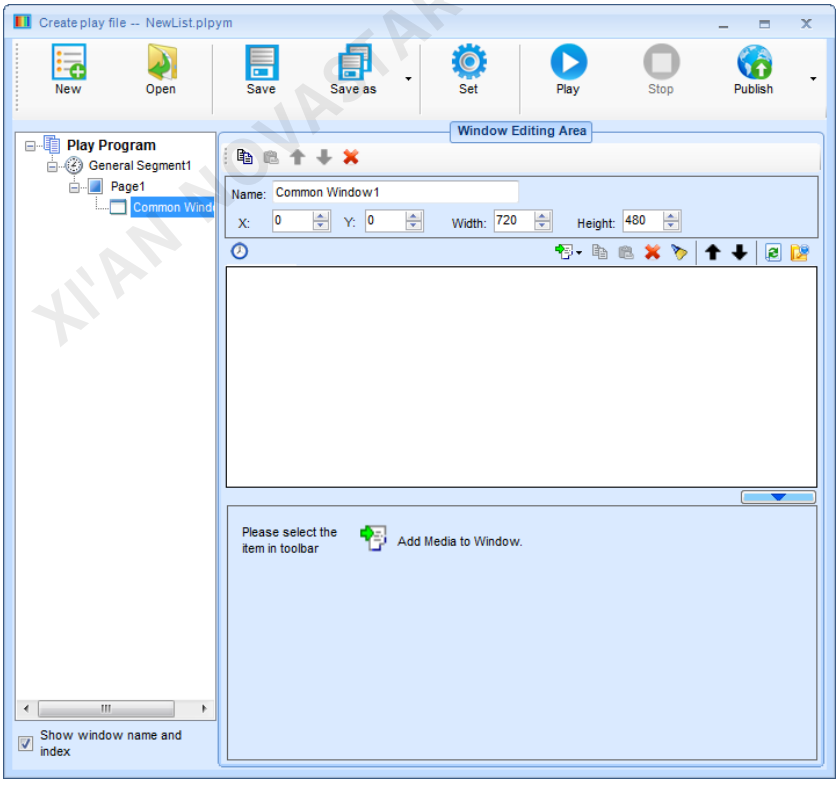


Fig. 9-6 Play-Program creating page

9.2.1 Play program structure

Play program can save as the file which extension is .plpym, it is composed by several common segments, otherwise, it can also contain one or more inserted segments. The common segment and inserted segment is composed by one or more pages, and each page is composed by one or more windows. The window can be divided into Common Window, Clock Window, Scroll Text Window, Countdown Timer Window, and Weather Window. The Common Window can contain one or more different types of media. One example of play program structure is as shown in the following figure.

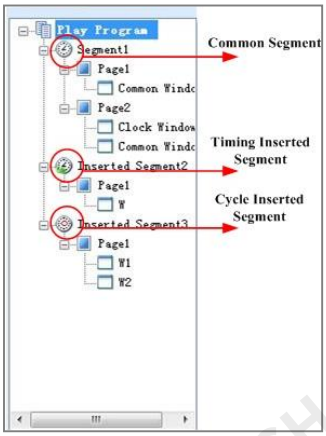


Fig. 9-7 Example of play program

✧ **Common Segment**

The segment has these time properties: Effective Date, Effective Days of the Week, Effective Time of the Day.

For Example: The common segment Segment1, from June 23, 2012 to June 30, 2012, every Monday, Wednesday, Friday, played from 8:00 to 12:00, as shown in the following figure.

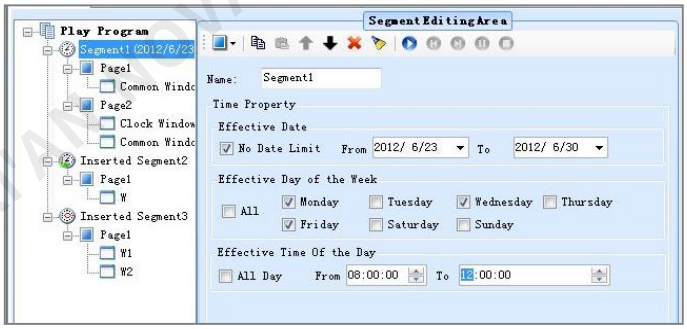


Fig. 9-8 Common segment 1

✧ **Timing Inserted Segment**

The segment is started to play for specific times or duration at a specific time point in effective days of effective date. It has these time properties: Effective Date, Effective Days of the Week and several Specific Time Points.

For Example: Timing inserted segment Segment2, from June 23, 2012 to June 30, 2012, every Monday, Wednesday, and Friday, played at 8:30 for 1 times, as shown in the following figure.

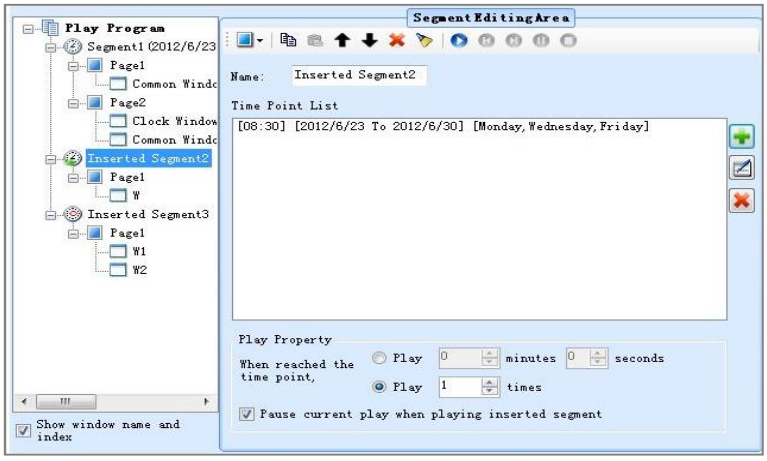


Fig. 9-9 Timing inserted segment2

✧ **Cycle Inserted Segment**

The segment is played for specific times or duration at regular intervals in effective time of effective days of effective date. It has these time properties: Effective Date, Effective Days of the Week, Effective Time of the Day and Play Intervals.

For Example: Cycle inserted segment Segment3, from June 23, 2012 to June 30, 2012, every Monday, Wednesday, Friday, from 8:00 to 12:00, played one time every 30 minutes, as shown in following figure.

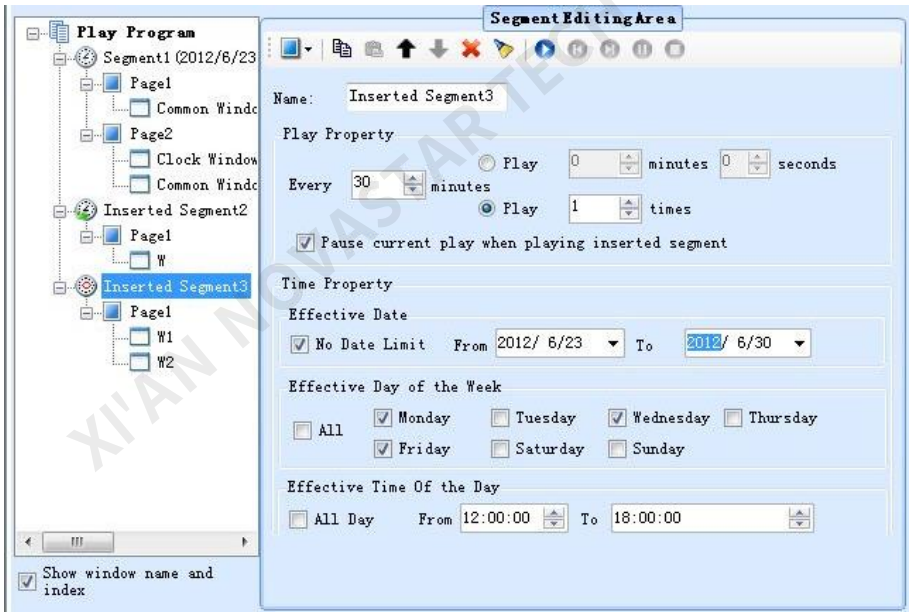


Fig. 9-10 Cycle inserted segment inserted segment 3

✧ **Page**

A page is an area on the computer display screen that is mapped to a LED display for showing visible media sources (such as videos, pictures and text) on the LED display.

- **Global page**

Global page is a special common page that it always stays on the front of all other common pages. In the case that common pages of different window layout are needed while a window at a fix position is also required (such like that for clock, weather info or scrolling text), putting the fix position window in a global page is the best way for the window layout design. But if only one common page is needed, a global page may not be necessary as the fix position window can be set directly to the position required.

- **Common Page**

A common page can have multiple windows and the layout of the windows can be customized. A segment can have multiple pages. And of course, the window layouts of these common pages can be different from each other. The common pages will be shown in the order they are listed in the segment. Normally, one common page is enough for a segment.

✧ **Window**

A window, also named a play window, is an area of a page in which visible media sources will be show. Note that any window must be affiliated to a page.

- **Common Window**

A common window could have its own media sources list and thus different types of media sources can be played in it in the list order.

- **Scroll Text Window**

A window that is only for showing scrolling text.

- **Clock Window**

A window that is only for analog or digital clocks.

- **Countdown Timer Window**

A window that is only for showing information from a time meter.

- **Weather Window**

A window that is only for showing weather information.

9.2.2 Play program dispatch rule

If there are conflicts between the playing times of segments, follow the below rules:

1) **The back one has the higher priority for the same type segments.**
2) **If the timing inserted segment has the same playing time point as the cycle inserted segment, play the timing inserted segment.**

You can view the dispatching result between different dates in the Play Program Editing Area.

For example:

✧ **Common Segment**

Suppose time properties of segment A and segment B are set as follow:

A	B
From June 24, 2012 to June 30, 2012	From June 24, 2012 to June 30, 2012
Every day in a week	Every day in a week
From 8:00:00 to 15:00:00 in each day	From 8:00:00 to 12:00:00 in each day

- If B is at the back of A in the play program, then B has the priority to be played on time confliction (on March 23, 2015).

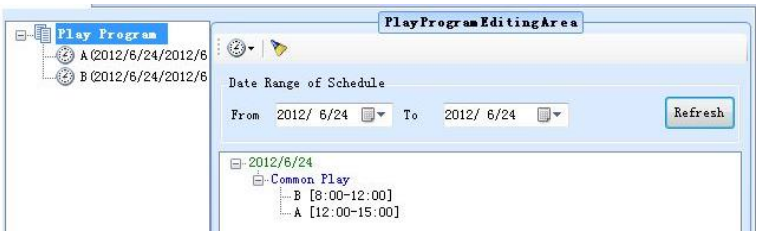


Fig. 9-11 B has higher priority than A

- Otherwise, if A is at the back of B in the play program, then A has the priority to be played on time confliction (on March 23, 2015).

Fig. 9-12 A has higher priority than B

✧ **Timing Inserted Segment**

Suppose time properties of timing inserted segment C and timing inserted segment D are set as follow:

C	D
From June 24, 2012 to June 30, 2012	From June 24, 2012 to June 30, 2012
Every day in a week	Every day in a week
At 8:00, 15:00	At 9:00, 15:00

- If D is at the back of C in the play program, then D has the priority to be played at the same time point (on March 23, 2015).

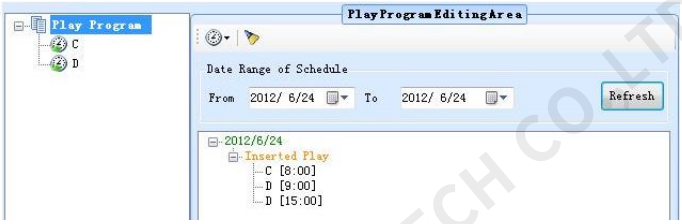


Fig. 9-13 D has higher priority than C

- Otherwise, if C is at the back of D in the play program, then C has the priority to be played at the same time point (on March 23, 2015).

Fig. 9-14 C has higher priority than D

✧ **Cycle Inserted Segment**

Suppose time properties of cycle inserted segment E and cycle inserted segment F are set as follow:

E	F
From June 24, 2012 to June 25, 2012	From June 25, 2012 to June 26, 2012
Every day in a week	Every day in a week
Play Interval: 30 minutes	Play Interval: 30 minutes

- If F is at the back of E in the play program, then F has the priority to be played on time confliction:

Fig. 9-15 F has higher priority than E

- Otherwise, if E is at the back of F in the play program, then E has the priority to be played on time confliction:

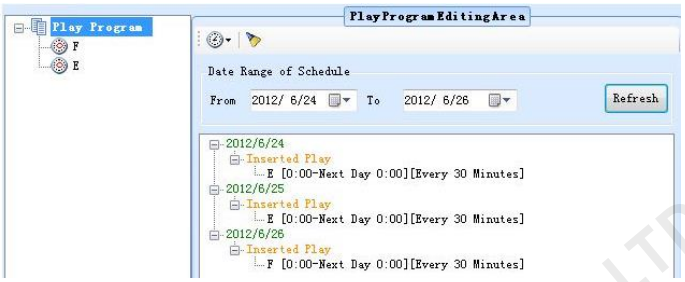


Fig. 9-16 E has higher priority than F

***Note**: If there is no confliction between two cycle inserted segments, but they has the same playing time point, still follow the same dispatch rule(the back one has higher priority).*

For Example, suppose time properties of G and H are set as follow:

G	H
From June 24, 2012 to June 25, 2012	From June 24, 2012 to June 25, 2012
Every day in a week	Every day in a week
Play Interval: 20 minutes	Play Interval: 10 minutes

- If H is at the back of G, H will be played at 00, 20, 40 minutes of every hour. Otherwise, play G.

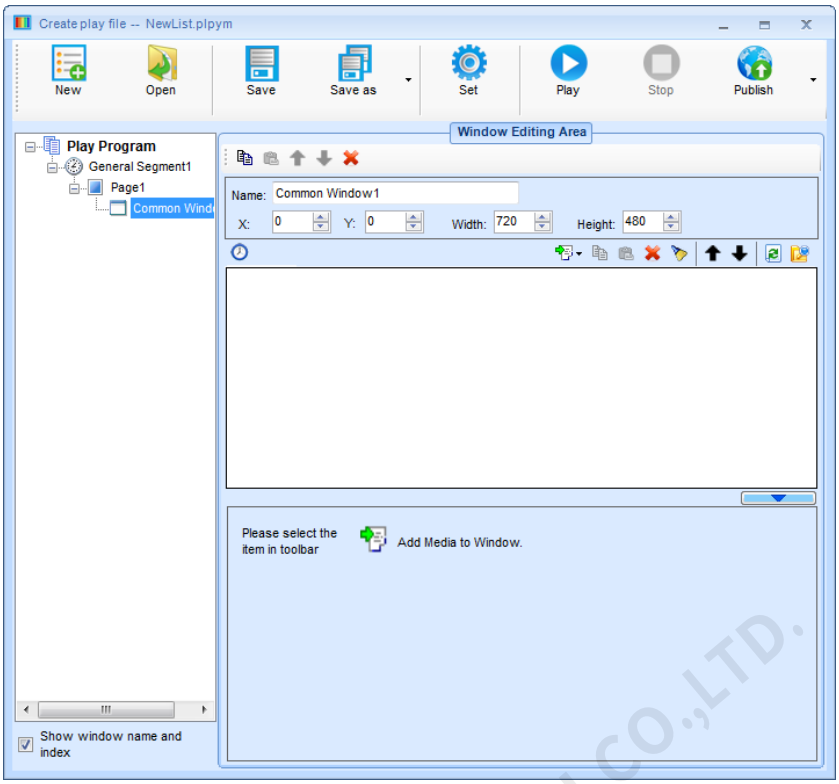
If one time point of timing inserted segment is the same as one playing time of cycle inserted segment, play timing inserted segment.

For example, suppose time properties of cycle inserted segment I and timing inserted segment L are set as follow, it would play L when arrived at 10:30.

I	L
From June 24, 2012 to June 25, 2012	From June 24, 2012 to June 25, 2012
Every day in a week	Every day in a week
Play Interval: 30 minutes	At 10:30

9.2.3 Display window setting

Click New button in the window of create play file to set the play window information.



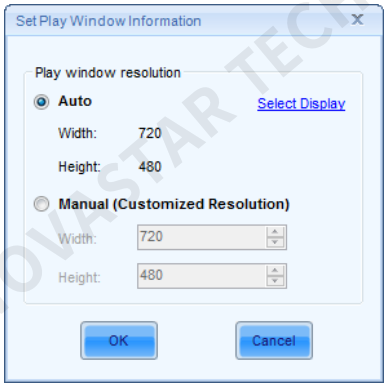


Fig. 9-17 Play window information

Play window resolution

Auto: Width and Height can adapt to the display automatically.

Customized size: Must be set according to the actual size of the display.

Select Display: Select display from the display list, to read the size of the client display directly.

Select Display operation steps:

a) Click Select Display in Fig. 9-17.to enter the terminal list.

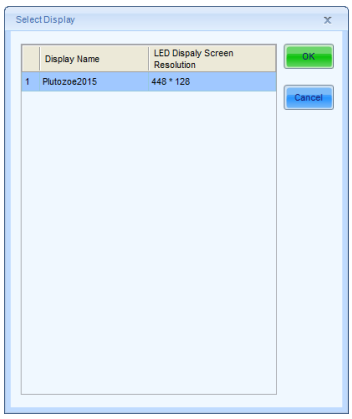


Fig. 9-18 Read display size of specific client

b) Select specific display, and click OK. The software will read the size of the client display directly.

9.2.4 Configure playlist directory

After clicking save in playlist creating page, the playlist will be automatically saved to default directory (factory default: My Documents\NovaPluto\ PM-PlayList). The user can configure the directory of playlist. Re-configuration of playlist directory might cause unsuccessful playlist publishing, therefore, users are recommended to read the contents of this section carefully.

Operating steps of configure playlist directory:

1) Click Configuration button in the main interface of PlutoManager. The following window will pop up:

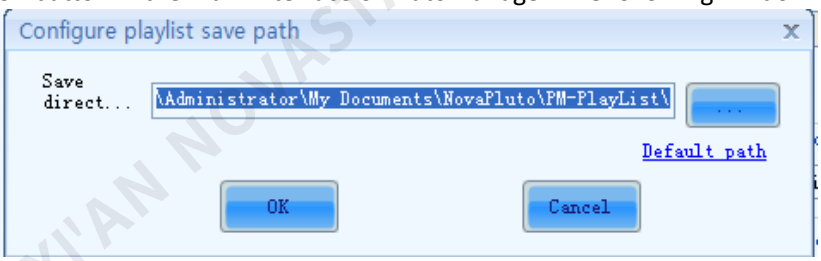


Fig. 9-19 Configure playlist directory

2) Click  , warning window will pop up:

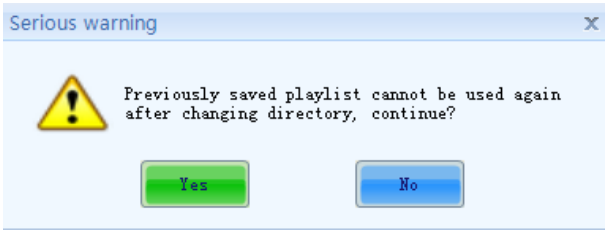


Fig. 9-20 Playlist directory changing warning

"Previously saved playlist cannot be used again after changing directory" means after the directory is changed, clicking Open button will lead to the new directory to search for playlist. The playlists previously saved in the default directory will no longer be opened, therefore cannot be used. So users are recommended to configure directory before saving playlist.

3) Click **Yes** to choose a new directory. And then click OK. New directory will be configured successfully.

9.2.5 Edit play program

9.2.5.1Edit Segment

a) Create

Click the button on the toolbar of Play Program Editing Area, or right-click on the Play Program Node, or right-click on the screen, a menu pops up shown as Fig. 9-21 for adding new segment.

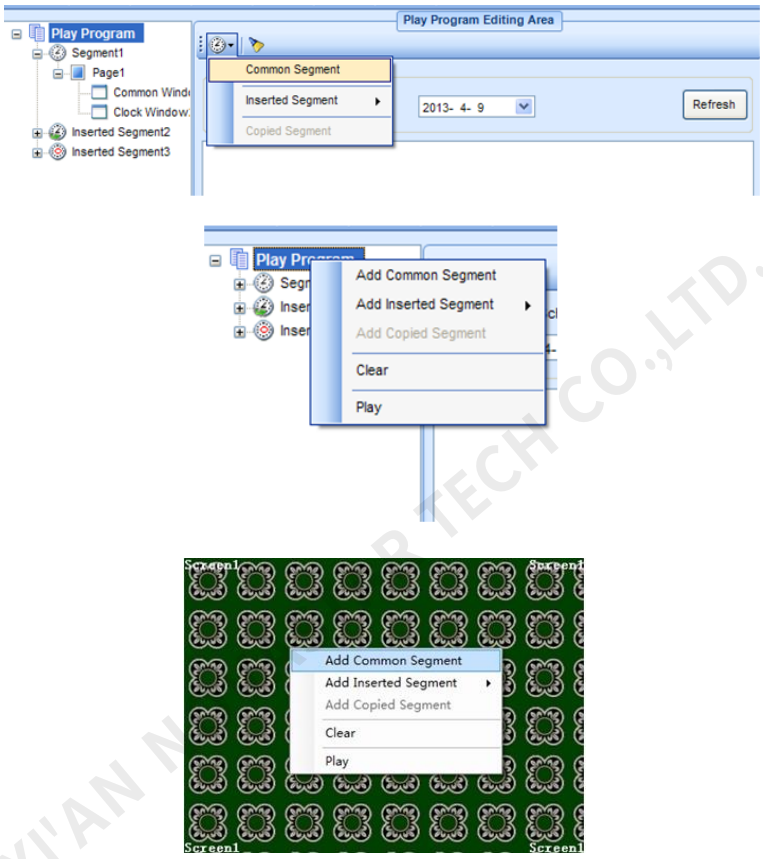


Fig. 9-21 Add segment

b) Editing properties of segment

You can edit the properties at the Segment Editing Area after adding the common segment or inserted segment. Shown as below.

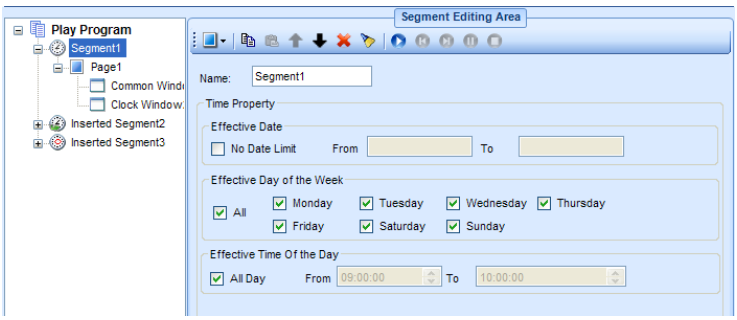


Fig. 9-22 Properties page of common segment

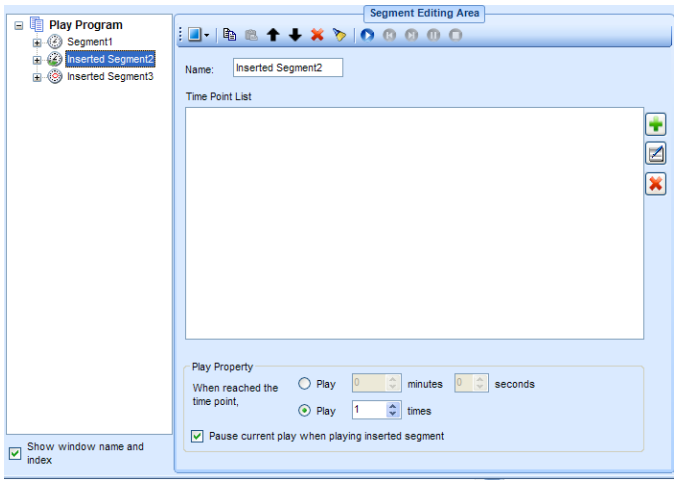


Fig. 9-23 Properties page of timing inserted segment

You can add one or more playing time point for the timing inserted segment.

For inserted segment, if Pause current play when playing inserted segment is selected, the current common segment play (If has) would be paused and hide if begin to play inserted segment, otherwise, the inserted segment and the current common segment would be played together.

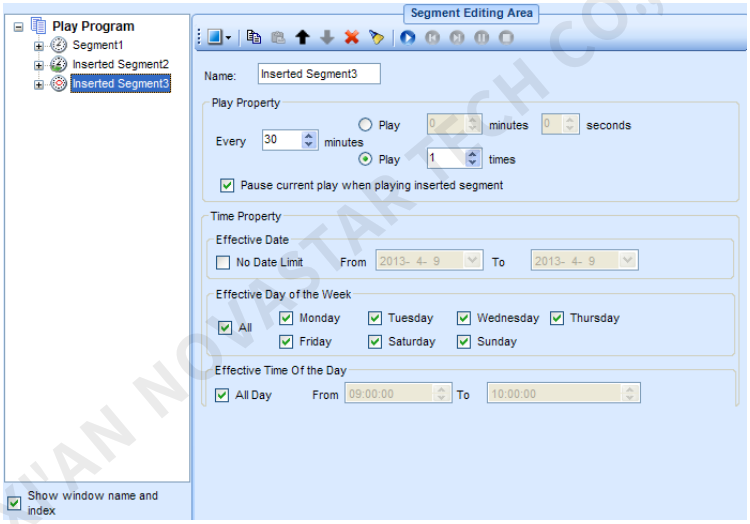
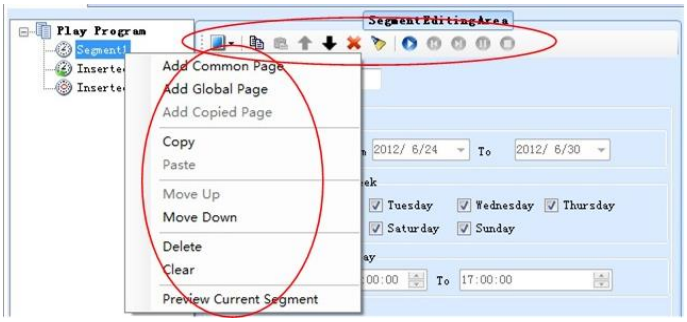


Fig. 9-24 Properties page of cycle inserted segment

Use the toolbar on the right or right-click menu, you can copy, paste, move or delete the selected segment. The toolbar and menu is shown as below.



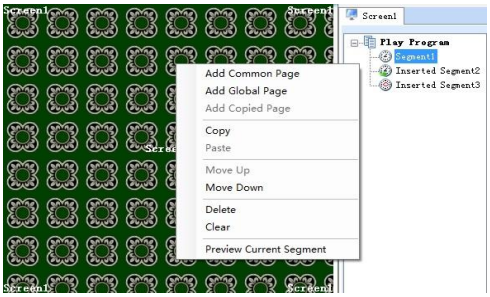


Fig. 9-25 Menu of segment

9.2.5.2Page editing

1) Create a new page

Click the button on the toolbar at Segment Editing Area to add a Common Page or Global Page.

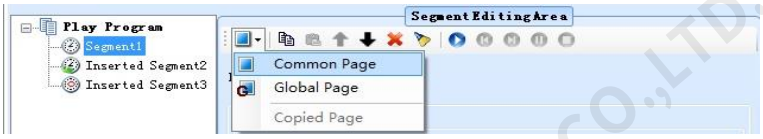


Fig. 9-26 Add page

2) Properties setting

The properties of the added page can be set through the property panel. Shown in Fig. 9-27 is the property panel.

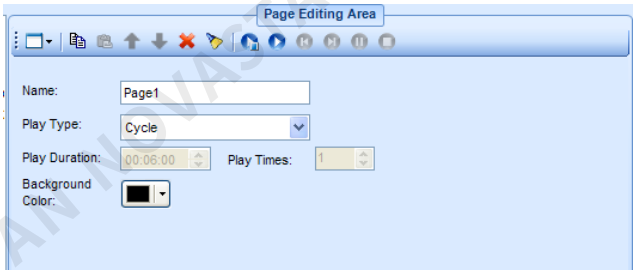


Fig. 9-27 Properties of page

There are three options for Play Type, Cycle, Specific Times and Specific Duration. If Play Type is set to be Cycle, this page will be shown repeatedly; if Specific Duration, NovaStudio2012 will shift to the next page after showing this page for the time specified by Play Duration; if Specific Times, NovaStudio2012 will shift to the next page after all the play windows finish playing their media sources repeatedly for N times (N is specified by Play Times).

Area of the page that is not covered by windows will show the background picture or color, as shown in Fig. 9-28.

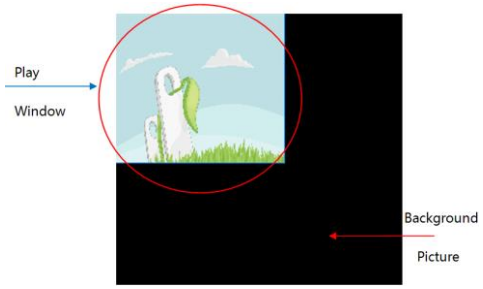


Fig. 9-28 Background with background picture

The play type is only Cycle for global page. The global page will be always playing during the segment playing.

Use the toolbar on the right or right-click menu, you can copy, paste, move or delete the selected page. The toolbar and menu is shown.

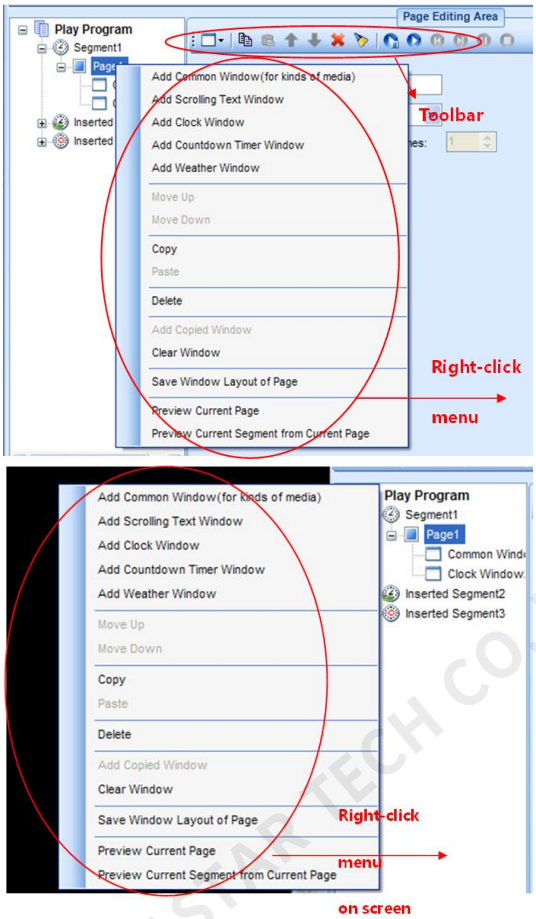


Fig. 9-29 Menu of page

9.2.5.3 Window editing

1) Create a new window

After adding a page, you should add windows to the page. For example, click the button shown in Fig. 9-30 to add a common window to the page.

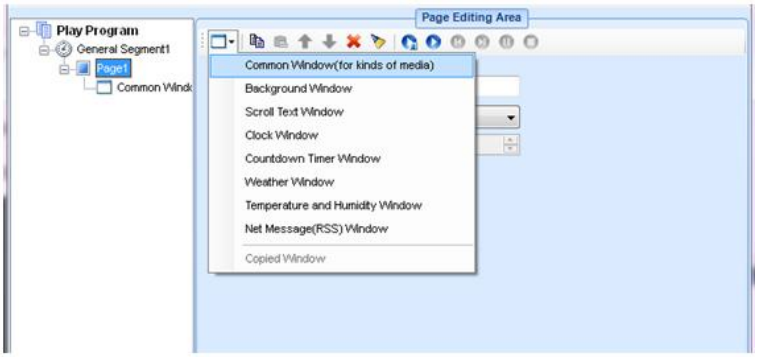


Fig. 9-30 Add window to page

The newly added window will be shown on the computer display after the add operation, as shown in Fig. 9-31.

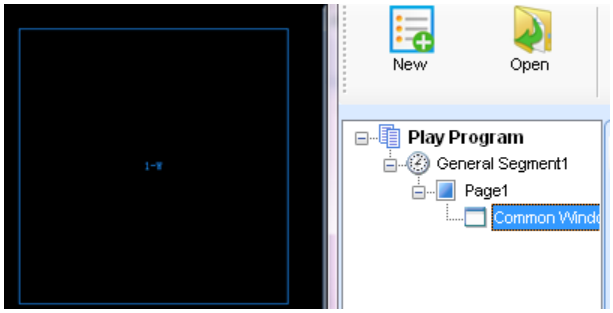


Fig. 9-31 Added window

2) Window position and size setting

The position and size of a newly added window may need to be reset as the default values are unlikely to meet the requirements. These values can be reset directly by using the tool provided in NovaStudio2012, as shown in Fig. 9-31. A more intuitive way to reset these values is to use the mouse. Click on the window to put focus on it and then set its position and size by drawing, pulling and squeezing, as shown in Fig. 9-32. The arrow keys and their combination with Shift keys can also be used for the position and size setting of a window.

Fig. 9-32 Tools for window position and size setting

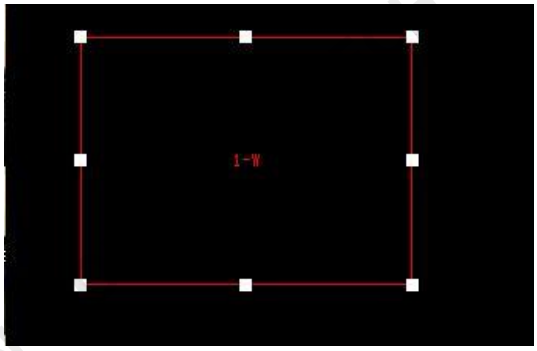


Fig. 9-33 A focused common window

To show all the windows of a page, just select the page from the page list. This could be very helpful for windows layout adjustment.

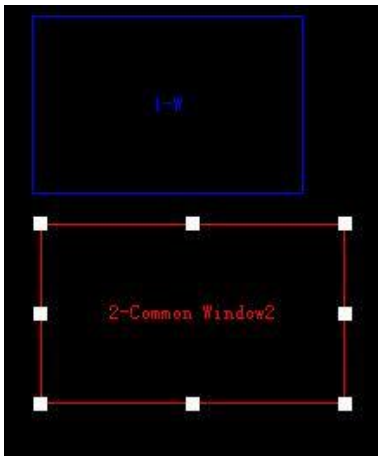


Fig. 9-34 Showing all window of page

3) Delete a window

To delete a specified window, click the circled Delete button, as shown in Fig. 9-35.

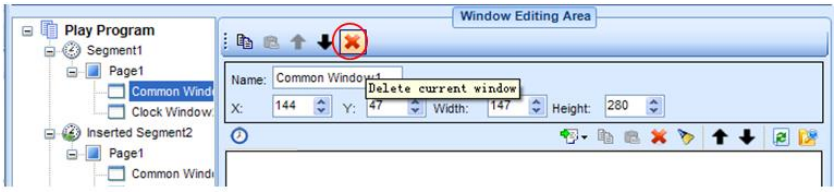


Fig. 9-35 Delete window

4) Move a window

For overlapped windows in the same page, the one at front will cover those under it.

Suppose a common window and a clock window is added to a page at the same position of (0, 0, 200, 200) . The common window will cover the clock window when this page is on shown if the common window is in front of the clock window in the window list. To avoid the clock window being covered by the common window, move it to the front of the common window or move the common window to the back of it. The circled arrow buttons in Fig. 9-36 are used to move a window forward or backward.

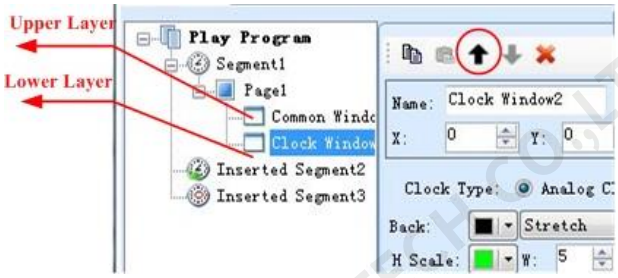


Fig. 9-36 Move window

5) Duplicate a window

To duplicate a window, select the source window, click the Copy button and then click the Paste. Circled in Fig as below are the Copy button and the Paste button.

Fig. 9-37 The Copy button and the paste button

The right-click menus on the window node and on the window zone in the screen are also supported to edit the window, as shown below.

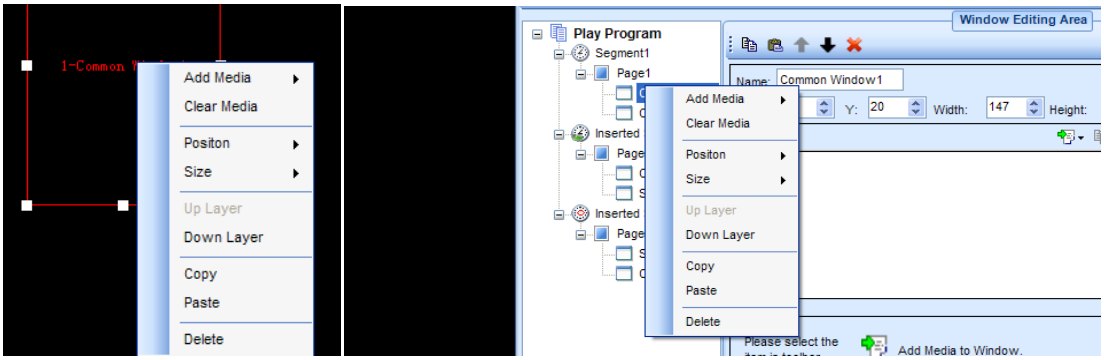


Fig. 9-38 Right-click menu of window

9.2.5.4Media editing

Media editing will be illustrated with a common window as an example.

1) Add a media

Media sources of a media type that is supported by the Software can be added to a common window for showing. Click the button “Add Media” to access the drop-down menu of media types. Select the corresponding item to add a media source of that type to the common window.

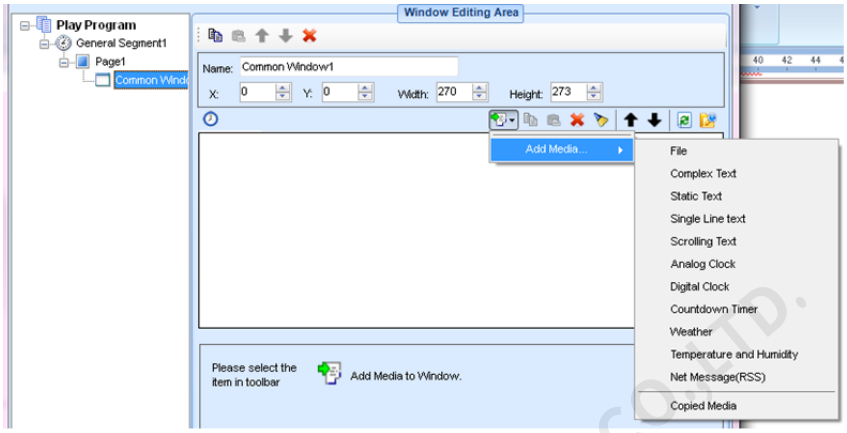


Fig. 9-39 Add media

2) Media properties setting

Properties of a media source can be set is related to the type of the media source. Refer to <Media Types Supported by Pluto Manager> for information about the settable properties of a certain type of media.

Settable properties of the selected media item in the media source list will be shown on the property panel, as shown in Fig. 9-40. Modify the property settings of a media item through the property panel if required.

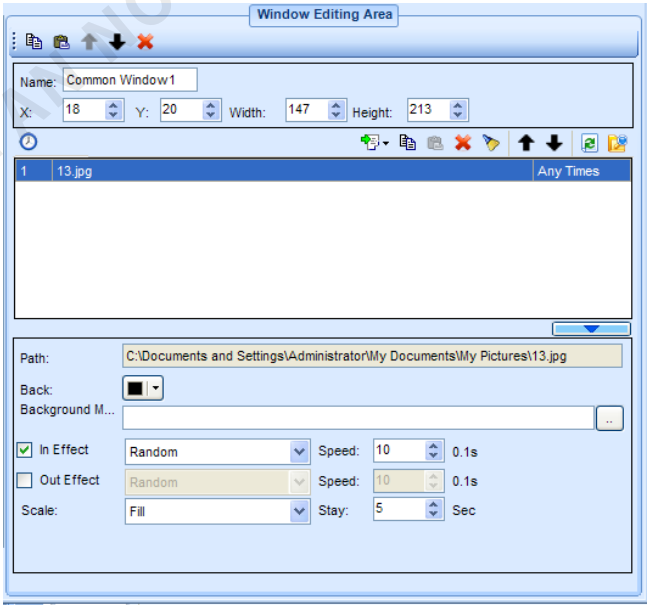
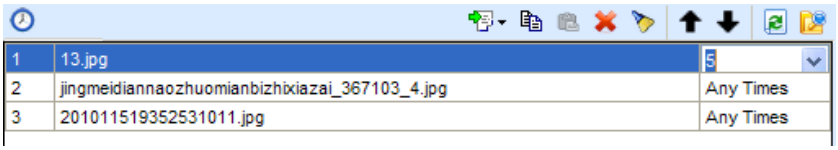


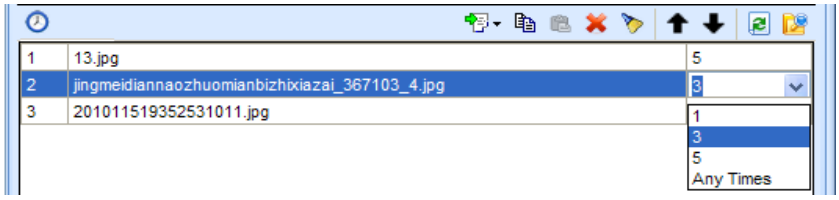
Fig. 9-40 Properties page of media

3) Set play times of media

Select the media in the list, then double click the Play Times Grid to change the play times: You can manually enter a new number or select the existing number in the drop-down, as shown.



（1）



（2）

Fig. 9-41 Change play times of media

The media scheduling is related with the play type of current page, described as follows.

- ✧ If there is three media A, B and C of one common window, the corresponding play time is 1, 2 and Any Times, the play order is as follows:
- The play type of page is Cycle： A B C B C C C C……
- The play type of page is Specific Times as 2： A B C B | A B C B
- The play type of page is Specific Duration： A B C B C C C C……
- ✧ If there is three media A, B and C of one common window, the corresponding play time is 1, 2 and 3, the play order is as follows:
- The play type of page is Cycle： A B C B C C | A B C B C C | A B C B C C |……|……
- The play type of page is Specific Times as 2： A B C B C C | A B C B C C
- The play type of page is Specific Duration： A B C B C C | A B C B C C |……|……

4) Preview a media

Click a media item in the media list to preview it in the current window (in this case, the current window is a common window). New property settings will take effect immediately even they are set during the previewing. The first media source in the media list of a window will be automatically previewed when the window is selected.

5) Move a media item

Use the  buttons to move a media item in the media list forward or backward and thus change the play order of the media sources. Mouse can also be used to move media items. The red line in Fig. 9-42 indicates the new position of the mouse item dragged by the mouse.

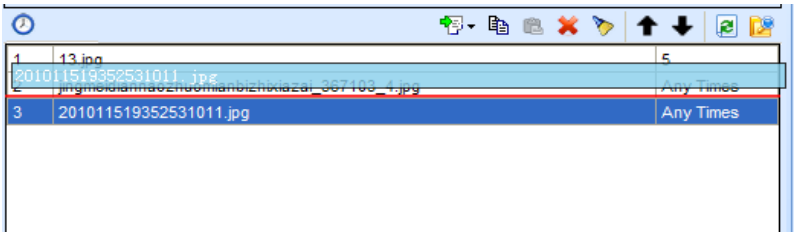


Fig. 9-42 Move a media item by mouse

6) The copy and paste of media

Click button  to copy the selected media, and click button  to insert the copied media after the selected media.

7) Apply the media properties to others

Select a media, and then click button  , choose the media to apply to in the pop up dialog.

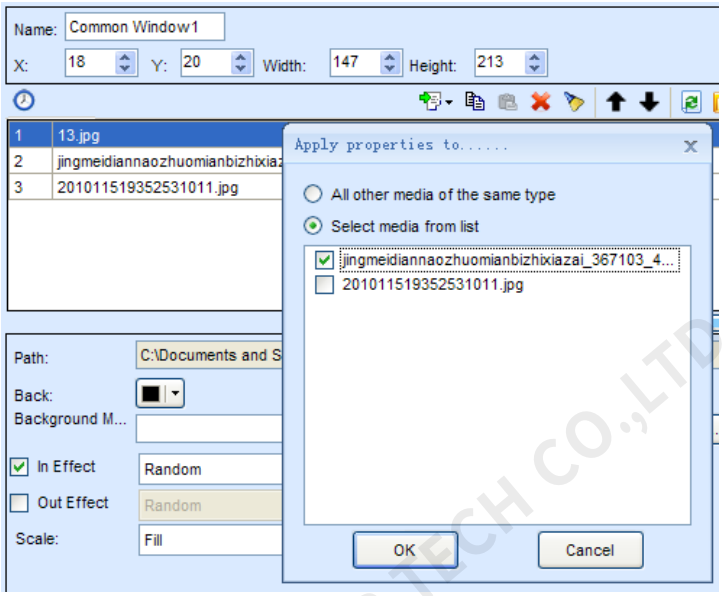


Fig. 9-43 Apply properties to media

Otherwise, the media operation also provides the corresponding right-click menu, as shown.

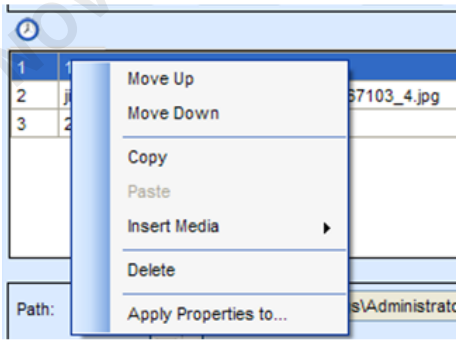


Fig. 9-44 Right-click menu of selected media

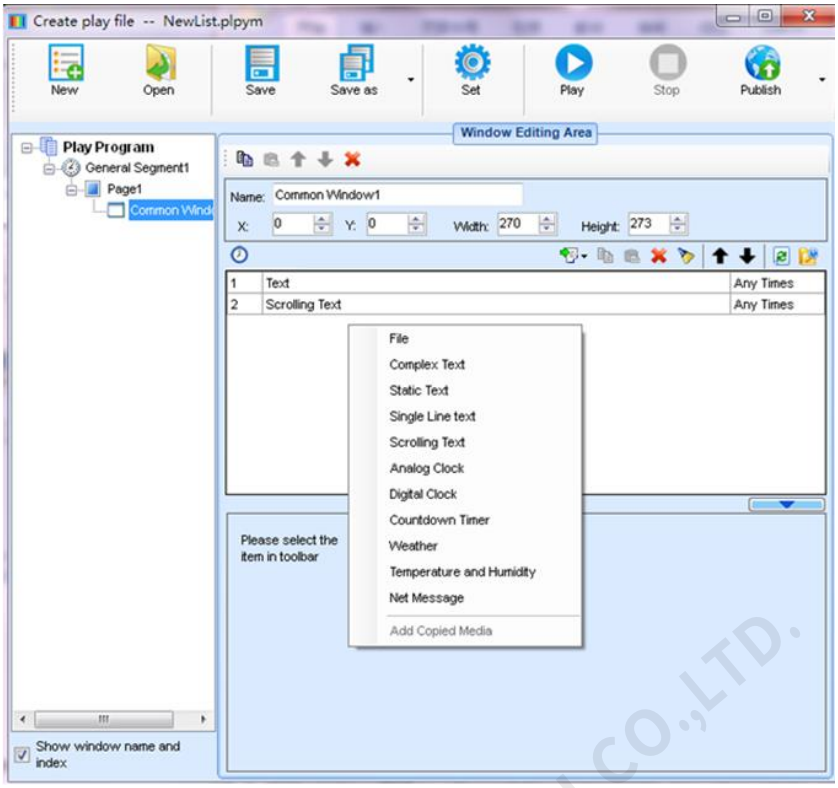
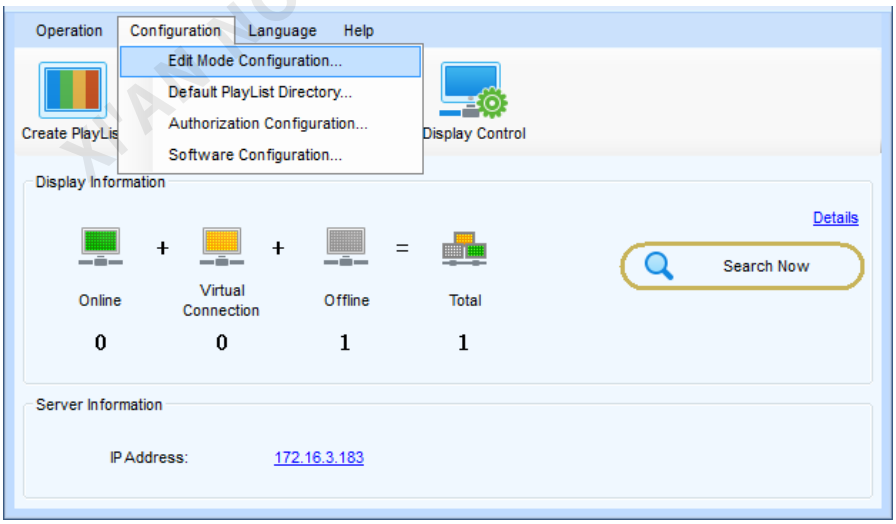


Fig. 9-45 Right-click menu of blank zone

9.3 Making sign list

Edit mode needs to be configured first. The operating steps are: click "**Configuration**" →"**Edit Mode Configuration**"→"**Sign**"→ "**OK**".



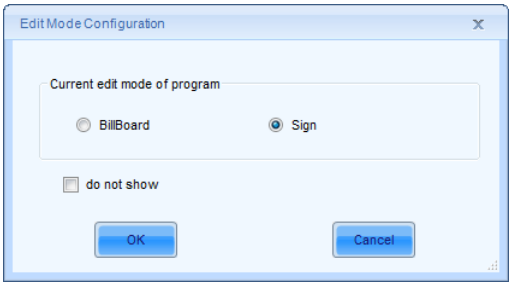


Fig. 9-46 Edit mode configuration

Begin to make Sign list according to the following steps.

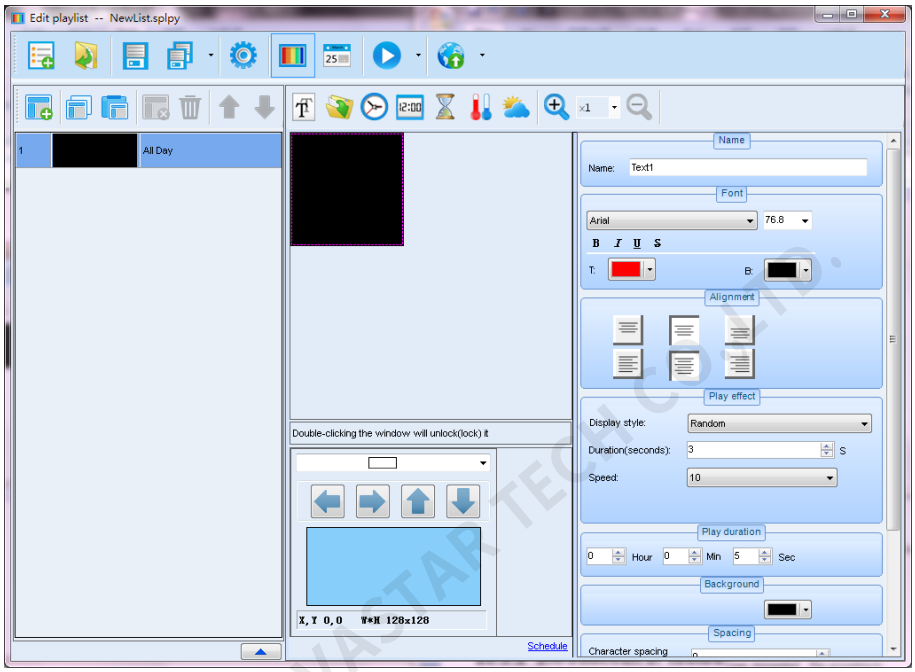
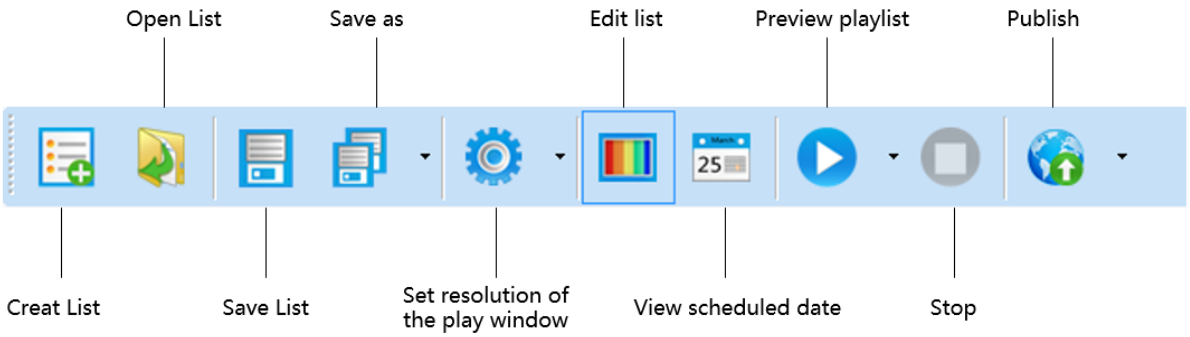


Fig. 9-47 Sign play list edit page

9.3.1 Introduction to Toolbar



Set play window. Click  to set play window.

Fig. 9-48 Set play window information

Method one: check "Auto", click "Select Display" to select the client, and direct read the size of the load display screen of the client and take it as the size of the play window.

Method two: check "Manual (Custom size)", and fill in the size of the play window.

9.3.2 Edit play list

The edit homepage of Play List is divided into multiple windows, and each window is named according to its function, as shown in the following figure.

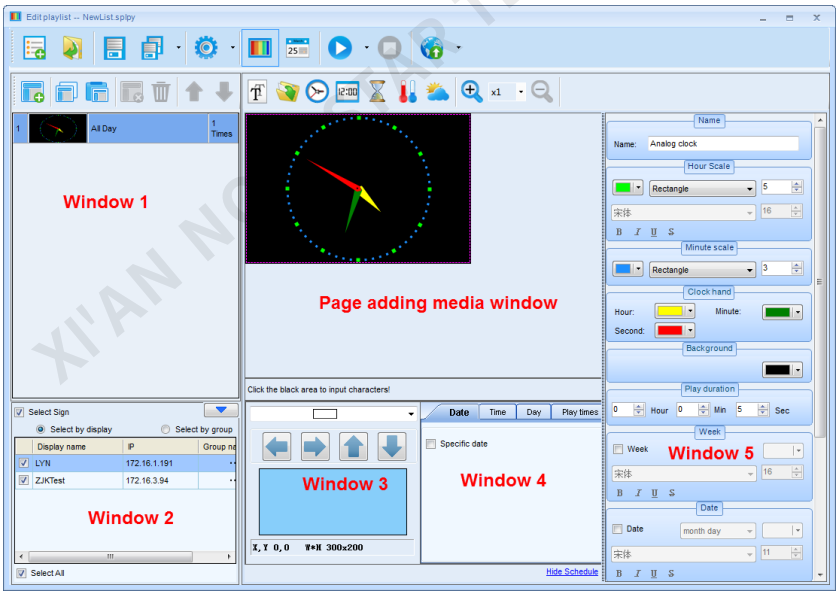


Fig. 9-49 Page function distribution

1) Page adding or deleting, sorting window

Click  to add the page, select Page Layout at the drop-down box at the right of the screen, and amend the proportion by clicking the buttons Up, Down, Left and Right based on requirements.

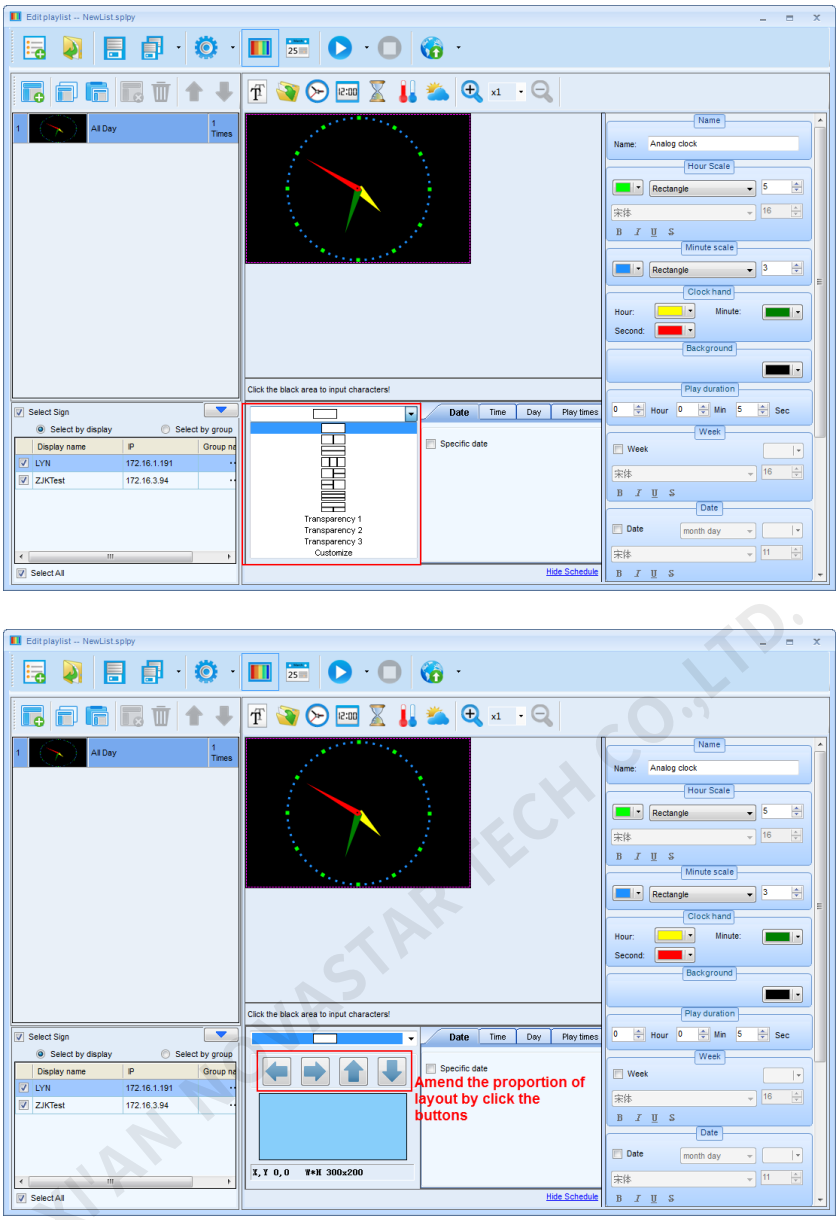
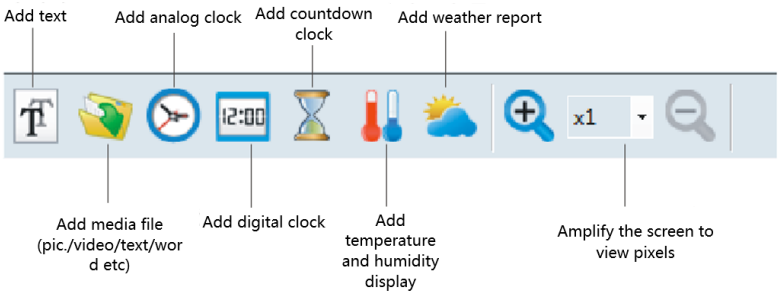


Fig. 9-50 Page adding or deleting sorting layout window

2) Page adding media window

Select one window of the page, and then click button on the toolbar to add media to the window.

Click  to simulate the real display screen to view the distribution situation of pixels.



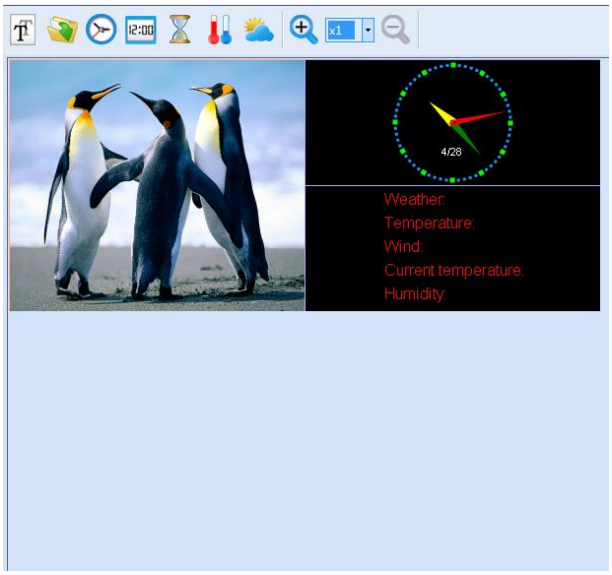


Fig. 9-51 Page adding media window

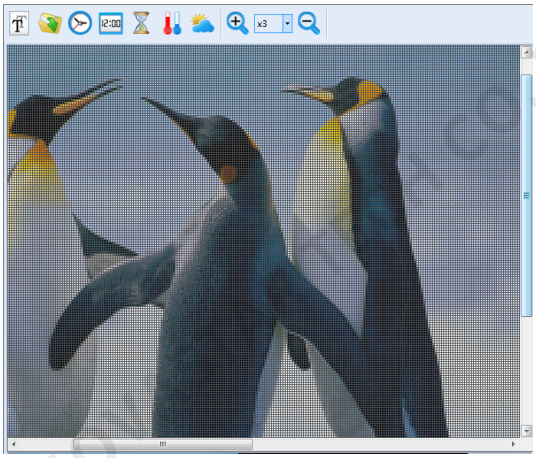


Fig. 9-52 Screen after 3 times of amplification

3) Play and media attribute edit window

When adding the media, simultaneously set attribute of the media and the play effect at the window.

4) Select sign

Click  , the window for select sign will showing or hiding, Check "Select sign", and then select the display to play the page.

5) Scheduled

a) Click Schedule to check "Scheduled date" to set play date of list, and click  to increase or decrease the time.

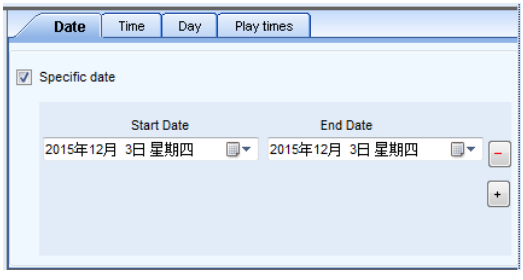


Fig. 9-53 Set scheduled date

b) Click "TIME" to set the play time of List, available options are All day, point-in-point or Time slot.
When "Point-in-point" play is selected, click to select the point-in-time, double click to cancel; the default is to play for one hour from the selected point in time; for example, three points-in-time are selected in the following figure - 12 AM, 3 AM and 8 AM; then the play scheduled dates are:
Play from 12 AM to 1 AM; Play from 3 AM to 4 AM; Play from 8 AM to 9 AM.

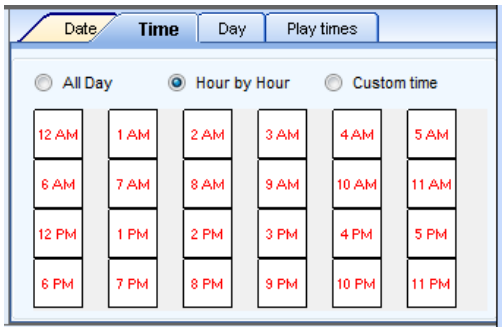


Fig. 9-54 Set point-in-time

When "Time slot" play is selected, click  to increase or decrease the time segments.

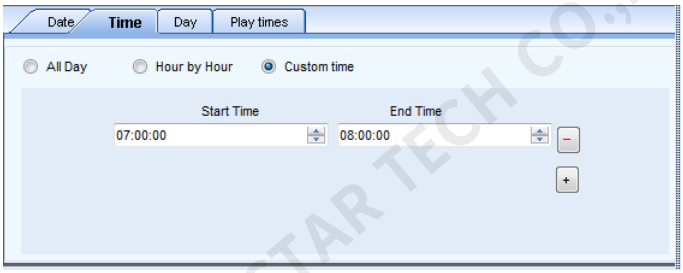


Fig. 9-55 Set time slot

c) Click "WEEKDAY" to set the day in the week to play List.

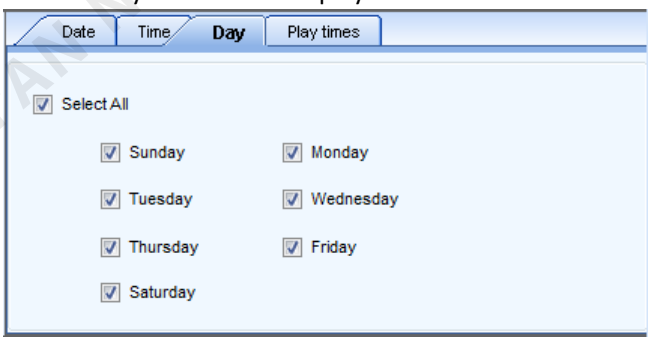


Fig. 9-56 Set weekday

d) Play times

e) Select “Client”

Click “Select the client” to select terminals on the page.

Note: Each page can be played on different clients.

If “Select the client” is not enabled, this page may be displayed on several clients.

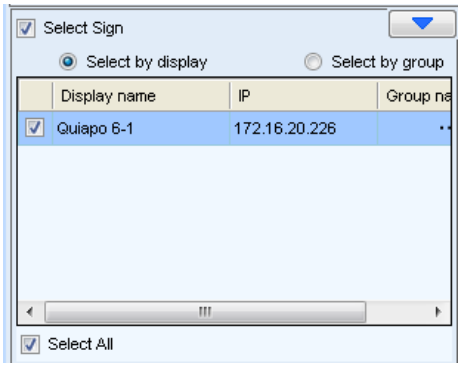


Fig. 9-57 Select clients

f) View Scheduled date

Click  to view the Scheduled date.

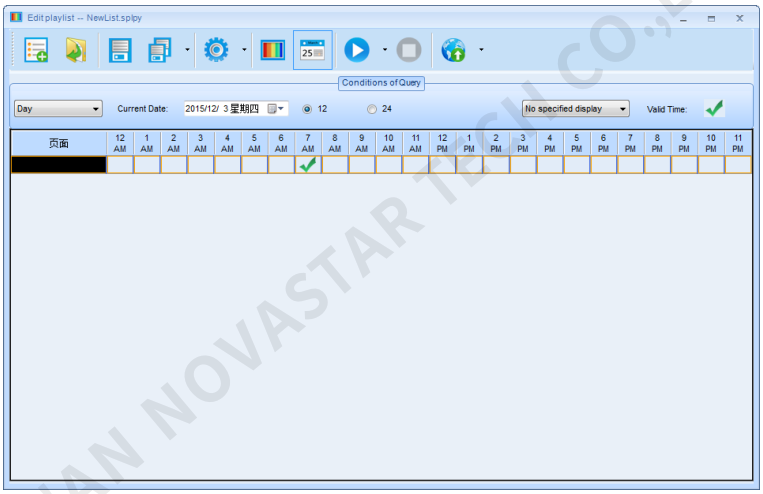


Fig. 9-58 View Scheduled date by day

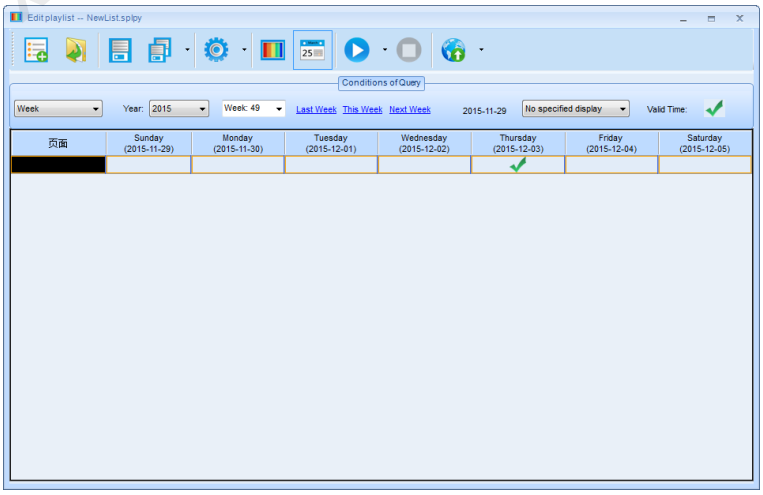


Fig. 9-59 View Scheduled date by period

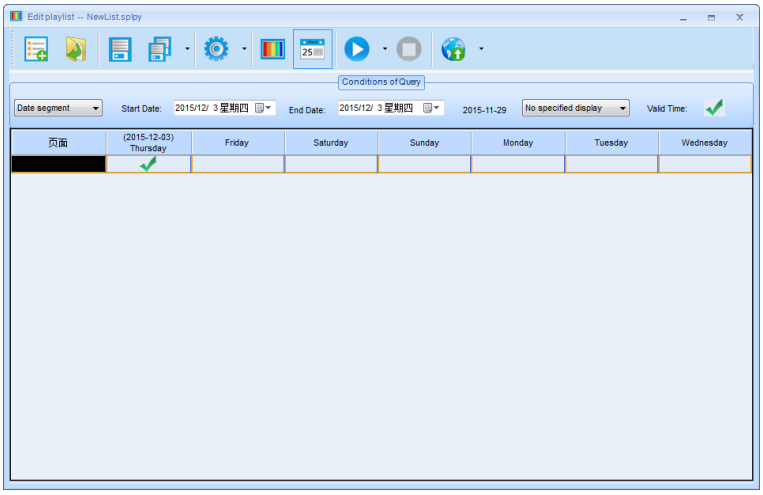


Fig. 9-60 View Scheduled date by time segment

9.3.3 Sending play list

Click 

on the toolbar, with the software prompting saving list first, then sending. User operates by following the software prompts.

9.4 Publish playList

9.4.1 Online publish

Online publish means publishing Play-Program directly to the client (who's online) storage space through network.

Operation Steps:

1) Go back to the main interface of PlutoManager. Click Publish PlayList button to enter the PlayList Publish page.

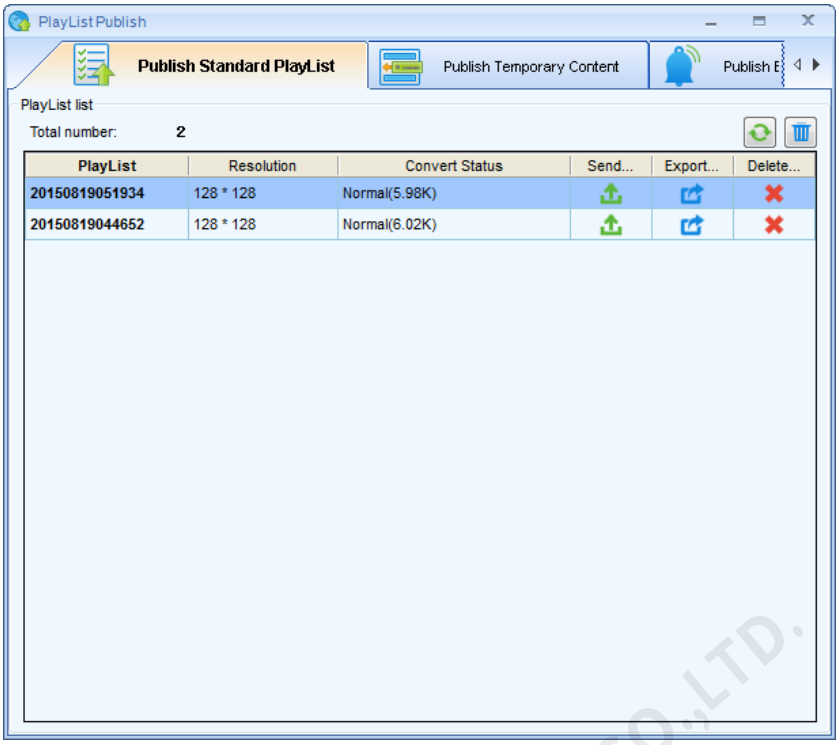


Fig. 9-61 Play-Program publishing page

Refresh: press to view all finished Play-Programs;

Clear: delete all Play-Programs and files;

Delete: once deleted, all files related to Play-Program will be gone no matter converted or not;

Send: send Play-Program;

Export: export Play-Program to USB disk.

2) Select the Play-Programs you want to convert, press “Ctrl” at same time to select multiple, right click, and select Convert. The following window will pop out. click "Advanced" You can set the parameters in detail, if no advanced settings, the video will be converted with the default parameters.

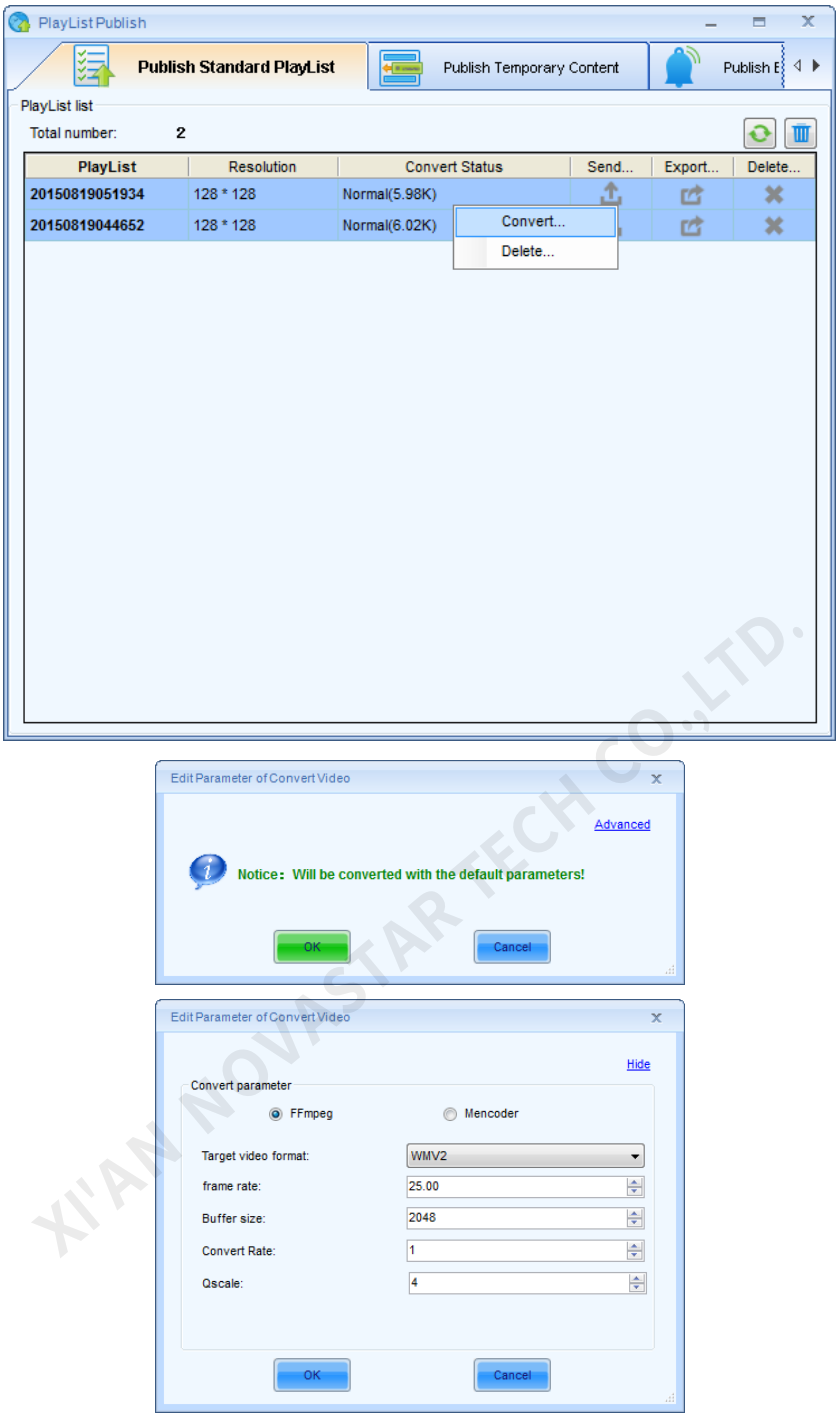


Fig. 9-62 Edit parameter of convert video

3) After the conversion is completed, it will be shown as below.

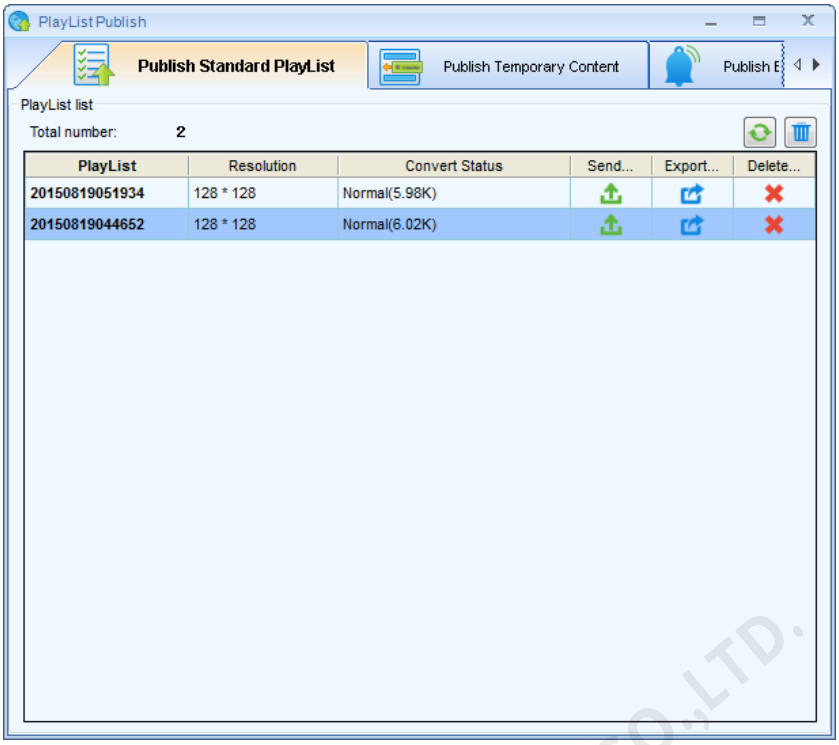
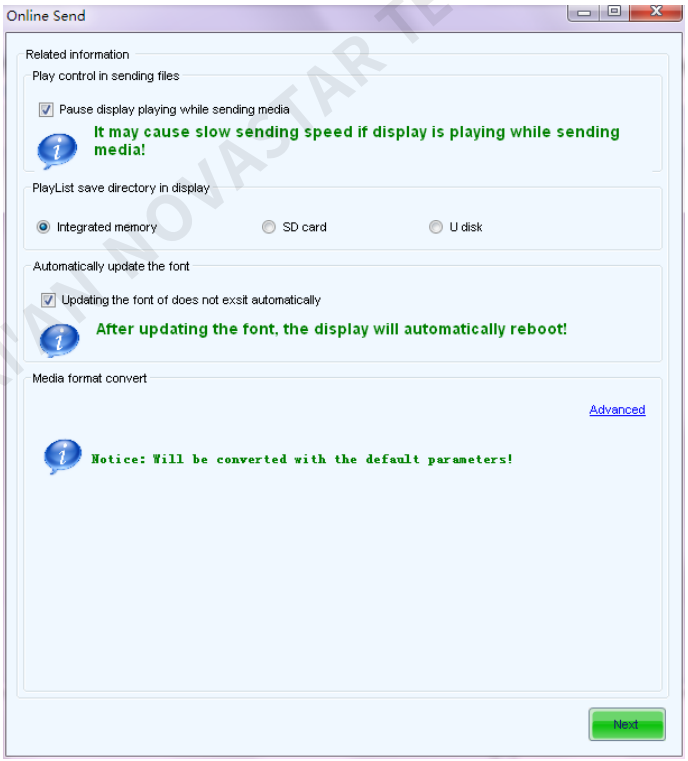


Fig. 9-63 Play-Program conversion result

4) Press to publish successfully converted Play-Program, and will enter the window as shown below.



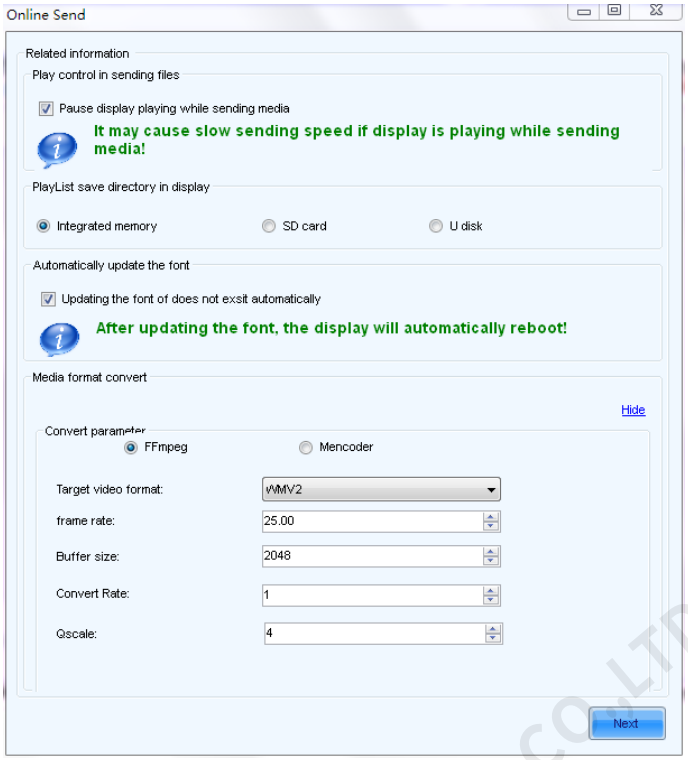


Fig. 9-64 Parameters of online send

Select by client: Directly check the client (who's online) which Play-Program will be sent to;

Select by group: Publish Play-Program by group;

Attention:

If the size of terminal screen is different from playback program, and the users still send this playback to the screen, the system will adopt the self adapting window playback, but this will lead to the terminal screen become deformed.

5) Click "Next" to enter the following page;

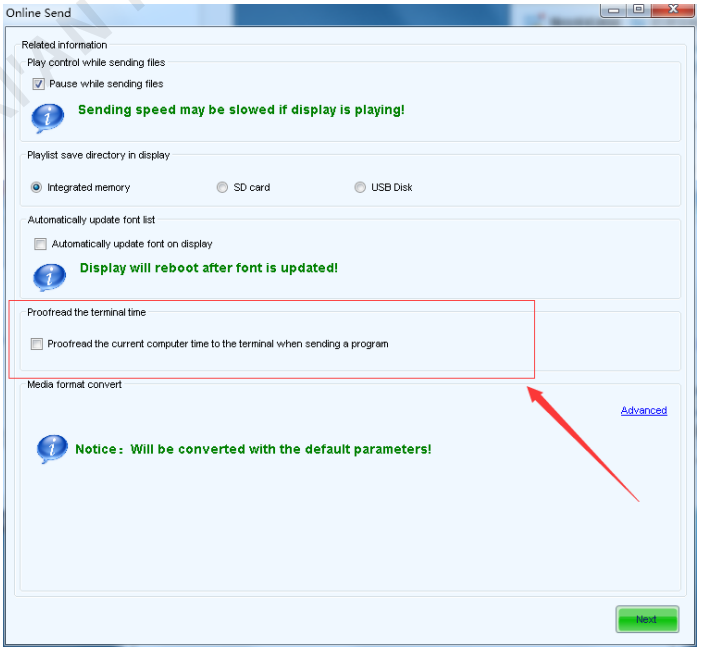


Fig. 9-65 Play- Program online publish page

***Note**: Synchronize the terminal time as required, and the current time of the computer is sent to the terminal while the program is sending during terminal time synchronization.*

6) You are advised to tick Pause client playing while sending media and choose where to save Play-Program in client. Click "**Advanced**"to publish, after successfully publishing, below window will be shown.

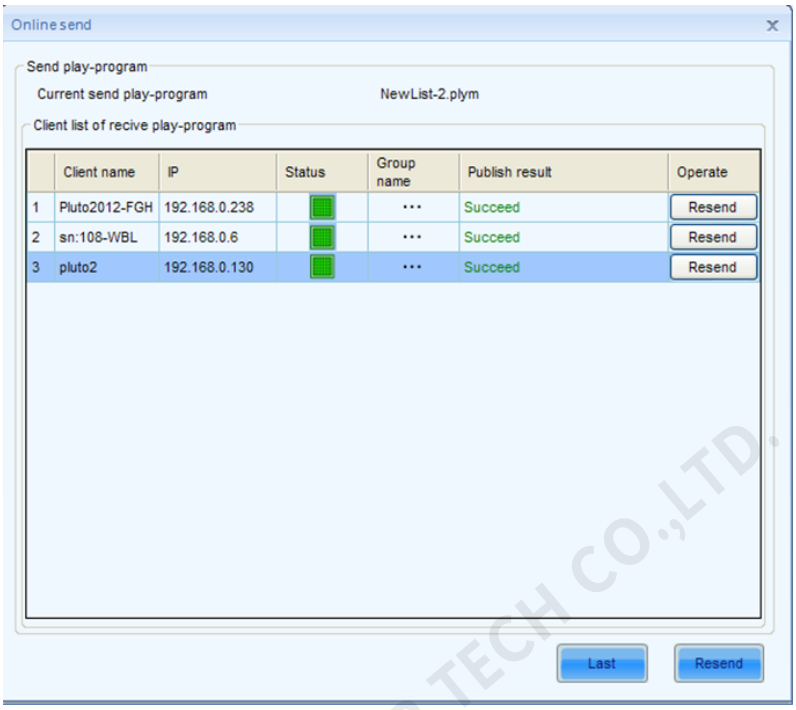


Fig. 9-66 Play-Program publishing successfully

***Attention**:*

In case of single group and single client, click  to skip to the page as shown in fig.9-65, and then click "Next".

9.4.2 Offline export

Offline export means to export current Play-Programs to USB disk first, and then connect to client and play.

Operation steps:

1) Press excert button in Fig. 9-63 to enter offline export settings page.

Fig. 9-67 Offline export settings

Play after copying Play-Program to other storage device: under this mode, after connecting USB disk to client, Play-Programs and programs will be copied to selected storage device before playing.

Play without copying: under this mode, after connecting USB disk to client, Play-Programs and programs will be played directly without copying to other storage device.

2) After setting, press Export to export current Play-Program to USB disk.

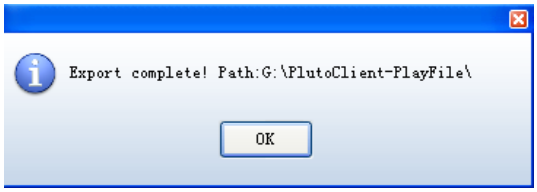


Fig. 9-68 Export succeed

9.4.3 Publish temporary content

Emergency insert play means to insert some media or Play-Programs which need to be played urgently on the client display during normal playing. Instant play and delay play are optional by the degree of urgency. Delay time can be set freely.

Return to Play-Program publish main interface, as shown in figure 9-63. Click the Publish Temporary Content enter the emergency insert play page;

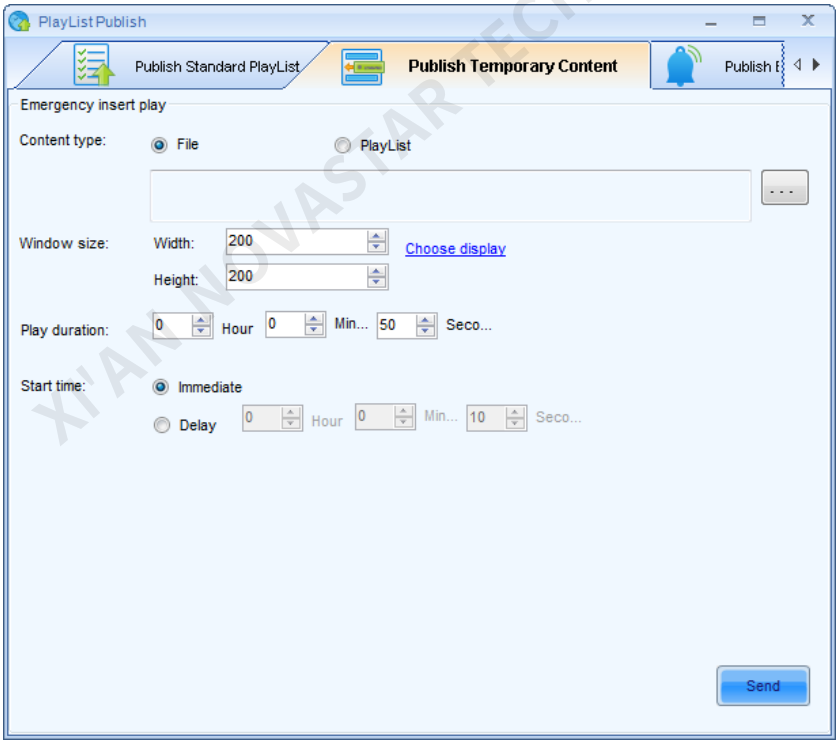


Fig. 9-69 Publish temporary content page

Content type: File, Playlist;

Window size: Size of the current client display;

Play duration: Total play time of inserted media file or Play-Program.

Start time

- **Immediate**: Inserted media file or Play-Program will be played immediately once successfully published;

- **Delay**: The playing will be delayed for a period of time after successful publishing, the delay time can be set.

Attention:

A. Window size must be the real size of the current client display, so when media files are added, and you don't know the size of the display, it can be read directly by choosing client.

B. For insert play, it shall also be considered that whether the window size of Play-Program is same to the size of the display. If they are different, need to edit first.

Operating steps of insert file:

1) Click  button to select the media files (images, video, audio, documents) need to be inserted, as shown below.
They are editing interfaces of insert pictures, video and audio etc.

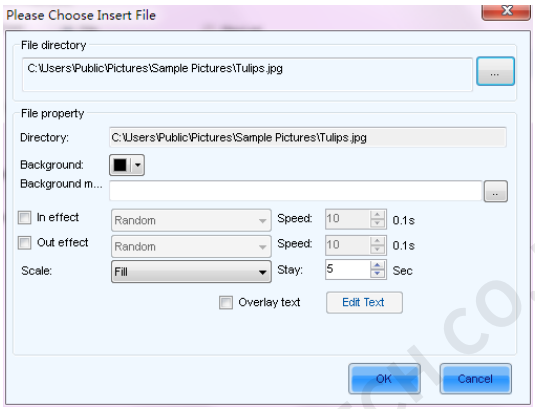


Fig. 9-70 Insert pictures

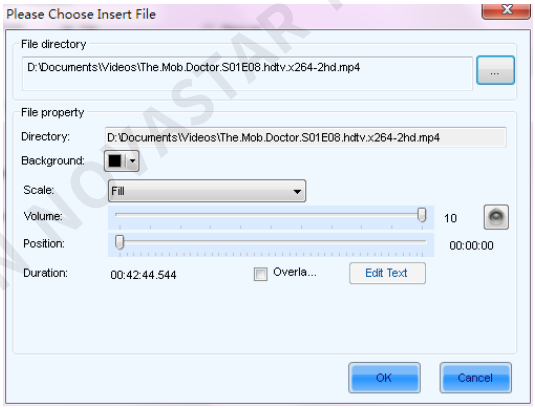


Fig. 9-71 Insert video

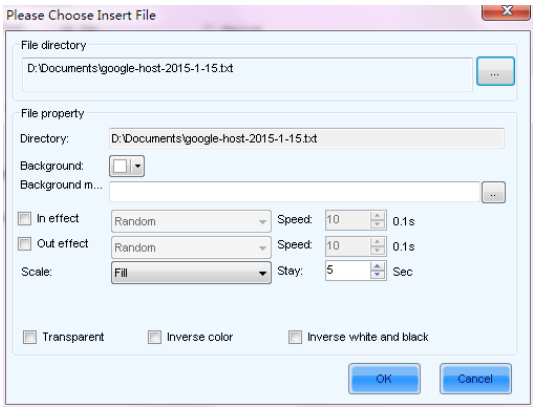


Fig. 9-72 Insert text file

2) After inserting media files, click OK to return to the emergency insert play page as shown in Fig. 9-69. Click Choose Display to read the display size of client who need the insert play. Select insert start time and duration;
3) After setting of insert play options, click Publish button at the bottom of the page. Edit parameter of convert video window will pop up, as shown in Fig. 9-62. Choose the video effect to be converted to, and click OK. After conversion is completed, the following window will pop up:

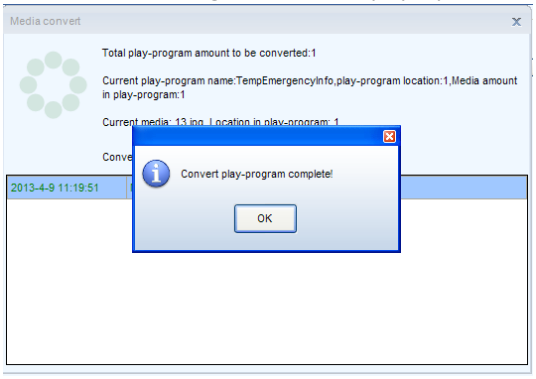


Fig. 9-73 Insert play files converted to Play-Program

4) Click OK to enter the online publish page as shown below. Select the client who need the insert play (who's also online). Click Next,
5) Check Play-Program and client list to be published. Make sure they are correct, then click Publish. When publish result shows Succeed, it means insert play files have been successfully published to the client.

Operating steps of insert playList

Select PlayList in Fig. 9-69 Emergency insert play page, and click ... to insert PlayList. The following steps are same to those of insert files.

9.4.4 Immediate notification

Immediate notification mainly releases some text information. Once successfully published, current information will be played on the client display immediately, prior to all other tasks.

Return to Play-Program publish main interface. Click Immediate Notification. The page is as shown below:

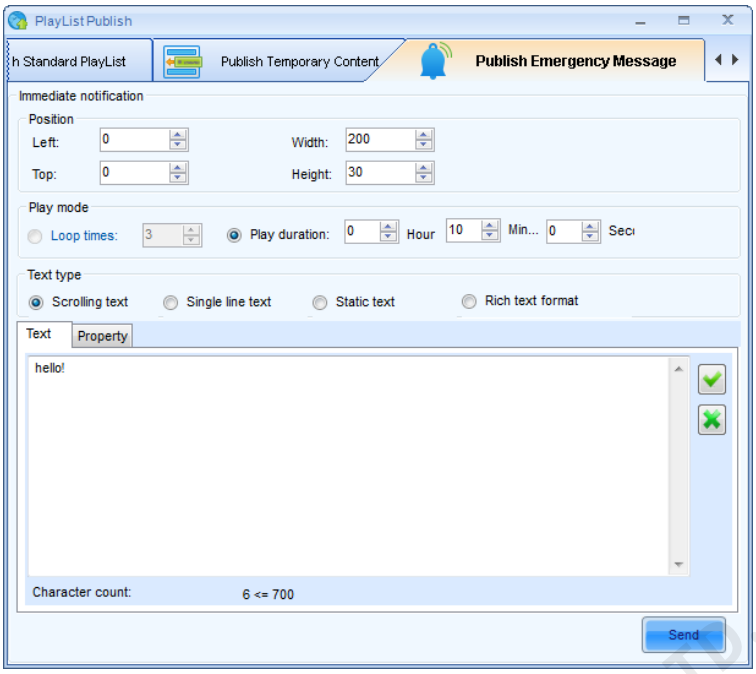


Fig. 9-74 Immediate notification page

Position: Position of immediate notification textbox on the display;

- **Width**: Textbox width ≤ window width;
- **Height**: Textbox height ≤ window height;
- **Left edge**: If the upper left corner of the window is (0, 0), the left edge value is the distance between left edge of textbox and left edge of the window, i.e. x coordinate. Left edge ≤ window width - textbox width;
- **Top edge**: Upper edge value is the distance between the upper edge textbox and the upper edge of the window, i.e. y coordinate. Upper edge ≤ window height - textbox height;

Play mode:

- **Loop times**: Set loop times of immediate notification
- **Play duration**: Play duration of immediate notification

Text type:

- **Scrolling text**: Editable text, transparent, background, text effects, text color, font, loop, scrolling speed, play duration, etc.
- **Single line text**: Editable text, transparent, background, text effect, font, entrance/exit effect, retention time, etc.
- **Static text**: Editable text, transparent, background, paragraph, font, play duration, etc.
- **Complex text**: Text editor, transparent, background, entrance/exit effect, retention time, etc.

Operating steps of immediate notification:

1) Edit textbox size, coordinates, content, and text format in immediate notification page;
2) Click Publish after editing. Choose Video Conversion Quality window will pop up. Select the quality you want to convert;
3) After conversion is completed, the page will be as shown below:

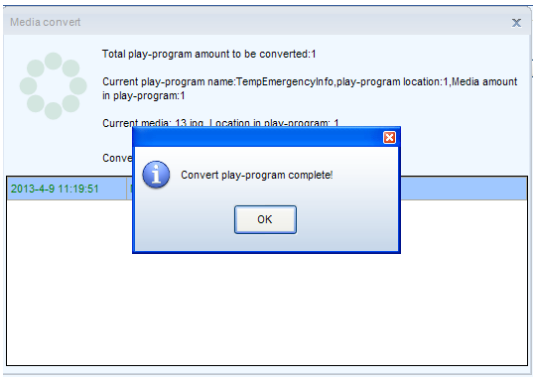


Fig. 9-75 Instant notification convert to Play-Program

4) Click OK to enter the online publish page. The following steps are same to online publish.

9.5 Play management

Play management includes play control, log management and storage management, to help users know the current play status and external storage condition of client timely,.

9.5.1 Play control

9.5.1.1 Control play

Enter the play control page directly by clicking Play management in the main interface, as shown below. On the left is client list. Select a client to control play status of it.

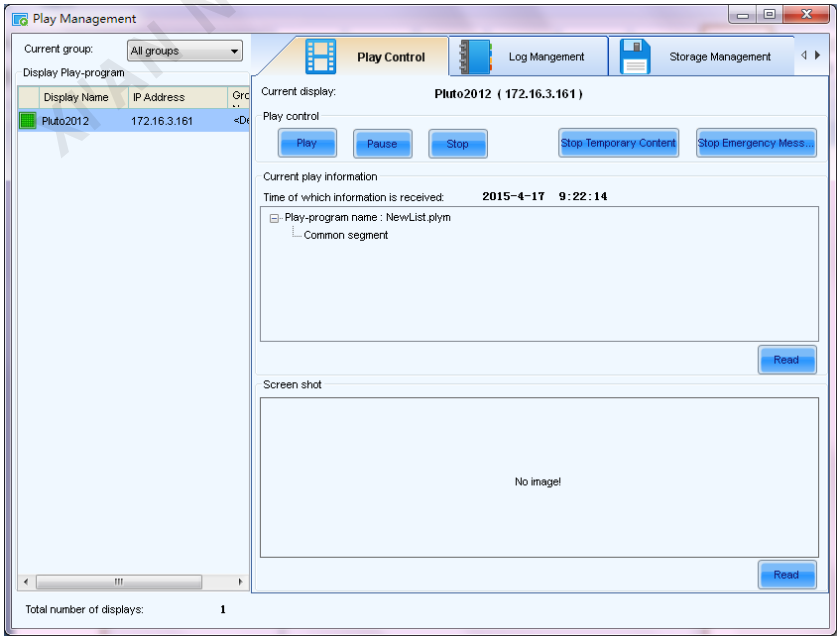


Fig. 9-76 Play control page

Play control:

- Play: Enable the client display start to play
- Pause: Pause the current playing
- Stop: Stop the current playing
- Stop Temporary Content: Cancel the inert play task
- Stop Emergency Message: Cancel the immediate notification

Current play information: User can refresh to get the current playing status of current client;

Just select a terminal and click Read button, the current play information of the selected terminal will be shown.

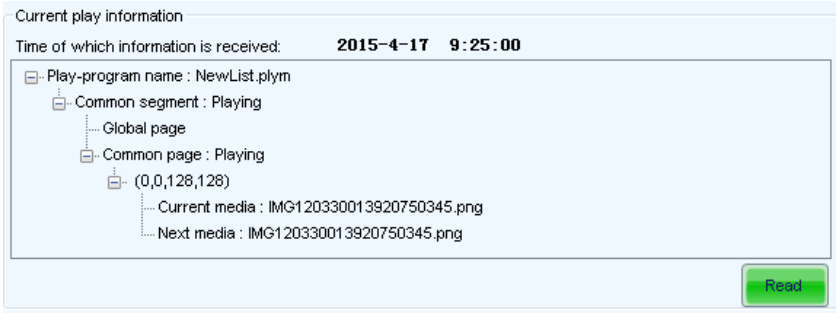


Fig. 9-77 Current play information

Screen shot: Click to get the real-time play image of the current client;

Just select a terminal and click Read button, the current play image of the selected terminal will be shown，click for a larger view.

Fig. 9-78 Screen shot

9.5.1.2Synchronized play

Terminals, of which synchronized play functions, are subject to play programs, and require time setting for the unified time. Refer to 9.8 Terminal time synchronization for time setting procedures.

Select terminal in the terminal list, and enter secret code“admin” or “888”through the keyboard to enter the following page. Select “Enable synchronized play” and then “Apply” to enable the synchronized play.

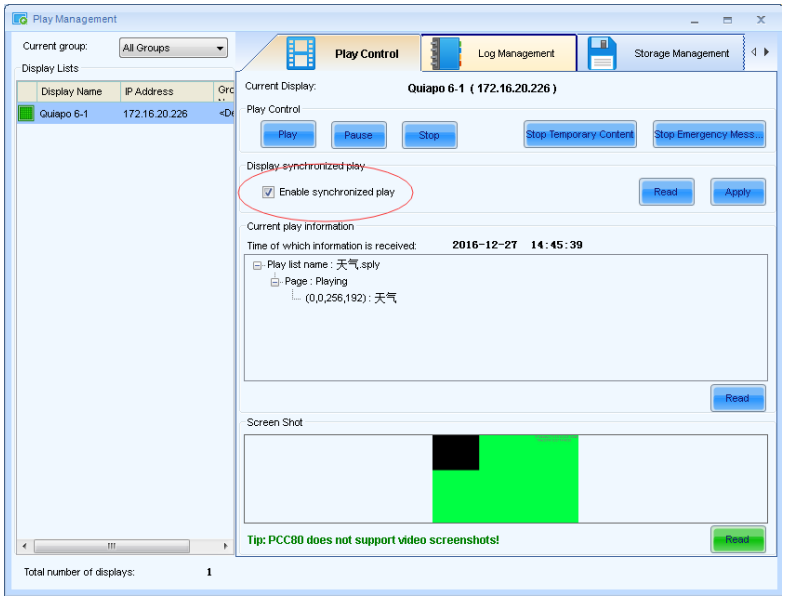


Fig. 9-79 Synchronized play

9.5.2 Log management

User can set valid days of log storage and view log of specific period of time in log management page.

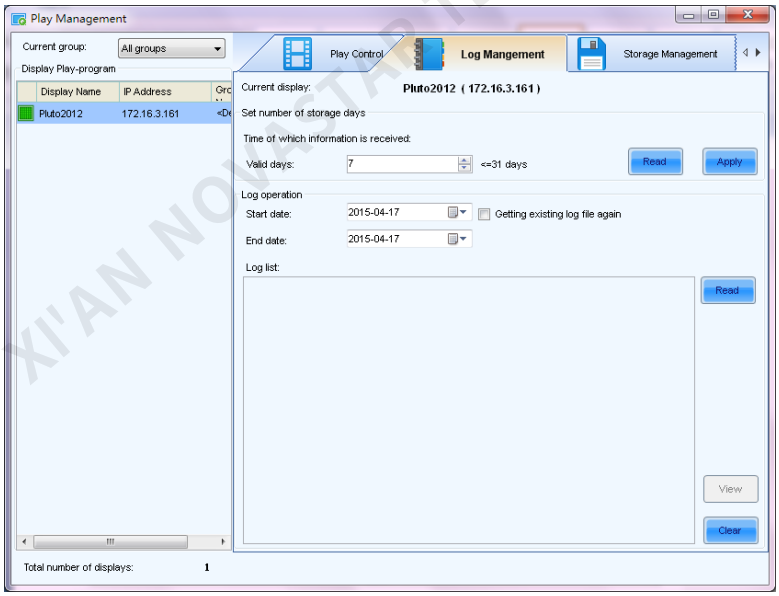


Fig. 9-80 Log management page

Set number of storage days: The user can set freely, but it shall not be more than 31 days. After the setting, click Apply to take effect. Click Read to view the current setting;

Log operation: User can set the start and end date, check Getting existing log again, and then Read to obtain log list of corresponding period of time.

9.5.3 Storage management

Media Play-Programs are all stored in the hardware or removable storage devices of client. In order to avoid failure of sending or loss of media due to lack of space, user shall maintain storage device space regularly.

Space utilization of media storage devices of each client can be viewed in storage management page. All media, expired media and all lists can be deleted. Please manage the remaining space of storage devices timely.

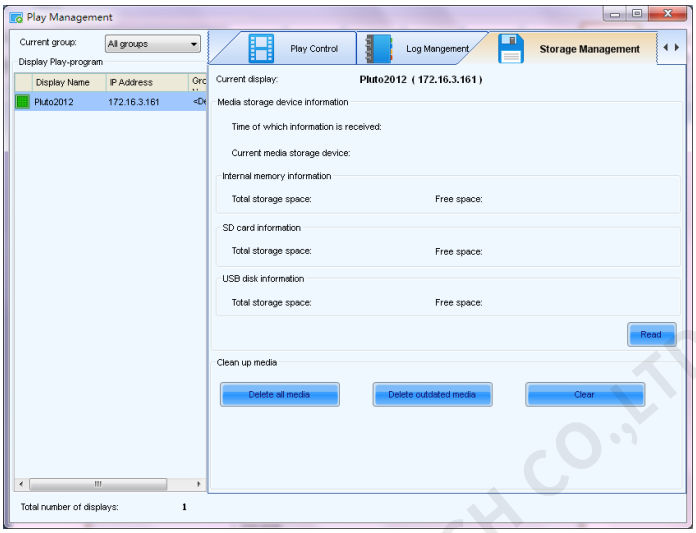


Fig. 9-81 Storage management page

Read: read total storage space and available space of client storage devices;

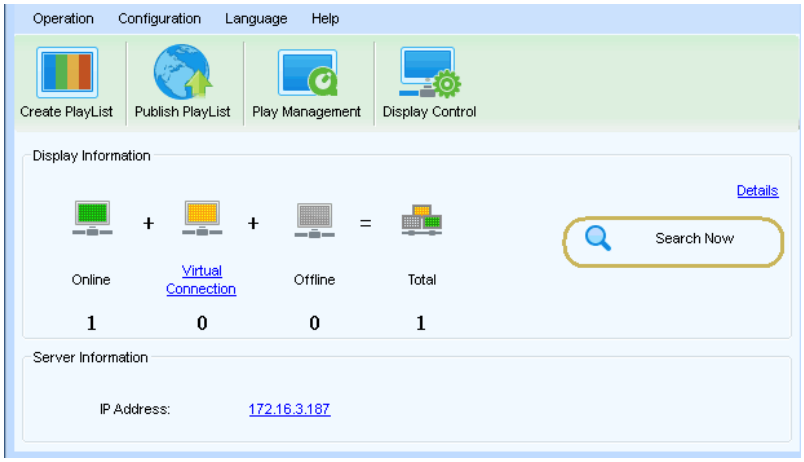
Delete all media: Delete all the media files of the current media storage device;

Delete Outdate media:

Media files not used by the current play program are considered as expired media. Click on this button will delete all expired media files.

9.6 Display control

The display control includes System Configuration, Network Configuration, Server Configuration，Brightness Adjustment and Power Schedule.



In addition: The order of the sub-options can be adjusted; for example, click "Network Configuration" and press left click to drag around.

9.6.1 Network configuration

When modifying network parameters of the current terminal, set the terminal IP under "**Network Configuration**"→"**Wired Configuration**" as following methods:

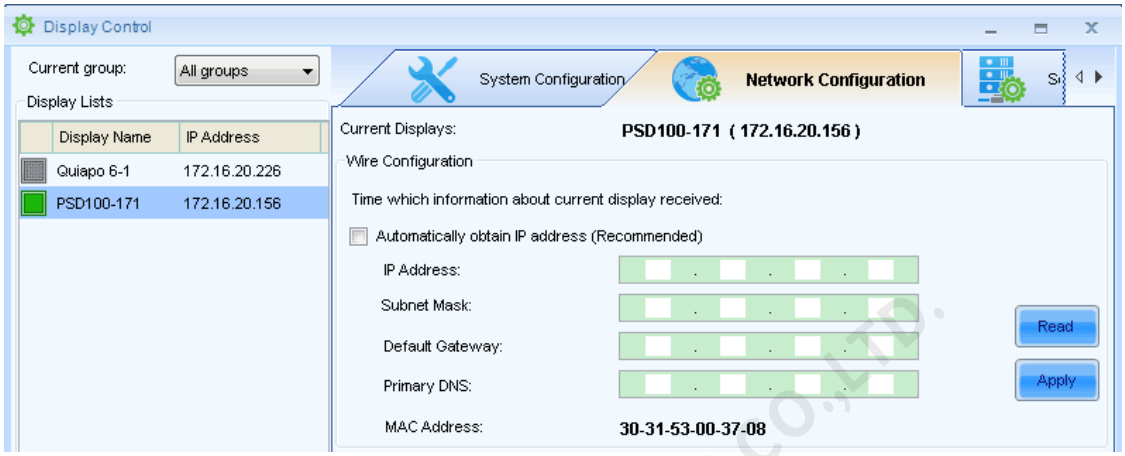


Fig. 9-82 Wired configuration

Click "**Read**" to read the current IP.

Remote Change of Terminal IP

Method 1: Tick "Obtain an IP address automatically (Recommended)" and the click "Apply".
Method 2: Change the parameter manually, and then click "Apply".
When IP is successfully set, the terminal will automatically disconnect, and then reconnect.

9.6.2 System configuration

9.6.2.1Time management

The time error may occur on terminal after a long time work, or the time shall be adjusted after the asynchronous card is replaced.
Under system control interface, users can read the current client time and time zone, check out the time of selected zone, apply the time zone to the terminal
For example: select a time zone" Central America", To show the time of this time zone. click【Read】button, to read client time and client time zone , and the window is as follow:

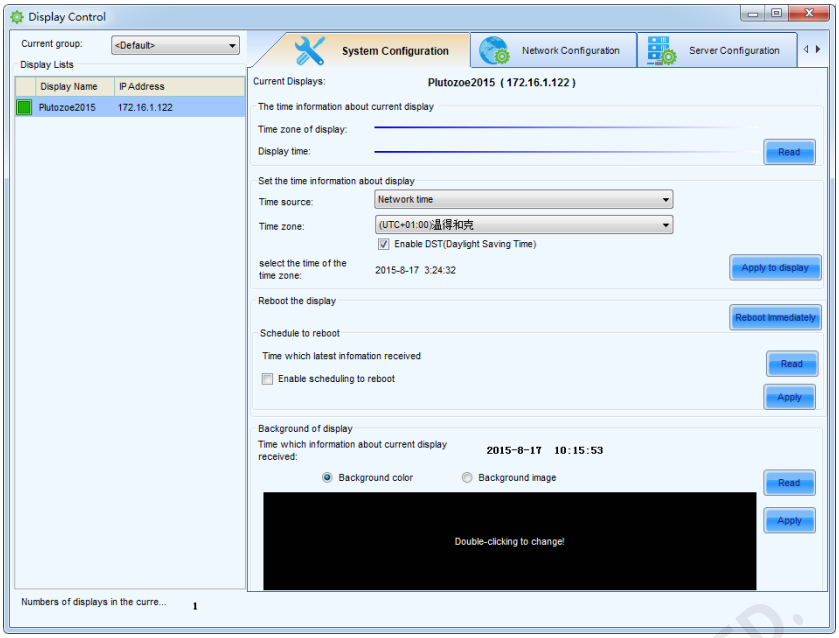


Fig. 9-83 Time management page

Click 【Apply to display】, The message of "Set client system succeed" indicates client time correctly set. Click 【Read】 button and you will see the terminal time is the same as that of the time zone.

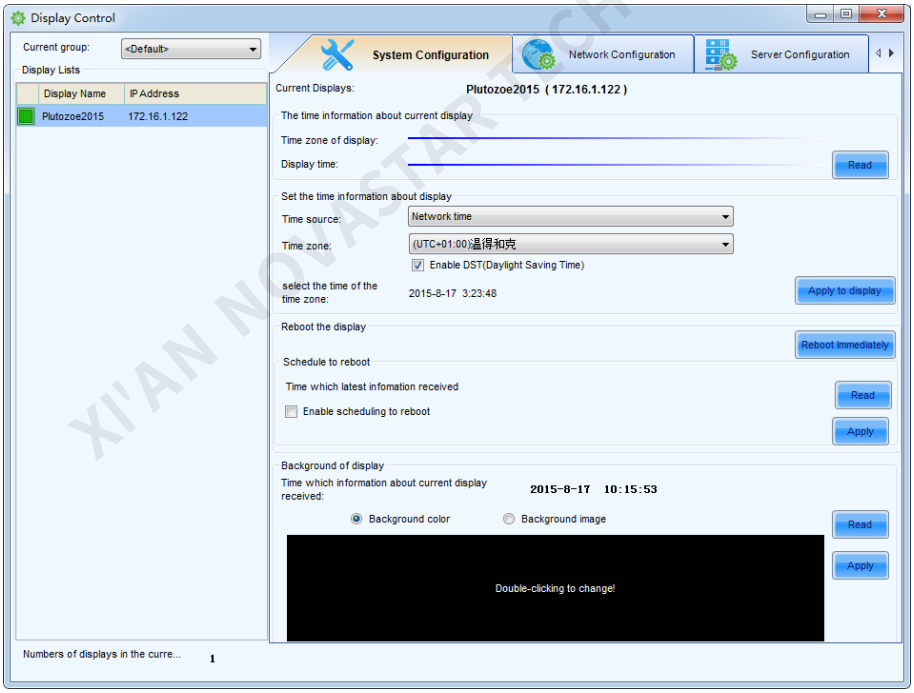


Fig. 9-84 Adjust time

9.6.2.2 Reboot the display

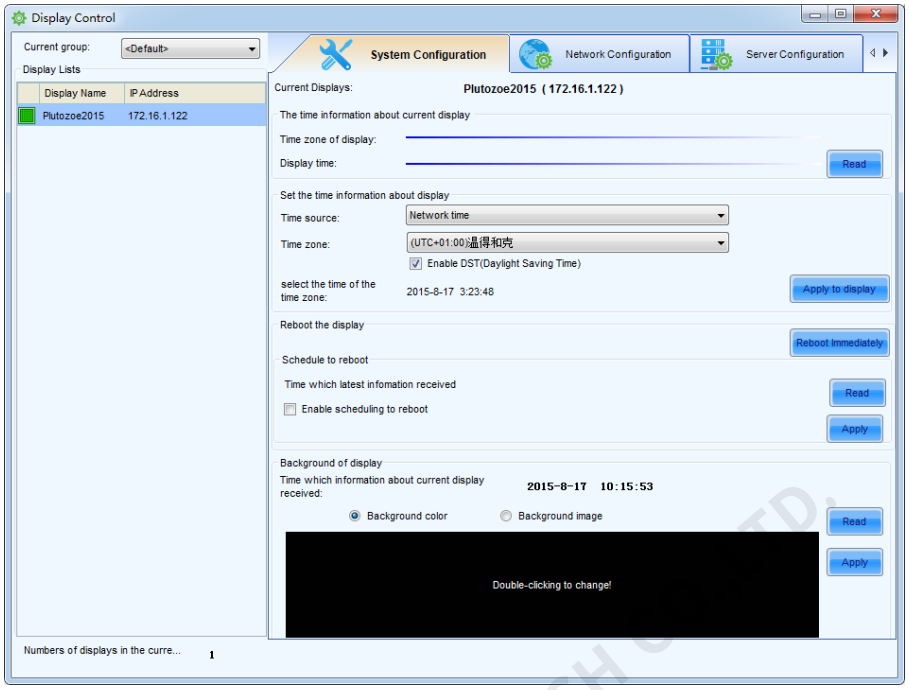


Fig. 9-85 Display reboot

Reboot immediately: select the display, and click “Reboot Immediately” button to reboot the current display.

Schedule to reboot

Click “**Read**” to view whether the current terminal is set as clocked restart.

If yes, the reboot time can be altered; if no, please tick “Enable scheduling to reboot” to set the reboot time; finally click “Apply” to send the reboot command to the asynchronous card.

9.6.2.3 Display password configuration

Input "admin" at the interface of "System Configuration" to display the terminal password setting interface, as shown in the following figure. As no password has been set for the terminal, input a password is displayed in the interface; if the password has been set previously, the password can
be cancelled or changed.

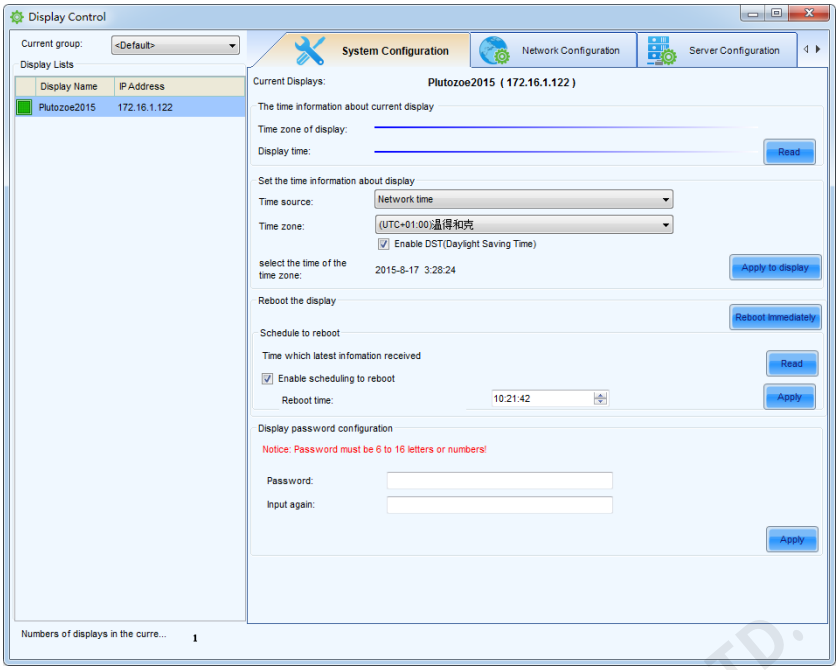


Fig. 9-86 Enter password

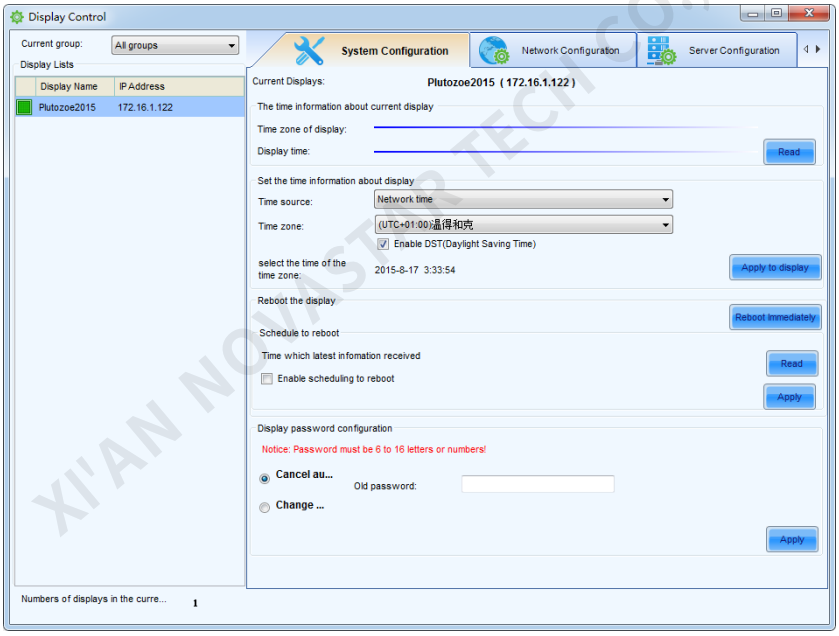


Fig. 9-87 Cancel or modify password

After entering the password, you can come to the next page to configure the default client background.

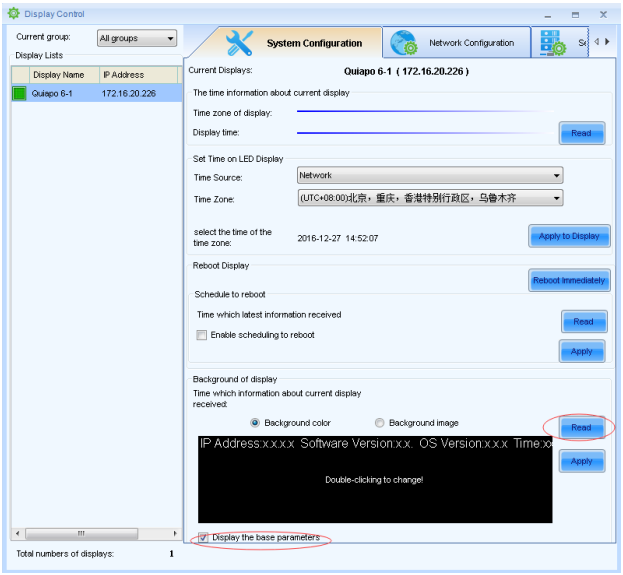


Fig. 9-88 Default client background configuration

***Attention**:*

After the display is configured with a password, an exclamation mark as shown. will be displayed on the terminal; that is because no authorization has been given on PlutoManager; in the main interface of PlutoManager, click "Configuration" - select "Authorization Configuration" - check the "Input the Authorize Password" - input the latest password - click "OK". See 9.11 Display Authorization for the detailed descriptions for the authorization.

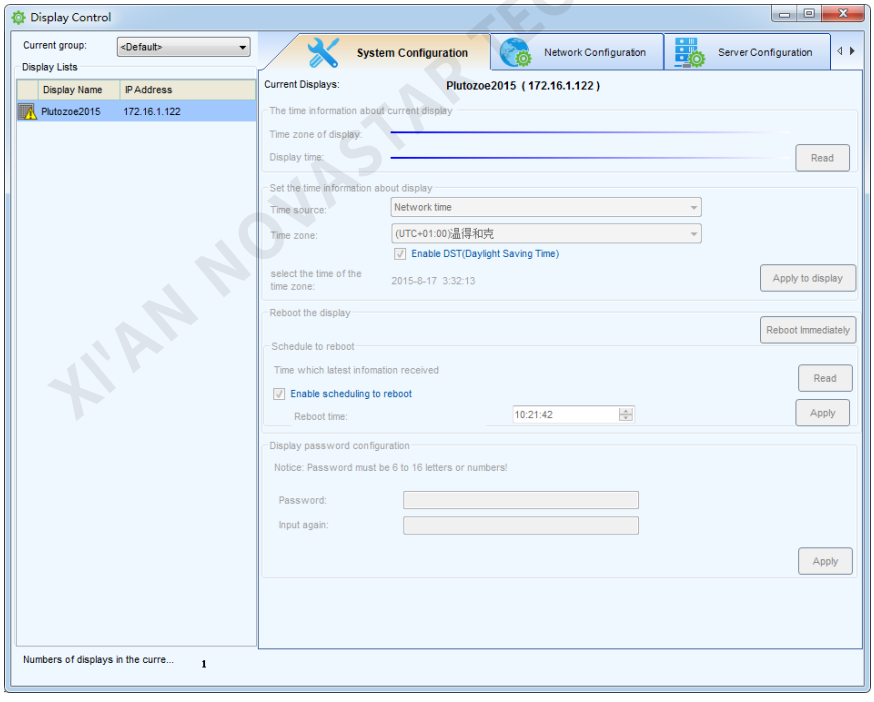


Fig. 9-89 Terminal unauthorized

9.6.3 Server configuration

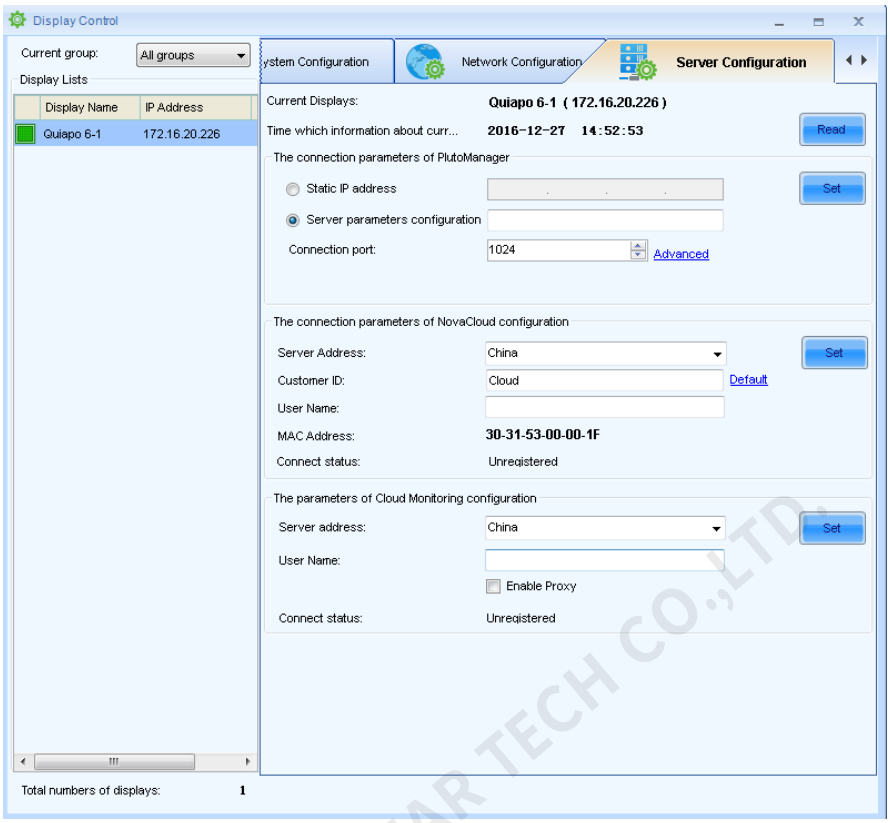


Fig. 9-90 Server Configuration

Read: read the current server configuration of the display.

Set the interface as shown in figure 9-90 as required. Connection status can be the current status to make communication check and problems locating easy.

The connection parameters of PlutoManager

Static IP address: the local IP of the control computer.

Server parameters configuration： The domain name of the Server which PlutoManager connected with.

Connection port: adopt the default settings to ensure that the port can't be taken up by other software (in the main interface of PlutoManager, click "Configuration" - "Software Configuration" and then set the connection port).

The connection parameters of NovaCloud configuration

Server address： Select the server address from the three choices.

Customer ID: Defaults to Cloud. It cannot be modified.

User name: Fill in the user name.

MAC address: It is one of the requirements when the display sign up to NovaCloud.

The Parameters of Cloud Monitoring configuration:

User name: Fill in the user name registered in NovaiCare, the terminal will be registered under the user name after filling.

Set: After the server parameter is set, click "Set" to apply that to the terminal.

9.6.4 Brightness adjustment

9.6.4.1Manual brightness

Pull the bar can adjust the display brightness, which will be automatically applied to the terminal display screen. Click "**Save**" to save the brightness setting to the hardware, where the brightness will not be lost when the power is cut off.

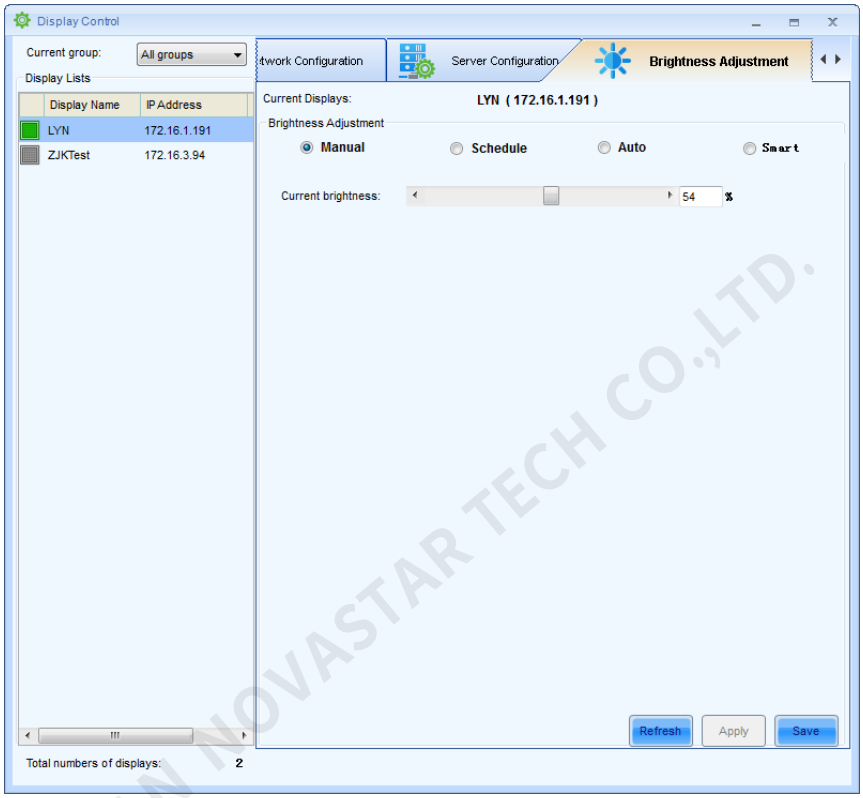
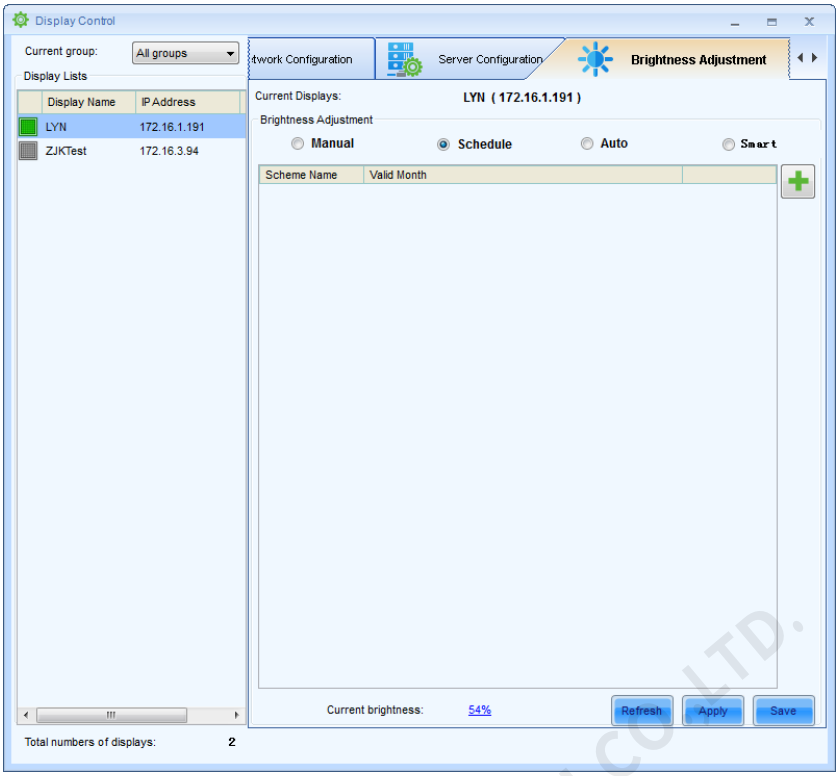


Fig. 9-91 Manual adjustment

9.6.4.2Scheduled brightness

The Schedule brightness adjustment shall not be set on NovaPluto-LCT and PlutoManager simultaneously; if both software have been set with the schedule adjustment, then the system will perform the final setting.



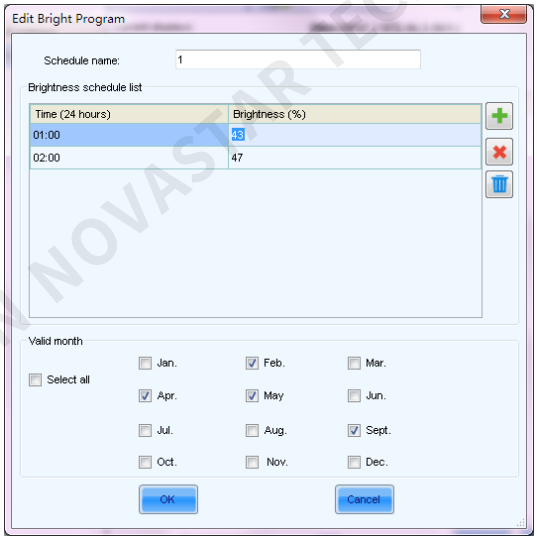


Fig. 9-92 Scheduled adjustment

9.6.4.3 Automatic brightness

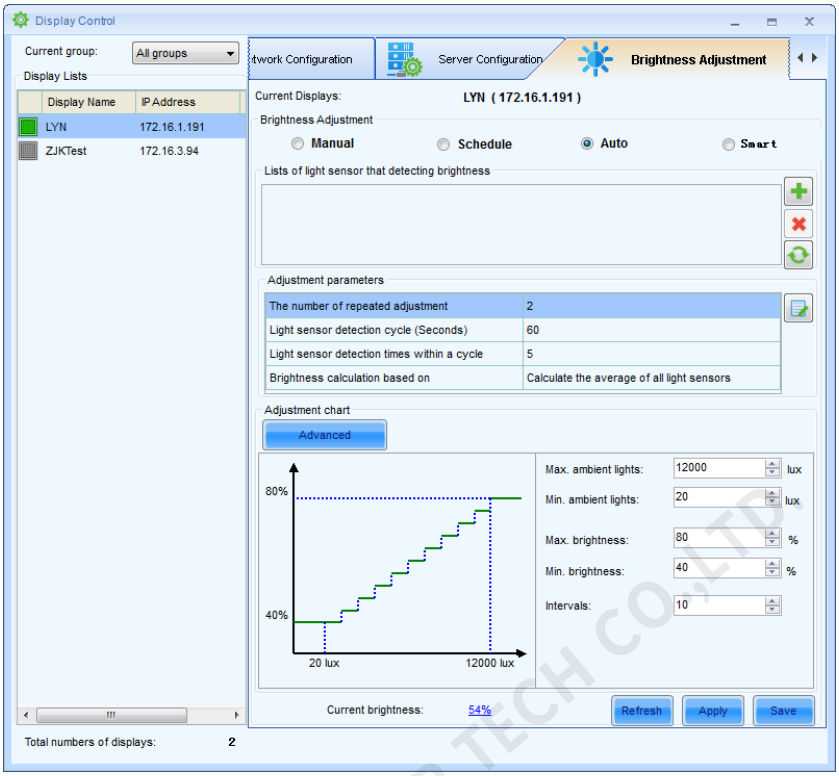


Fig. 9-93 Auto brightness

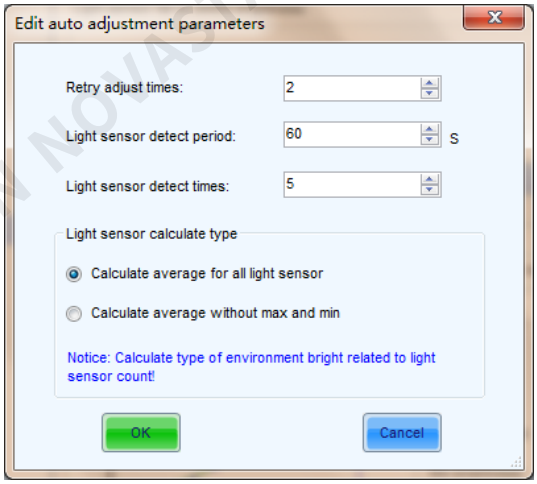
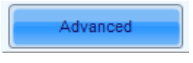


Fig. 9-94 Auto adjustment

Click  can enter advanced setting page. After entering the advanced setting page, users can fill in the brightness values based on different environment brightness.

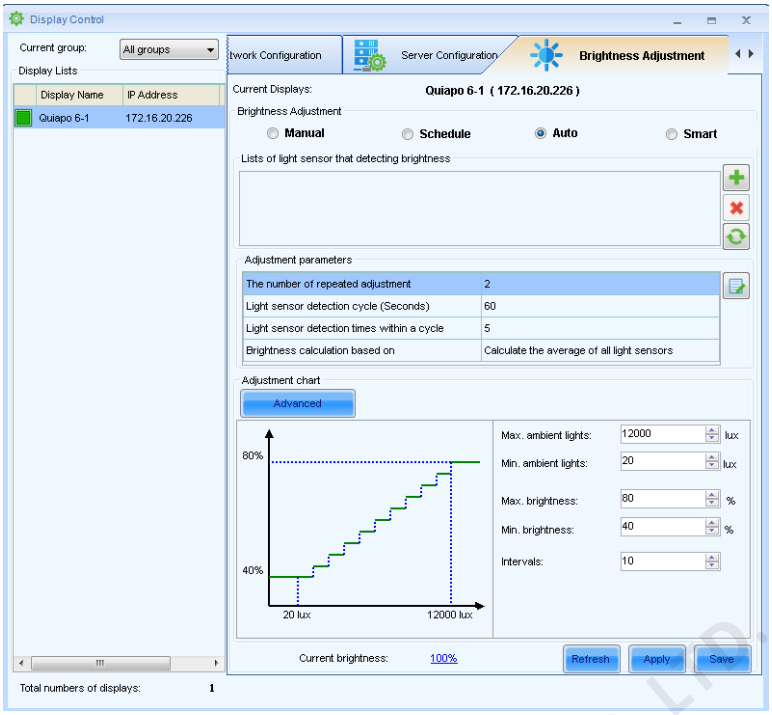


Fig. 9-95 Advanced setting page of auto brightness adjustment

9.6.4.4Smart brightness

By using smart brightness, the adjusting methods of scheduled brightness and automatic brightness can be combined together for flexible application.

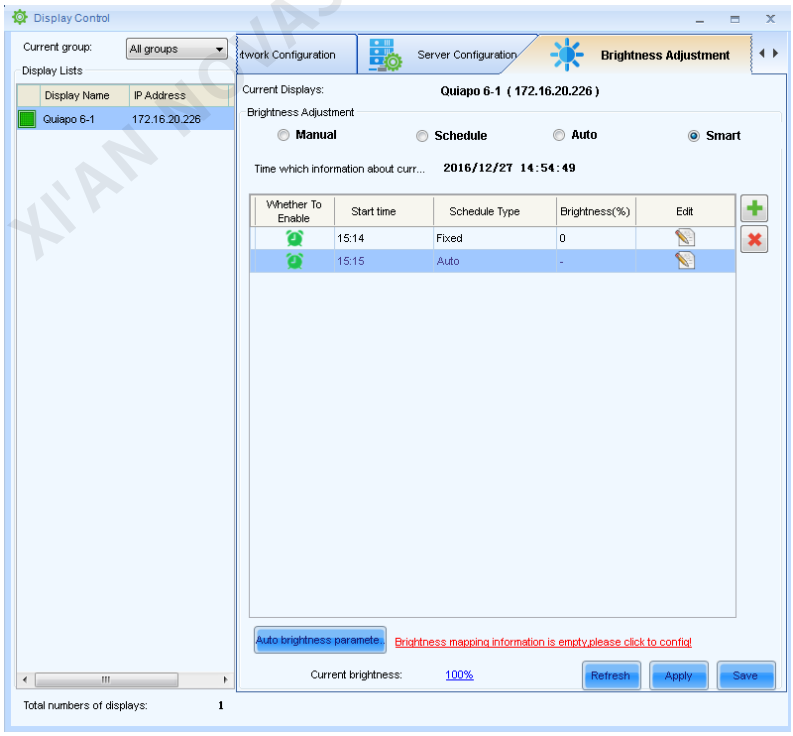


Fig. 9-96 Smart brightness

Click  , add the adjustment scheme and click “OK” after editing.

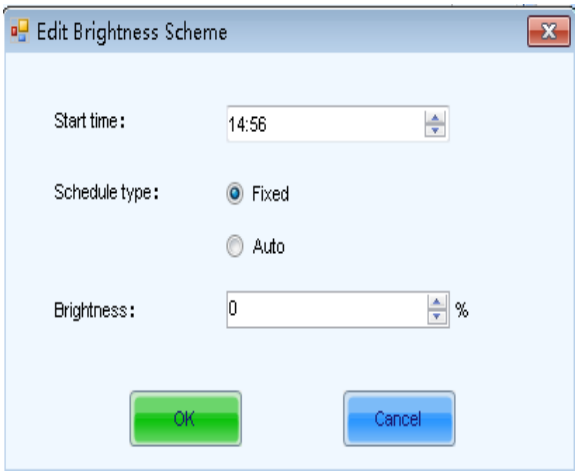
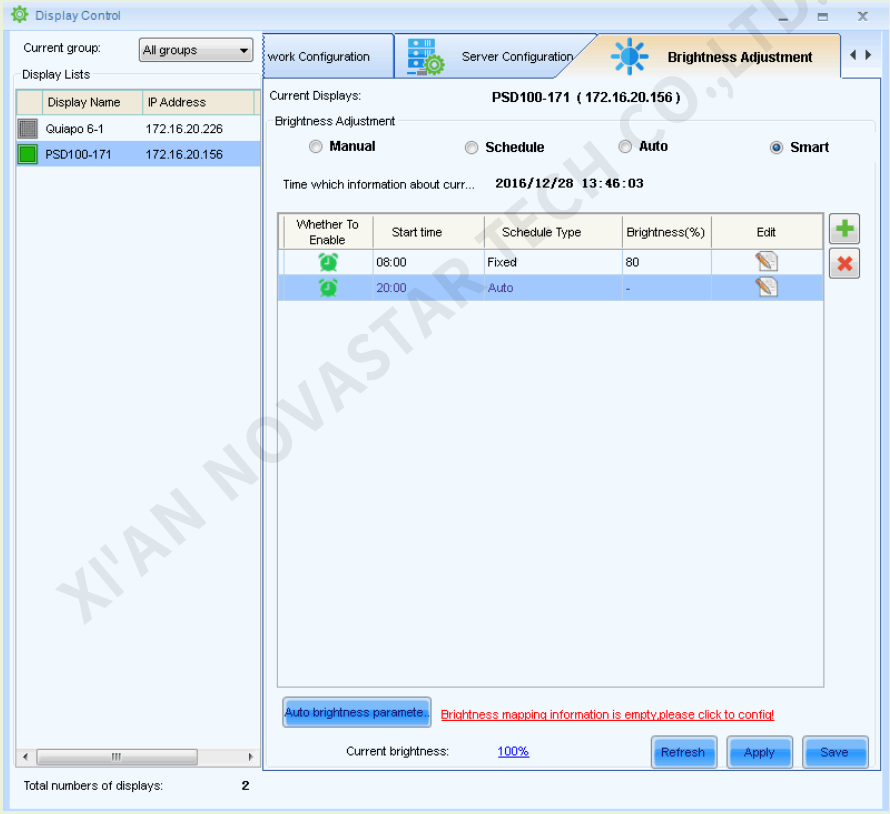
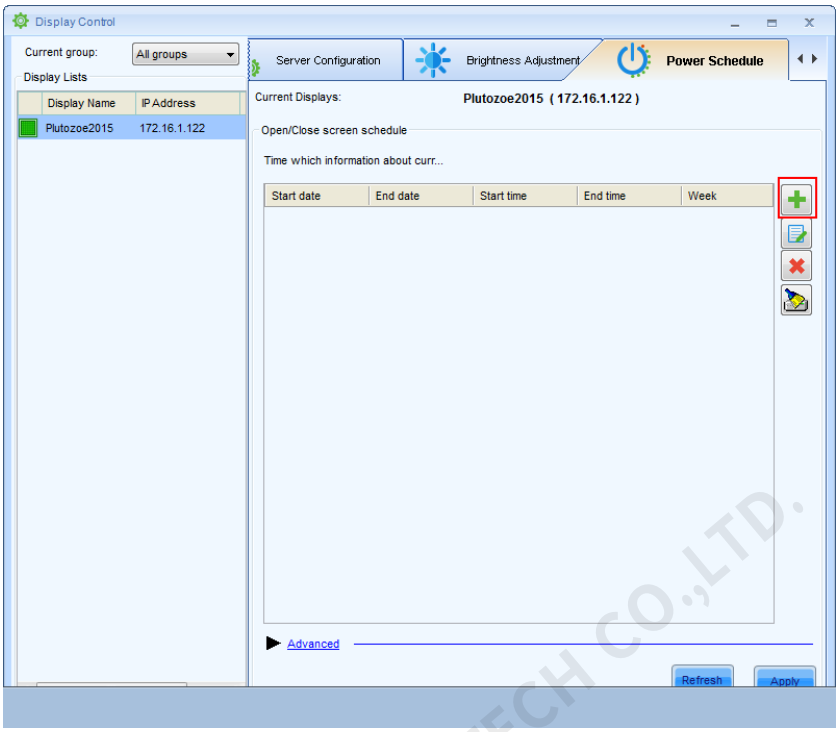


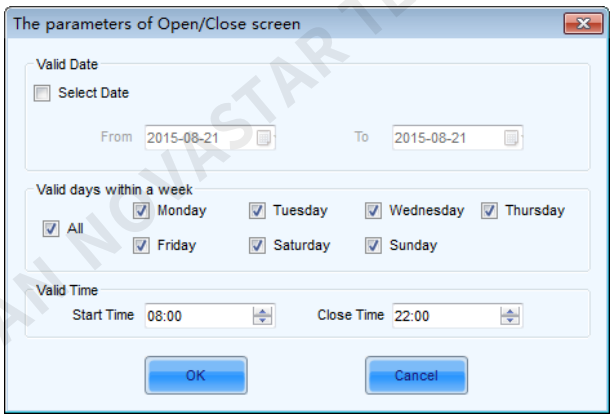
Fig. 9-97 Brightness editing plan

Two brightness programs are required to regularly adjust the brightness to 100% at 8 AM and automatically adjust the brightness at 8 PM. Setting results are as shown in the following figure:



9.6.5 Power schedule





9.7 Online upgrade

Operating steps of online upgrade of pluto client software:

1) Press Operation in PlutoManager main interface, select Display Upgrade, to enter below page. You can refresh to check the version of the selected display, or click “Refresh All” to refresh all the displays.

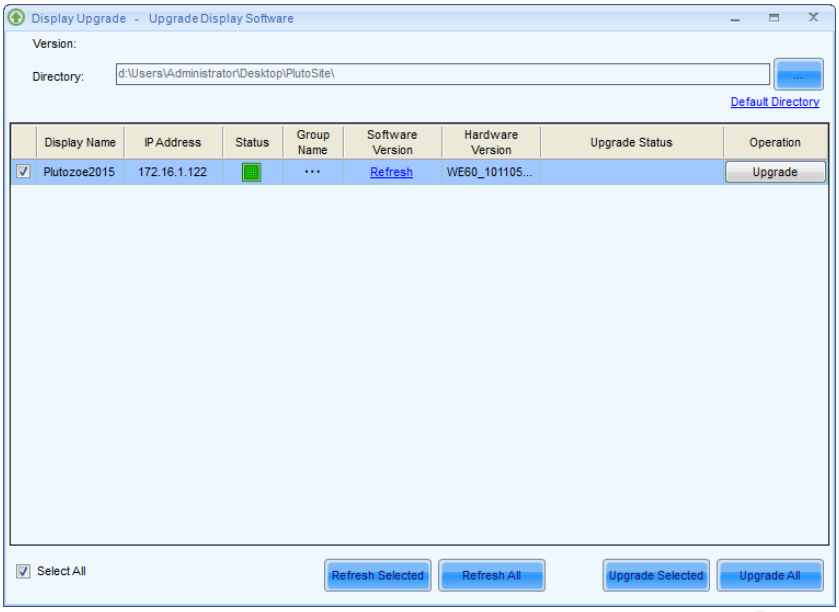


Fig. 9-98 Online upgrade of pluto client software

2) Click  to select path of upgrade package.
3) Upgrading of one display or all displays is optional.

9.8 Time synchronization

Keep the time of display consistent with that of the control computer, server, or display network through the time synchronization.

1) Click **operation** on the main interface→**Time Synchronization**, to open the Display Time Synchronization window.

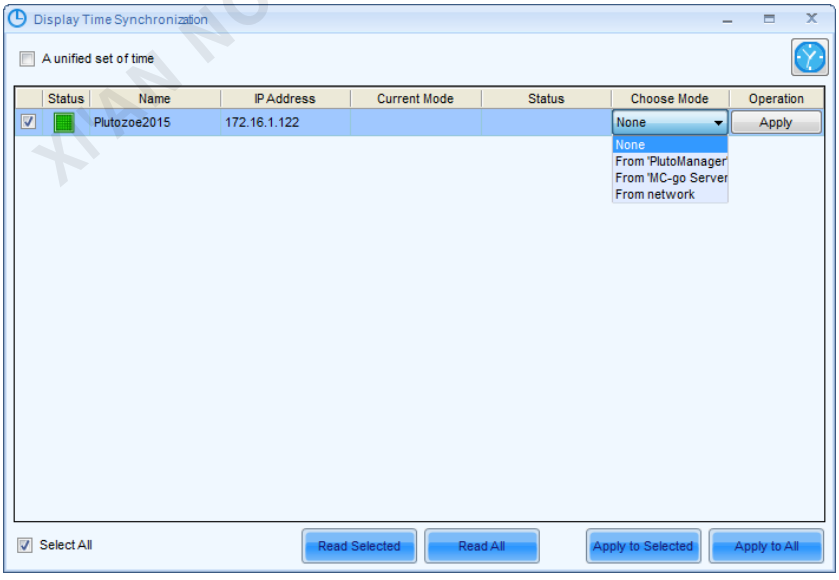


Fig. 9-99 Time synchronization

A unified set of time: Check the option to conduct the unified setting of all displays.

Time synchronization mode:

- **From PlutoManager**: keep the time of display consistent with that of the PlutoManager computer (i.e.

control computer)

- **From MC-go Server**: keep the time of terminal consistent with that of Cloud server, if the Cloud platform is used.
- **From network**: time acquisition of display is from the network.

Read Selected / Read All: readback the current mode of the selected or all displays.

Apply to Selected/ Apply to all: Apply the time of the selected or all display to current settings.

2) Select the time synchronization mode for the display and apply to display.

3) Click  button for time setting. Click OK when finish.

Fig. 9-100 TimeSyn setting

TimeSyn interval: For setting the time period according to which terminals' time will be checked and reset.

Time source: Optional network time or computer time.

TimeSyn zone: For time zone setting.

9.9 Font management

Read and update current font of the display.

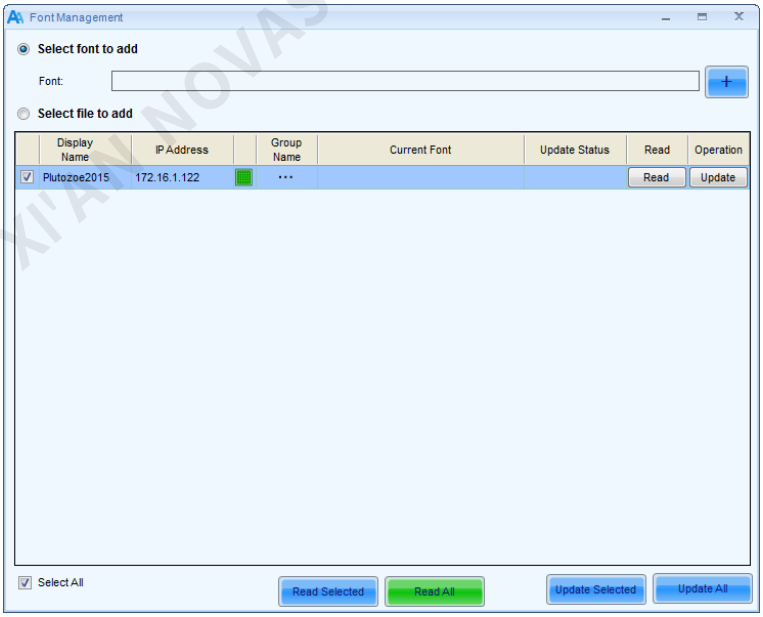


Fig. 9-101 Font management

9.10 Language management

Update the terminal's language.

Tick "Uniform Setting of Terminal Language" to select language type, and then click "Update All" to update the language of all terminals.

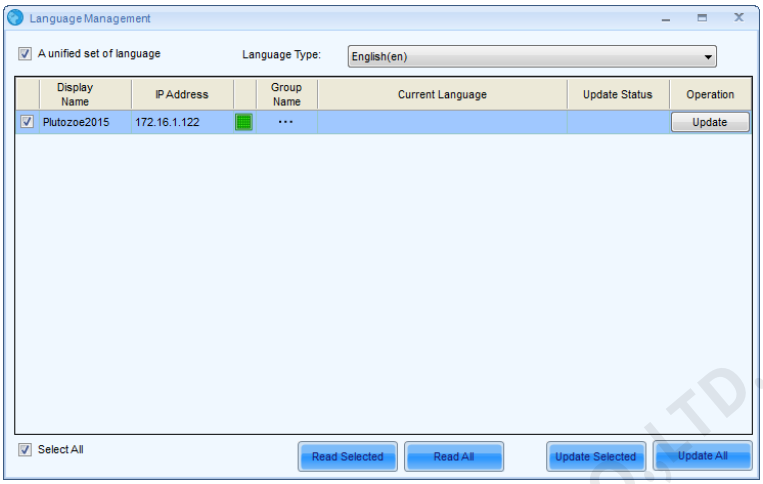


Fig. 9-102 Language management

9.11 Display authorization

Encrypt the specified client, and the encrypted client cannot be connected at will by any other people so as to protect the play security of client display.

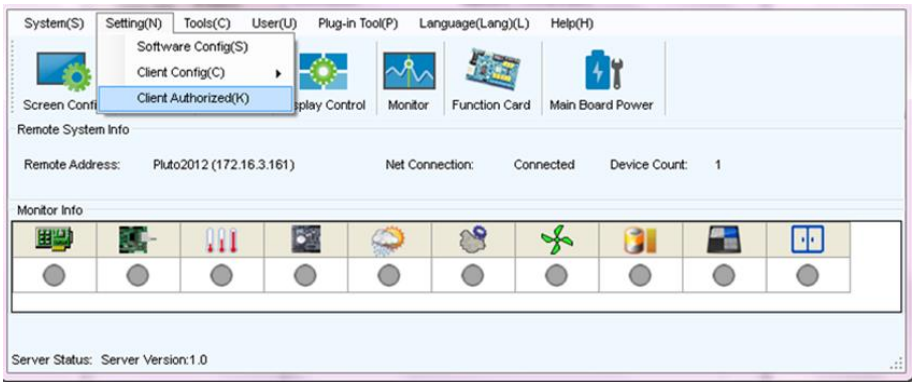
9.11.1 Authorization

Authorization of the display can be conducted in two ways.

Way I: NovaLCT-Pluto terminal authorization

1) Password authorization

In the NovaLCT-Pluto main interface, click on【**Setting**】→【**Client Authorized**】, and enter password in the Play Authorized Setting Window, and then click on【**OK**】.



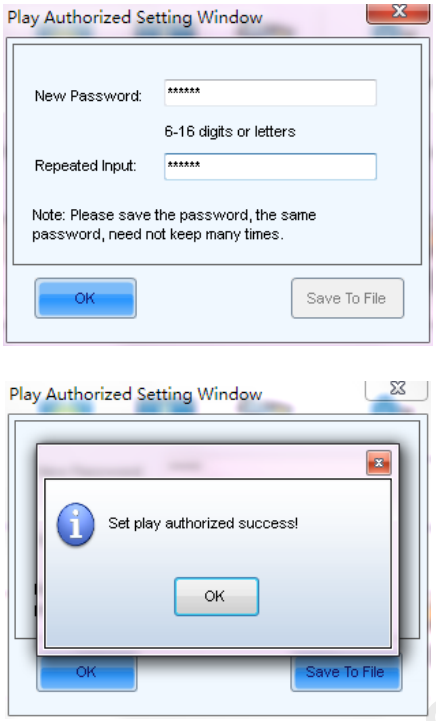
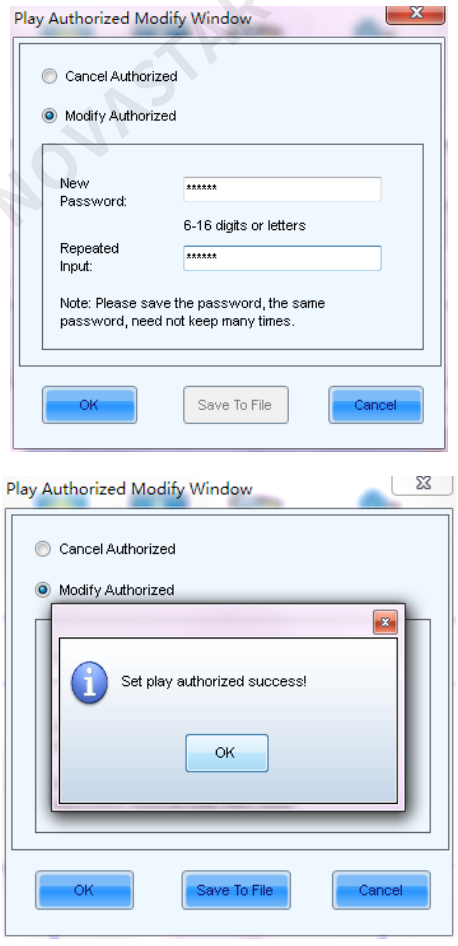


Fig. 9-103 Play authorized setting

2) Modify authorized

In the Play Authorized Modify Window, tick【Modify Authorized】, enter the newest password，and click on 【OK】. And then, save the authorized file, and it is better to cover the previous authorized file of this client.



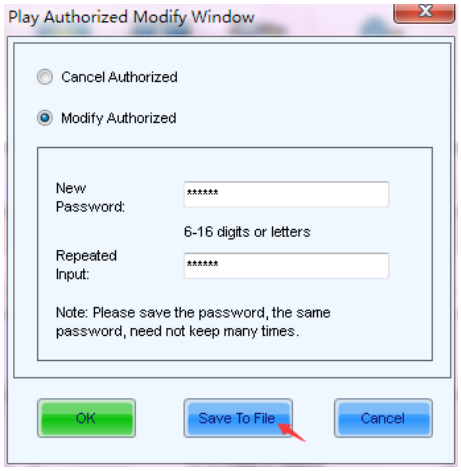


Fig. 9-104 Modify authorized

3) Generating authorization documents

Once the password is set, click on 【Save to File】, to save the authorized file to the specified directory（it is recommended to set a name allowing rapid identification as per clients for the authorized file）.

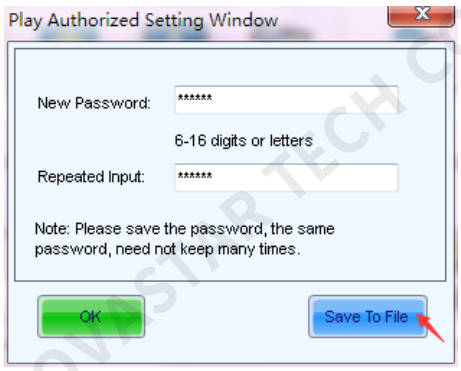


Fig. 9-105 Saving authorized File

4) Cancel authorized

In the NovaLCT-Pluto main interface, click on【Setting】→【Client Authorized】, and at this moment, it is required to enter password again, and then tick【Cancel Authorized】, and click on【OK】to cancel authorized.

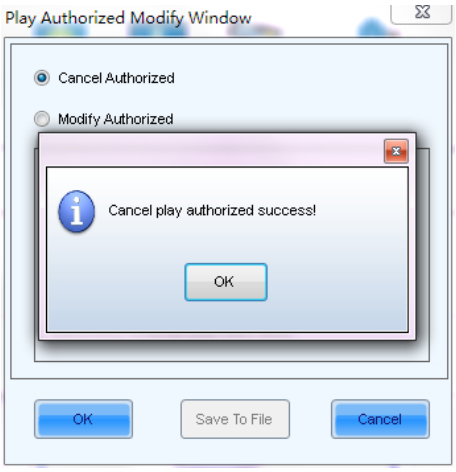


Fig. 9-106 Cancel authorized

Way II: Pluto Manager terminal authorization

See 9.6.2.3 Client password configuration for the specific operations.

9.11.2 Authorized decryption

1) NovaLCT

It shall be input the correct password when connecting the authorized terminal.

2) PlutoManager authorization configuration

If the terminal is set with a password or the password has been changed, then, the user has to input the latest password or import the corresponding authorization document into PlutoManager; otherwise the connection error may occur.

For example：previously, authorization has been set for LYZ，and in PlutoManager client list, you may see that this client displays abnormal connection.

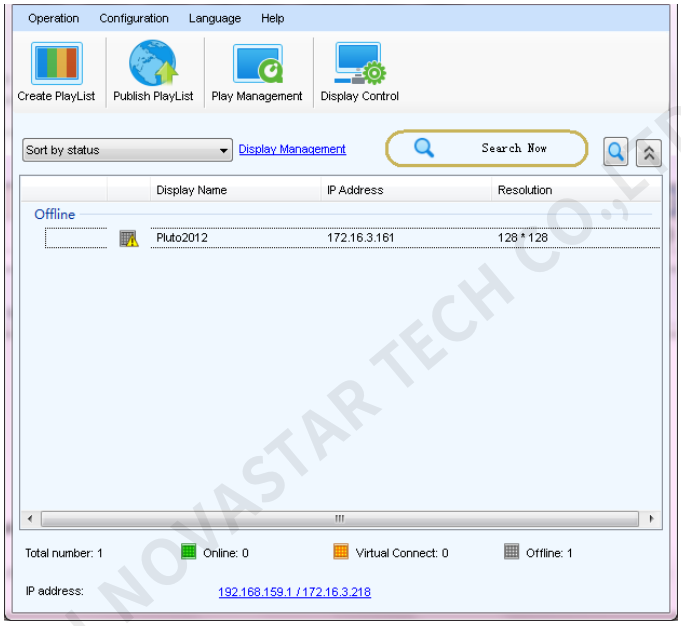


Fig. 9-107 Display status of client without authorization configuration

Solutions:

In the software main interface, click on【Configuration】→【Authorize file】, as shown below:

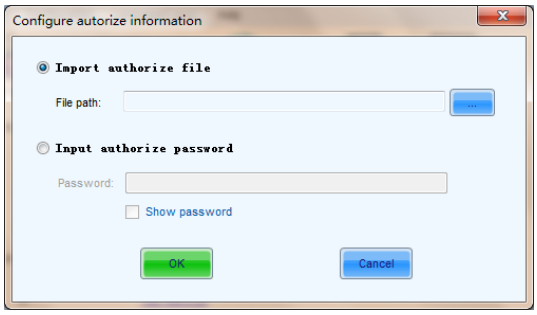


Fig. 9-108 Configure authorization information

Way Ⅰ: Select "Import authorize file" option , then click on  to import authorized file of LYZ, and click on "OK".

Way Ⅱ: Select "Input authorize password" option, and click on "OK".

After importing the authorized file, the display status of this client is normal, as shown below:

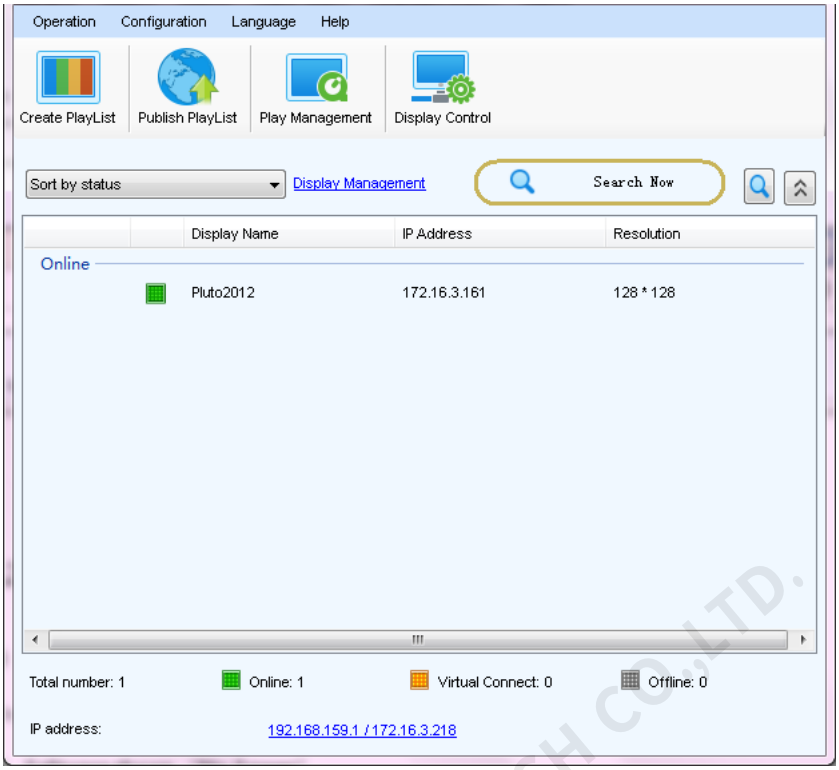


Fig. 9-109 Client display after authorization configuration

10 Hardware Program Upgrade

Operation steps for updating hardware program in LCT:

Login as an advanced user, and input admin in the main interface of NovaLCT Pluto to open hardware program loading page.

Attention:

A. There isn't any place to view the typing when inputting the password. Just type in the password directly.

B. Just input the password again if you typed the wrong password.

C. Hardware program updating is not recommended if no problem occurs.

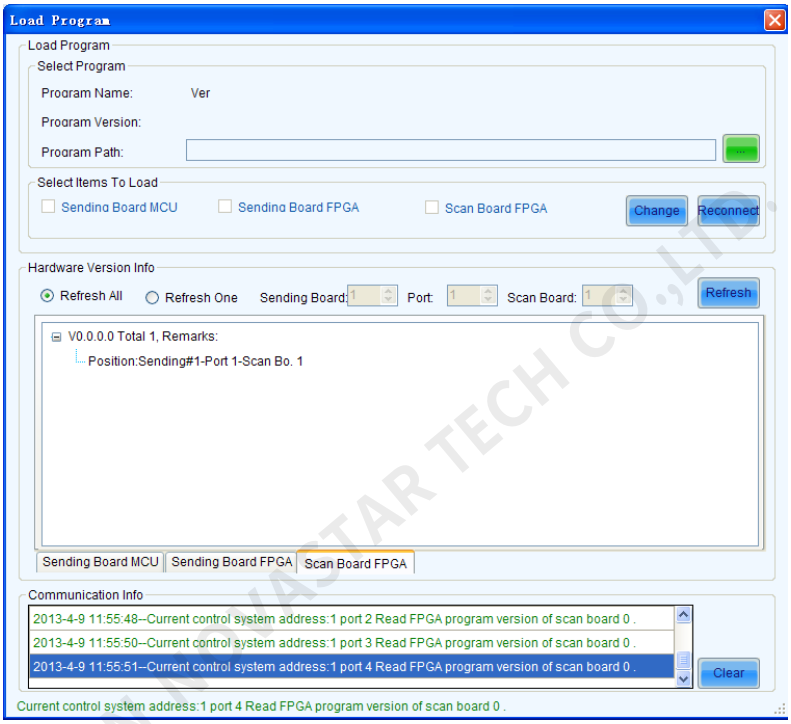


Fig. 10-1 Hardware program loading page

Program Path: Select the program to be loaded to the hardware.

Scan Board FPGA: Select this option to upgrade the FPGA program of a scan board.

Change: Click this button to load the selected program to the selected hardware.

Refresh All

If this option is selected, the version info of scan boards connected to the current serial port will be refreshed when click the Refresh button.

Refresh One

If this option is selected, only the version info of the selected scan board will be refreshed when click the Refresh button.

Refresh: Click this button to show the current version info of the hardware. This can be used to check whether the hardware program has been upgraded.

11 Frequently Asked Questions

1) Software shows "No Hardware"

Please check whether all the clients that currently connected are electrified.

2) Software shows "No Screen"

If the LED display has been configured already, then try to read the configurations from the display by click Read from HW button in the Screen Configuration page, as shown in Fig.11-1. If the display has not been configured yet, please configure it first.

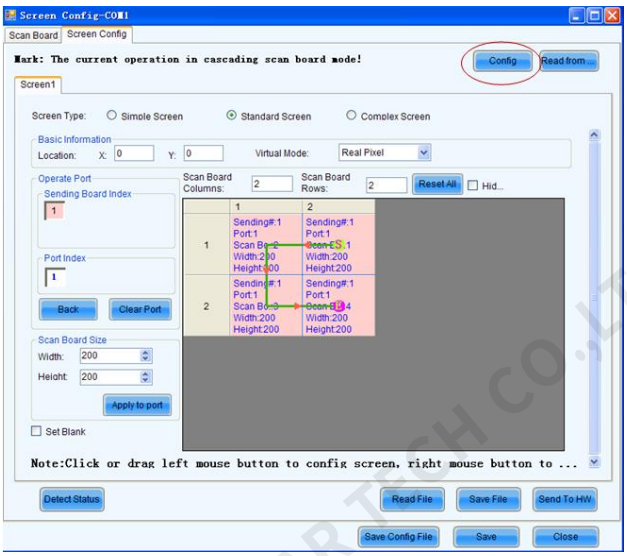


Fig. 11-1 Read LED display info from hardware

3) Only part of the modules of each cabinet work normally in Smart Setting

Please check whether the size of the module array is correctly set.

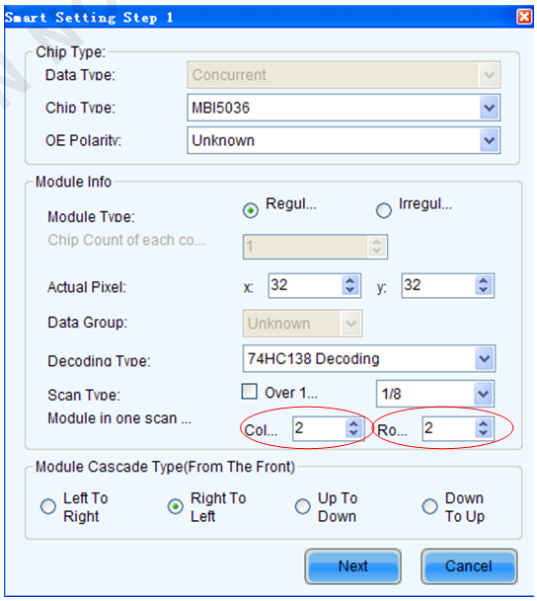


Fig. 11-2 Smart setting step 1

4) Check whether the number of columns of lines in the figure are consistent with that of actual columns of lines of cabinets.

12 Document Version Statement

Version	Date	Update Description
Nova Pluto Asynchronous Control System User Manual-V1.0	Sept. 25, 2012	Initial edition
Nova Pluto Asynchronous Control System User Manual-V2.0	Dec. 25.2012	NovaLCT-Pluto-V3.4.2 PlutoManager V2.0.2
Nova Pluto Control System User Manual-V3.0	Apr. 10, 2013	NovaLCT-Pluto-V4.0.0 PlutoManager V3.4.0
Nova Pluto Control System User Manual-V4.0	May 20, 2013	NovaLCT-Pluto-V4.0.2 PlutoManager V3.4.2 ManageCenterV3.4.1
Nova Pluto Control System User Manual-V4.3.0	Feb.17.2014	NovaLCT-Pluto-V4.3.0 PlutoManager V4.3.0
Nova Pluto Control System User Manual-V4.4.0	June 17th .2014	NovaLCT-Pluto-V4.4.0 PlutoManager V4.4.0
Nova Pluto Control System User Manual-V4.5.0	Apr. 20th .2015	NovaLCT-Pluto-V4.5.0 PlutoManager V4.5.0
Nova Pluto Control System User Manual V4.5.2	August 18, 2015	NovaLCT-Pluto-4.5.1 PlutoManager 4.5.2
Nova Pluto Control System User Manual V4.5.3	Dec. 3, 2015	NovaLCT-Pluto-4.5.3 PlutoManager 4.5.3
Nova Pluto Control System User Manual V5.0.0		NovaLCT-Pluto V5.0.0 PlutoManager V5.0.0