



User's Manual

Dual-mode Multimedia Player PBOX150

Rev1.0.0 NS120100107

Statement

Welcome to use the product from Xi'an NovaStar Tech Co., Ltd. (hereinafter referred to as "NovaStar"). It is our great pleasure to offer this manual to help you understand and use the product. We have striven for precision and reliability during the compilation of this manual. The contents of this manual are subject to change without notice. If you have any problem in use or you have any suggestion, please feel free to contact us according to the contact information provided in this manual. We will do our utmost to satisfy your needs. We would like to express our sincere thanks to your suggestions and make assessment for adoption as soon as possible

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Trademark



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FCC Caution

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment .This equipment should be installed and operated with minimum distance 20cm between the radiator& your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

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1 Brief Introduction of PBOX150

In order to support traditional digital signage and provide a better entry into full-color LED display industry for clients to carry out media business, NovaStar has launched dual-mode media player PBOX150. Synchronous and asynchronous dual-mode switch is supported, which has made it more convenient for clients to use.

- 1) Synchronous and asynchronous dual-mode and supporting full zoom of video input in synchronous mode;
- 2) Supporting HDMI Loop;
- 3) Supporting WiFi function to enable wireless communication;
- 4) WiFi function supports AP+Sta at the same time and you can build your LAN while connecting public network;
- 5) Supporting load capability of 600,000 and maximum width of 2048 and maximum height of 1024;
- 6) Supporting redundancy backup of Gigabit Ethernet port;
- 7) Supporting audio output with stereo dual-channel;
- 8) Supporting local USB drive playing;
- 9) Supporting local USB drive playing of imported program;
- 10) Supporting three ways of brightness adjustment: timing adjustment, automatic adjustment and manual adjustment;
- 11) Supporting screen lock and blackout;
- 12) Supporting screen on/off via power;
- 13) Supporting SD card memory expansion;

- 14) Supporting remote cluster control and play via Internet;
- 15) Supporting various media formats such as analog clock, animation, picture, text, scrolling text, digital clock, positive and negative timing, Chinese traditional calendar etc;
- 16) Supporting playing with transparent background;
- 17) Supporting chips: driving IC of Macroblock, CHIPONE, Sumacro, Mingyang, IT, Bright Way, Hangzhou Silan etc. supported in cascading mode;
- 18) Support full-color static to 32 scan;
- 19) Field frequency of 60Hz;
- 20) Settable gray level and supporting a maximum gray level of 16bits 65536 grades;
- 21) Refresh frequency: scanning screen can achieve 3840Hz and static screen can achieve 6000Hz;
- 22) Supporting brightness and chroma calibration;
- 23) Able to connect function card MFN300;

2 Appearance



VIDEO SWITCH	Audio and video Switching Light on in HDMI mode and off in asynchronous mode.
WiFi	Connecting antenna
SD CARD	Plugging SD card



100~240VAC.50/60Hz	Power interface	
Default IP	Default IP of PBOX150 is: 192.168.0.220	
PWR&RUN	Status indicator	PWR: power indicator
		RUN: signal indicator
LAN/WAN	100M interface connecting to control computer or to the Internet.	
USB	USB interface for mainstream USB drive	
RESET	Factory reset button	
TEMP	interface for temperature sensor	
LIGHT	interface for light sensor	
HDMI IN	HDMI input	
HDMI LOOP	HDMI Loop output	
AUDIO OUT	Audio output	
LED OUT	Gigabit Ethernet port, LED output	
BACKUP	Gigabit Ethernet port, LED backup output	

3 Network Connections

PBOX150 can be connected to play& control computer through three modes: network cable, LAN and WiFi.

3.1 Network cable



Fig. 3-1 Network cable

3.2 LAN

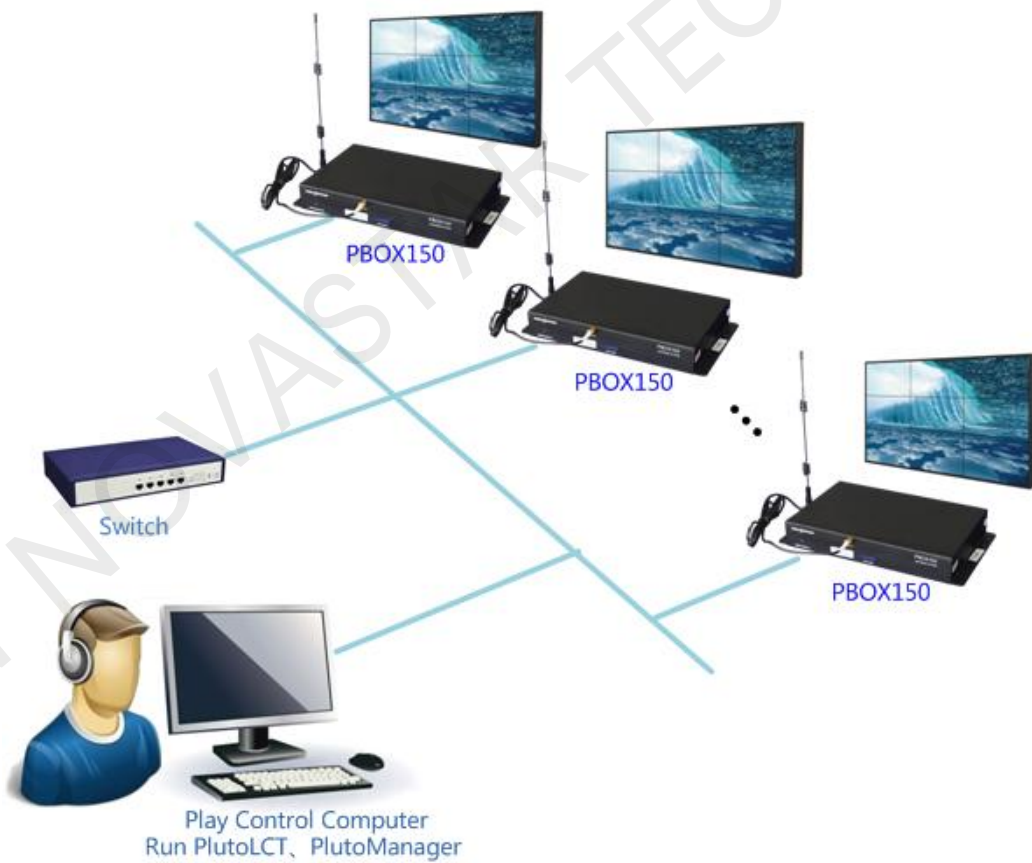


Fig. 3-2 LAN

3.3 Wifi

Tips:

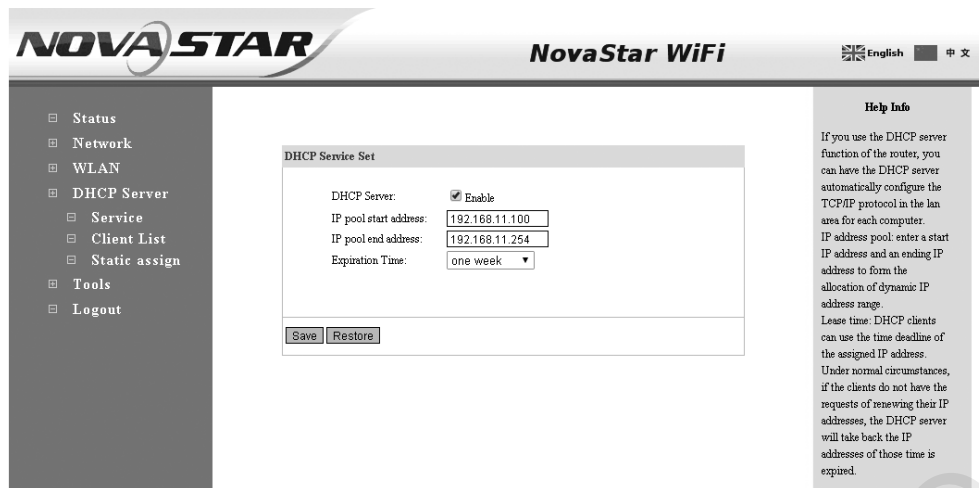
- 1) The WiFi function of PBOX150 has DHCP service which is disabled and in route mode by default.
- 2) Please do not directly switch PSD100-WiFi into local area networks by network cables at the time of DHCP opening. As the DHCP of this card will conflict with the DHCP service for routers in the local area network at the time of opening and meanwhile, IP addresses will be distributed simultaneously.
- 3) When the PSD100-WiFi switches into routers, Huawei, TP-link, Tenda and net gear brands are recommended for the guarantee of stability.
- 4) When the bridge feature is used, the superior router under bridge connection shall have the WDS function, otherwise, bridge connection will fail. Mutual bridge connection can be realized among PSD100-WiFi systems and for superior router, it is allowed to pre-confirm whether the WDS of the superior router can be enabled. The mode is generally enabled.
- 5) The default factory settings of control card are that DHCP service is disable.
- 6) The default factory settings of control card are that router mode, users could select the bridge mode according network interface.

3.3.1 Mode I: WiFi control card does not connect with external network



Tip: In this case, publishing and management terminal devices cannot connect external network. PBOX150 itself can build a new network through its connected WiFi.

- 1) Connect PSD100-WiFi to user computers by network cables;
- 2) Set computer's IP address as static IP: 192.168.10.*;
- 3) Open the browser and input 192.168.10.1 in the address bar, to enter the setting interface of wireless routers. Both the Login User and the password are admin by default. Enter the DHCP server > DHCP service and open DHCP services;



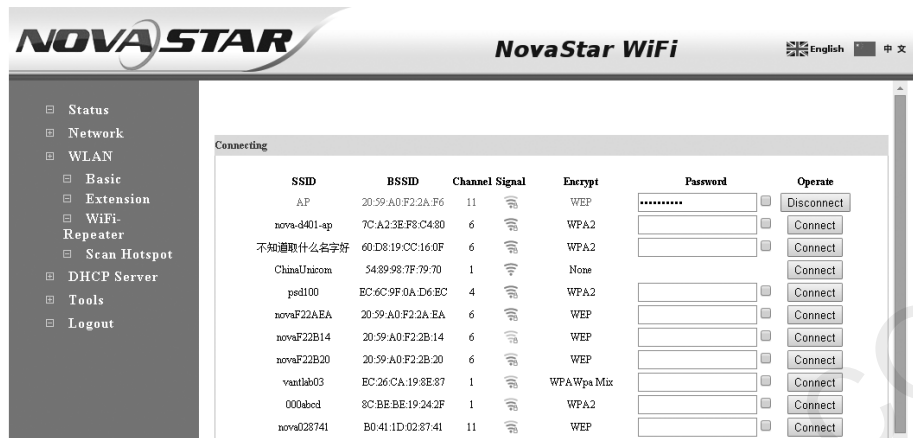
- 4) Use mobile device to search the hot spots of the WiFi module for connection: The SSID is nova***** (check information label) and the default password is 0123456789.

3.3.2 Mode II: connect the WiFi card with external network by wireless network



- 1) Set computer's IP address as static IP: 192.168.10.*;
- 2) Open the browser and input 192.168.10.1 in the address bar, to enter the setting interface of wireless routers. Both the Login User and the password are admin by default. Enter the DHCP

server ->DHCP service and open DHCP services. Conduct wireless setting -> scanning hot spots and decide the spot for connection:



- 3) The connection status is displayed as connected (see the Figure above), when it is allowed to use mobile device for searching the hot spots of the WiFi module for connection: The SSID is nova***** (check information label) and the default password is 0123456789;

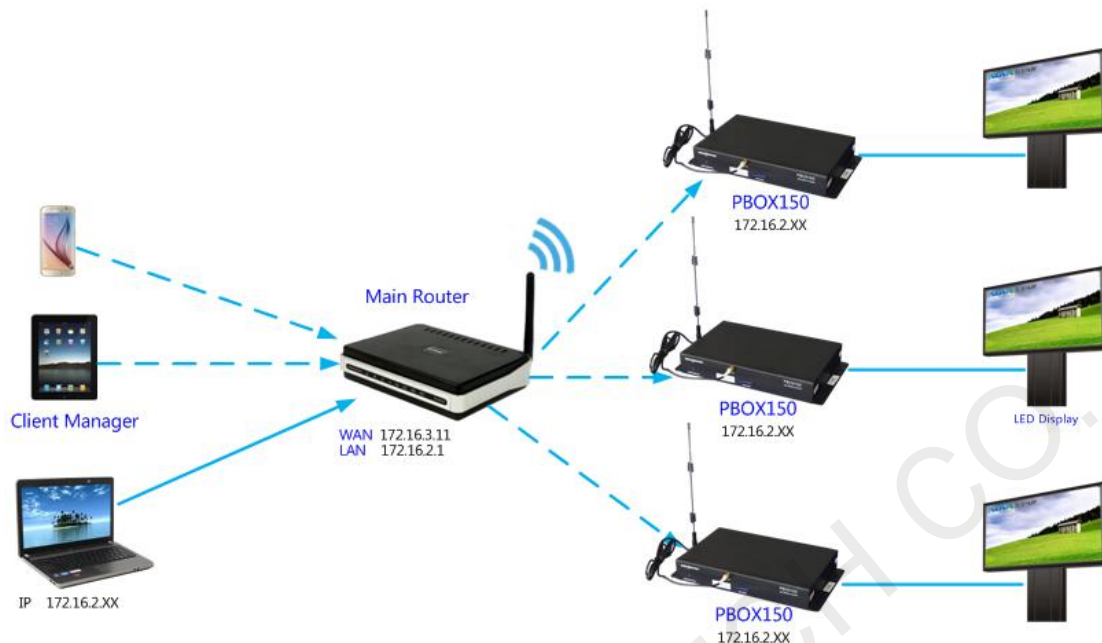
3.3.3 Mode III: connect the WiFi card with external network by network cables



Note: Please close the DHCP service before setting wireless network parameters.

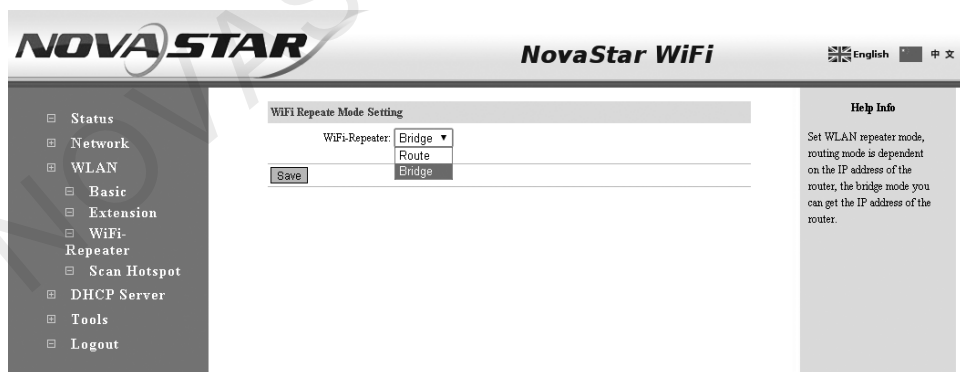
Connect PSD100-WiFi to external routers by network cables and then use mobile devices for WiFi hot spots searching: The SSID is nova***** (check information label) and the default password is 0123456789;

3.3.4 Mode IV: WiFi card opens the bridge connection mode



Note: Please close the DHCP service before setting wireless network parameters.

- 1) Open the browser and input 192.168.10.1 in the address bar, to enter the setting interface of wireless routers. Both the Login User and the password are admin by default. Upon successful login, configure the Relay mode -> Bridge connection;



- 2) After configuration, select Wireless setting -> Scan hot spots and select the hot spot for connection. Then reset the computer IP to auto obtain. The topological graph of bridge connection mode is as shown in the figure.

Note: Please refer to the PSD100-WiFi User Guide for mode bridge connection schemes.

3.4 IP Searching

Tip: If the DHCP service is enabled, both the IP addresses of the laptop and the control card are 192.168.10. *. If the DHCP service is disabled and external routers are connected by network cables, laptop and control card all use the IP addresses distributed by external routers. After the wireless control card is successfully connected, the IP addresses of the laptop and the control card are in the same network segment, for easier software search.

Run Nova LCT-Pluto on play& control computer, click **System->Search All Display(s)**;

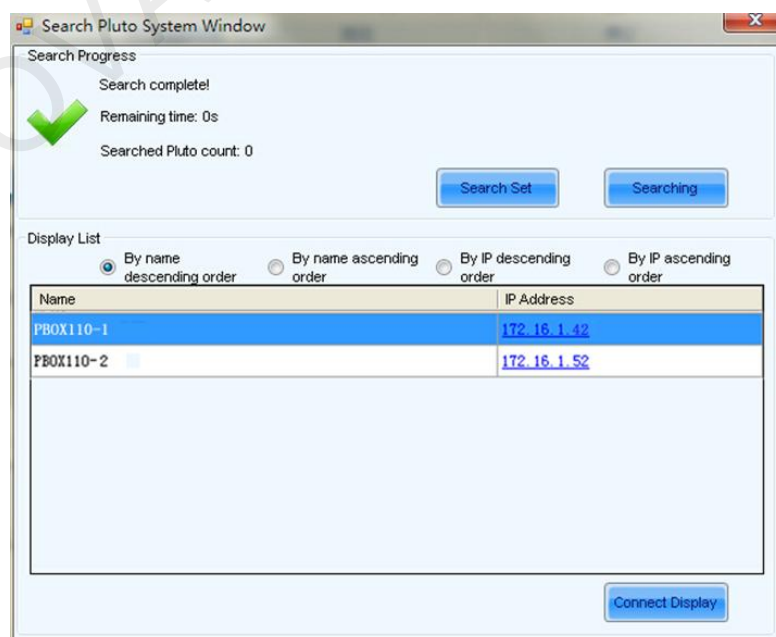


Fig. 3-3 Searching Pluto system

Double click on the display and the operation interface of IP modification will shown.

You can modify IP address directly or choose to obtain IP automatically.

Click **Send** after setting is completed.

4 Advanced Login

Select the display to be connected from the list you have searched and click connect display;

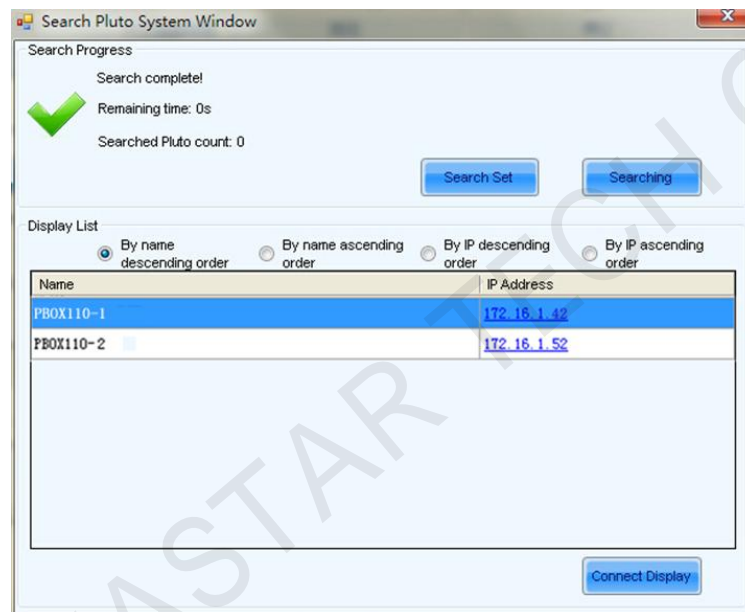


Fig. 4-1 Connect display

Click **User** -> **Advanced Login** and then enter the password: "admin" , click **Login**;

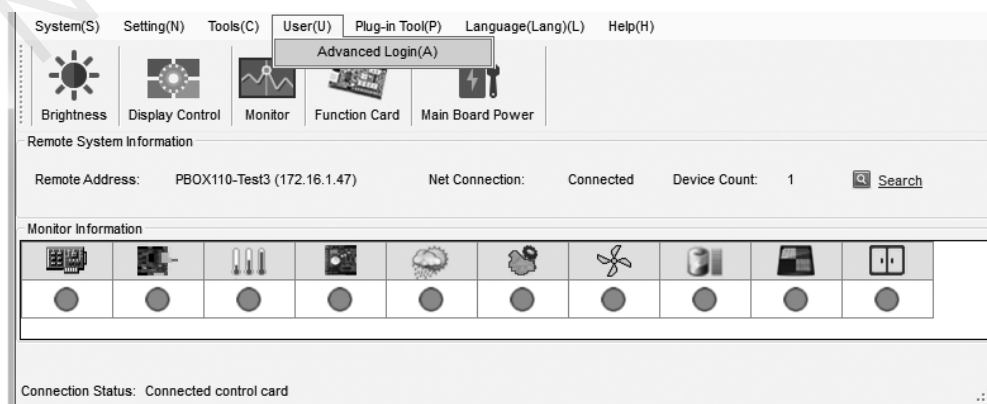
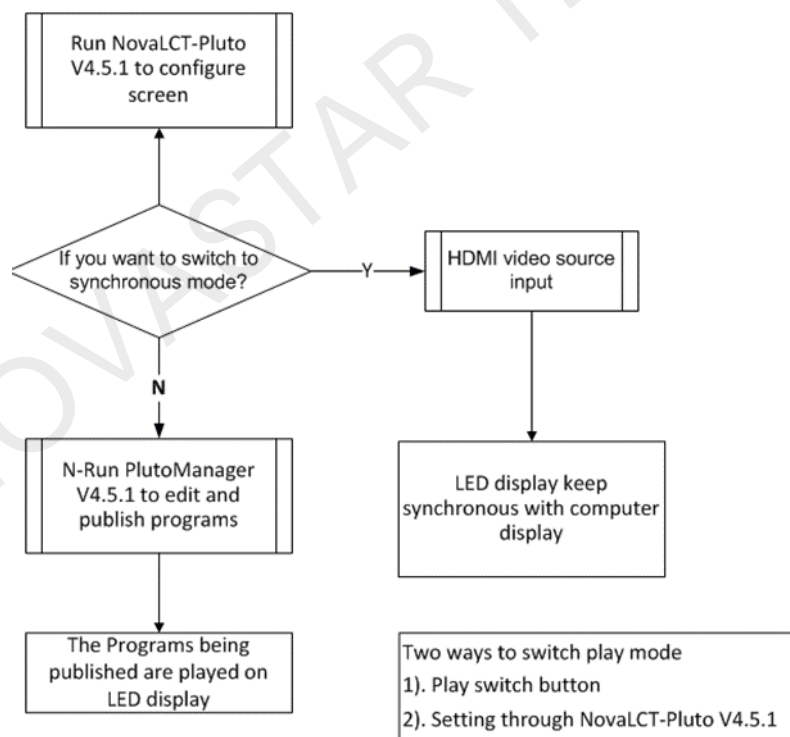


Fig. 4-2 Advanced Login

5 Software Installation

- Click the link below to download higher versions of NovaLCT-Pluto V4.5.1, the configuration software of display screen:
<http://www.novastar.tech/xzzx/rjzl/dssxt//rjzl/ybxt/62.html>
- Click the link below to download higher versions of PlutoManager V4.5.1, the play& control software :<http://www.novastar.tech/xzzx/rjzl/dssxt//rjzl/ybxt/63.html>
- Cluster management: Click the link below to download service platform NovaCloud and central management software Mc-go
<http://www.novaicloud.com/>

6 Operation Flowchart



7 Switch of Play Mode

PBOX150 supports synchronous and asynchronous modes of playing. In addition, these two modes could switch quickly from one to the other.

The video source of PBOX150 is HDMI input in synchronous play mode.

Program editing and sending need to work together with play& control software

PlutoManager in asynchronous play mode

The following two methods for switching of play mode are provided to select:

Methods I: Switching by button. Press "SWITCH" on the front panel of PBOX150 and the indicator light is on showing the current play mode is switched to synchronous.

Methods II: Switching by software. Run Nova LCT-Pluto. Click "Screen Configuration" under Settings and then select input source configuration.

Note: PBOX150 will default to synchronous mode after power on if HDMI input source has the access to signal.

8 Operation of Asynchronous Play Mode

Run play& control software PlutoManager on control computer to set program window, edit mode and send. (Please view the operating steps in 10 Program Editing and Publishing by Applying PlutoMnager).

9 Operation of Synchronous Play Mode

HDMI input source could obtain images on computer automatically and keep synchronous with computer display. Then edit program on computer to play in real time.

10 Screen Configuration by Applying NovaLCT-Pluto

This chapter is only an introduction of the basic configuration of display screen. Please view the www.novastar.tech

operating instructions of NovaLCT-Pluto in **NovaLCT-Pluto User's Manual**.

Run Nova LCT-Pluto on the computer.

- 1) Click System(S)→Search All Display(S). LCT will search current connected display. The result is shown as below and click Connect Display.

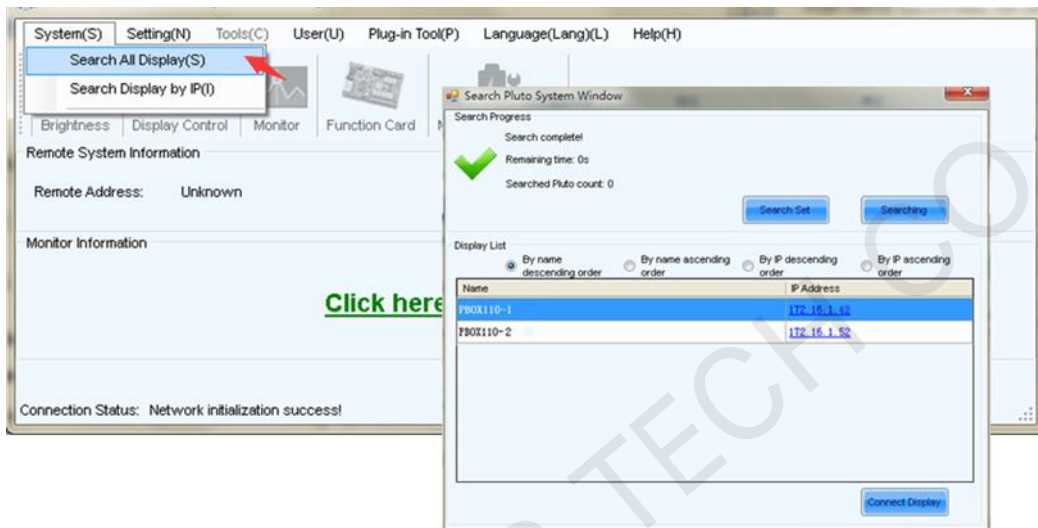


Fig. 10-1 Searching and linking display

- 2) Advanced login. The initial password is: **admin**.

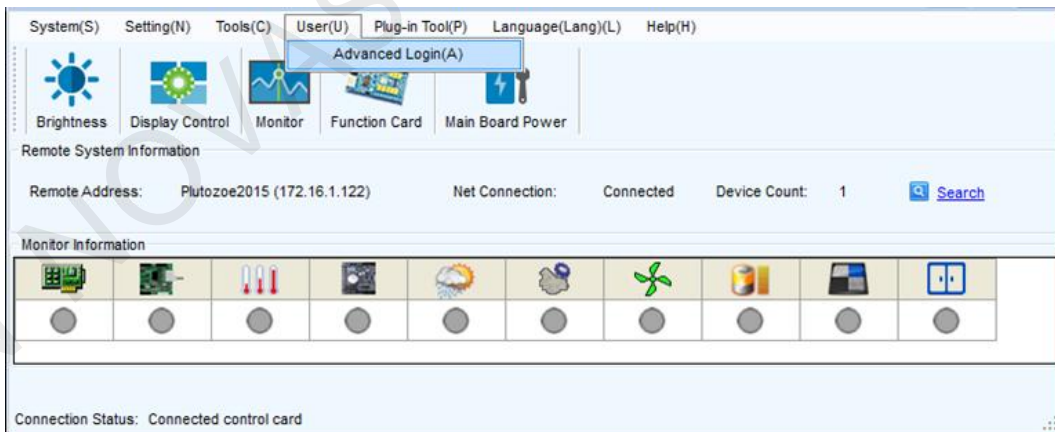
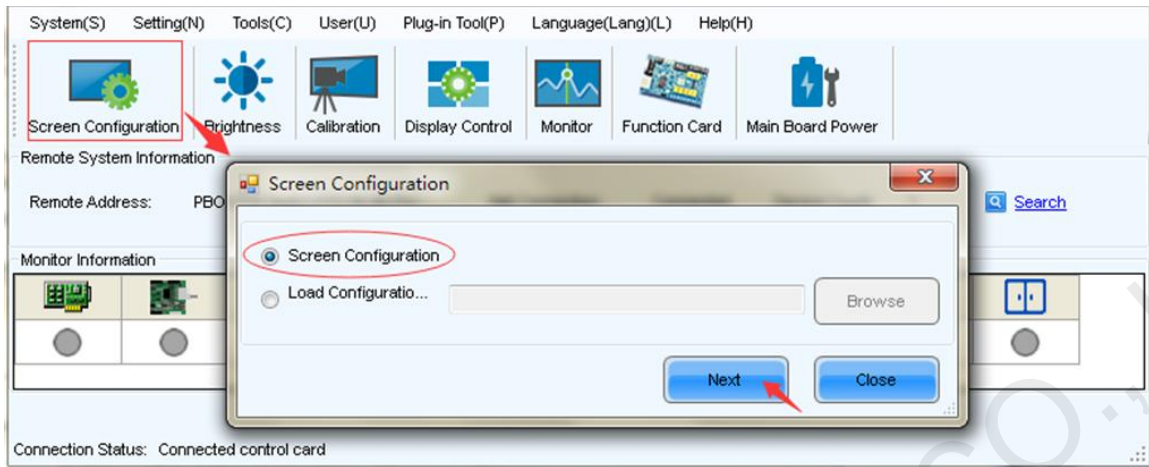


Fig. 10-2 Advanced login

10.1 Start LED display by receiving card configuration files

Precondition: There are saved configuration files in advance or ask display provider and Nova for configuration files.

Advantage: start display by configuration files without setting by users.



Enter "Scan Board" interface and click "Load File" to import configuration file of scan board in .rcfg format. Click "Save to Screen" and the data won' t lost if the power is terminated.

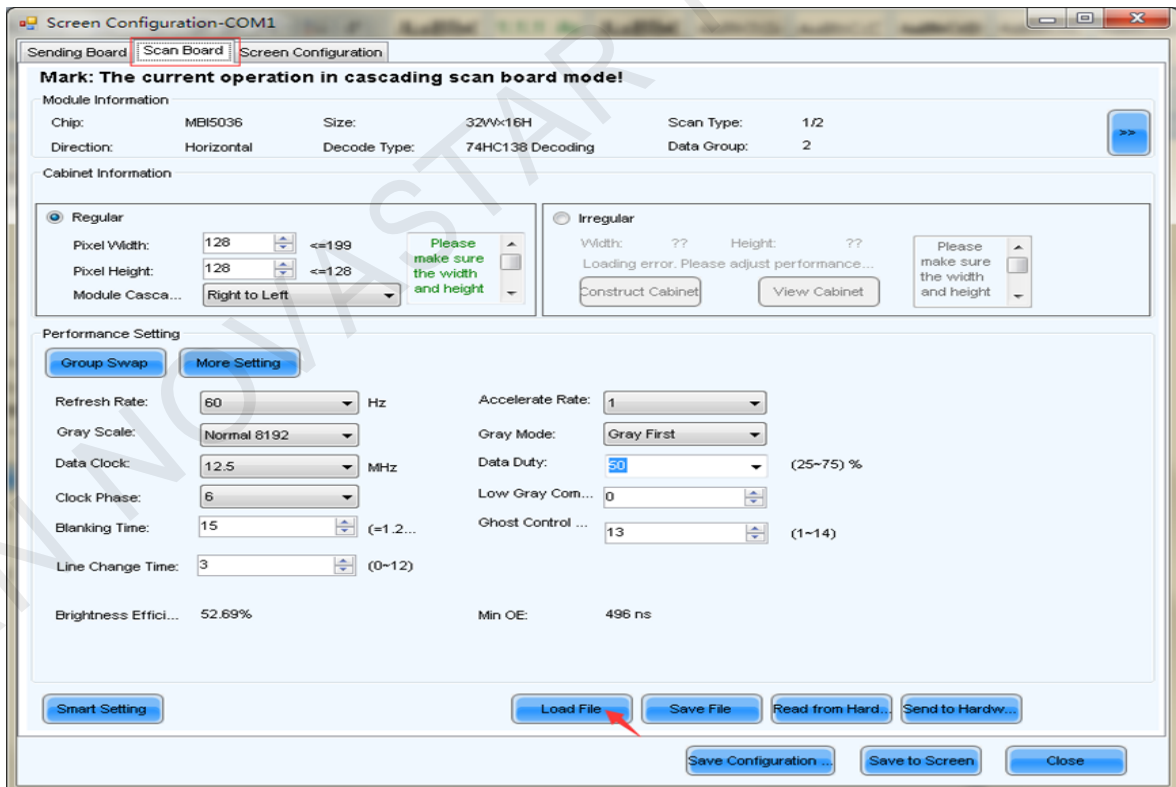
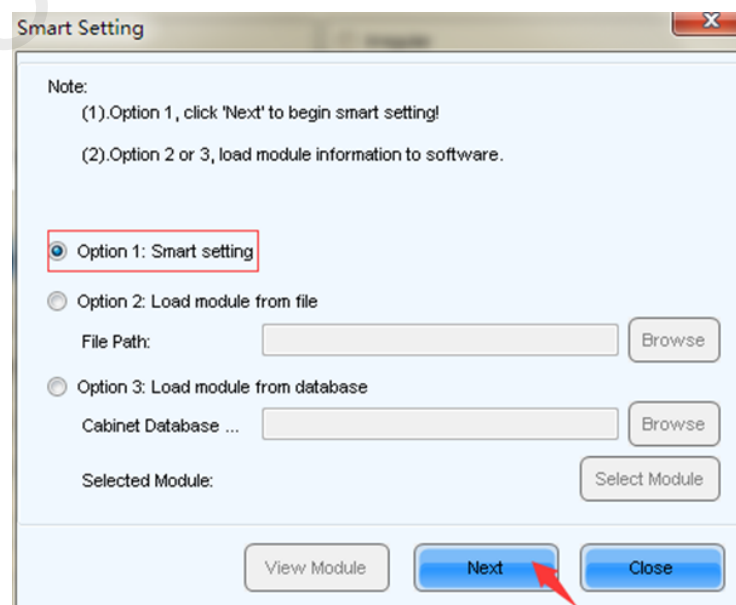
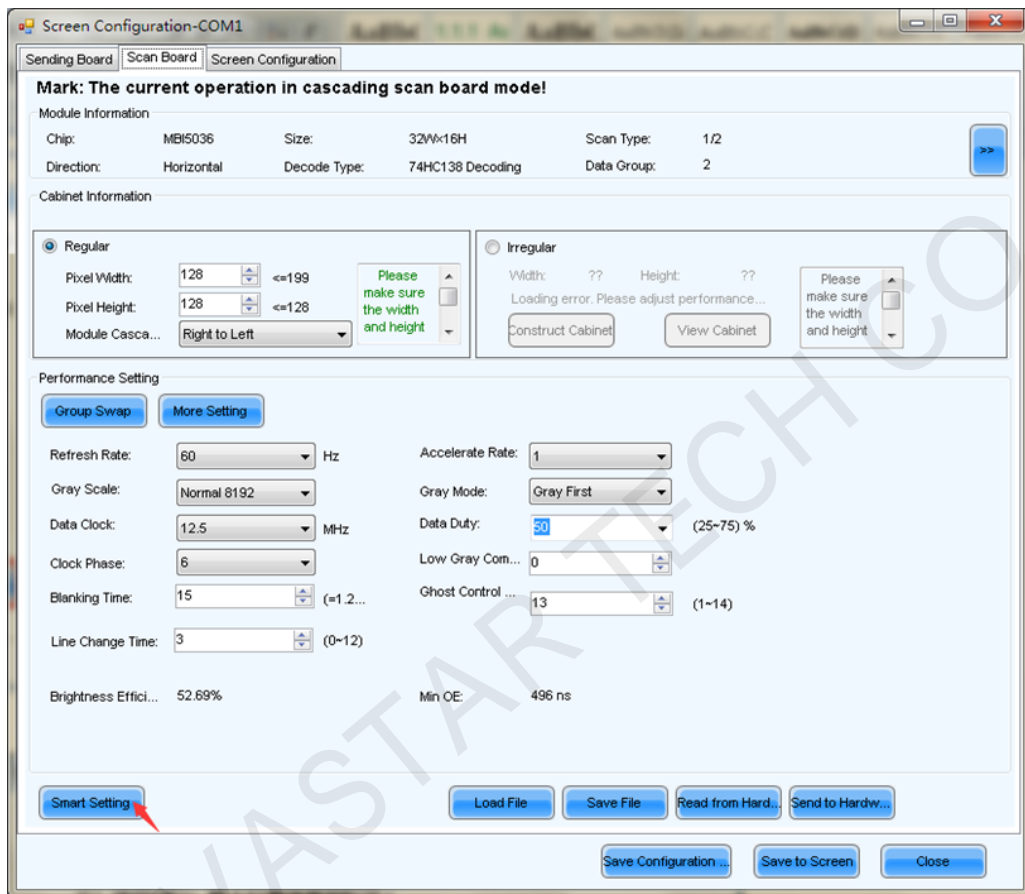


Fig. 10-3 Starting LED display by configuration files of scan board

10.2 Start LED display manually

10.2.1 Smart setting



The image shows a software window titled "Smart Setting Step 1". It contains several sections of configuration options:


- Chip Type:** Data Type (Concurrent), Chip Type (MBI5036), OE Polarity (Unknown).
- Module Information:** Module Type (Regular Module selected), Chip Count of each color ... (1), Actual Pixel (x: 32, y: 16), Data Group (Unknown), Decoding Type (74HC138 Decoding), Scan Type (Over 16 Scans checkbox, 1/2 dropdown), Module in one scan board... (Cols: 4, Rows: 8).
- Module Cascade Type (From the Front):** Left to Right, Right to Left (selected), Top to Bottom, Bottom to Top.
- Scan Board Work Mode:** Hub Mode (Normal selected, 20 Groups, 24 Groups, 28 Groups), Ghost Control Signal Polarity (High selected, Low).

Buttons for "Next" and "Cancel" are located at the bottom right.


Data types:

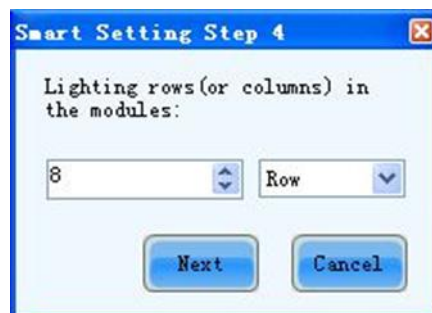
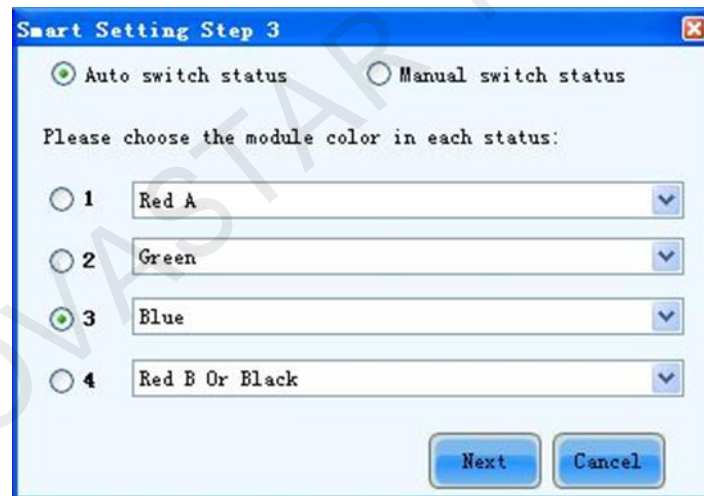
- **Module chip:** select driving chip type used by cabinets at present such as common chips, MBI5036 and MBI5042 etc.
- **OE Polarity:** this option can be **High Effective**, **Low Effective** or **Unknown**.
- **Module type:** the option can be **regular module** or **irregular module**. (Irregular 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 to the type of 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 called 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.

	<p>Notice:</p> <ol style="list-style-type: none"> 1) If the rows and columns of load module of scan board is set as the default (1 column, 1 row), modules in the first row of all cabinets will be lightened. 2) Fill in according to the specifications of cabinet and the last modules of the first row of all cabinets will be lightened.
---	--

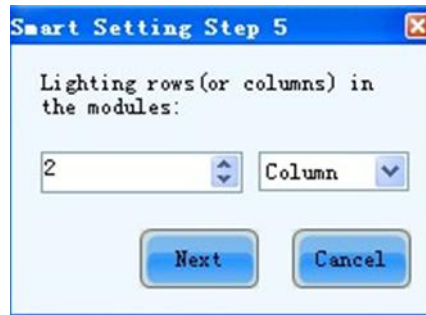


	<p>Notice:</p> <p>This step will be skipped if module OE polarity is known and set in Smart Setting Step 1.</p>
---	--



Fill in Smart Setting Step 4 according to actual situation and then click Next. Enter step 5 if

Scan Type is not selected in step 1. If selected, software will skip this interface.



Fill in Smart Setting Step 5 according to actual situation and click **Next** to enter "Smart Setting Step 9" . Then click the grid on computer corresponding to the lighted grid on module. Another grid will be lighted on the module after clicking one grid and then click next grid as the figure below.

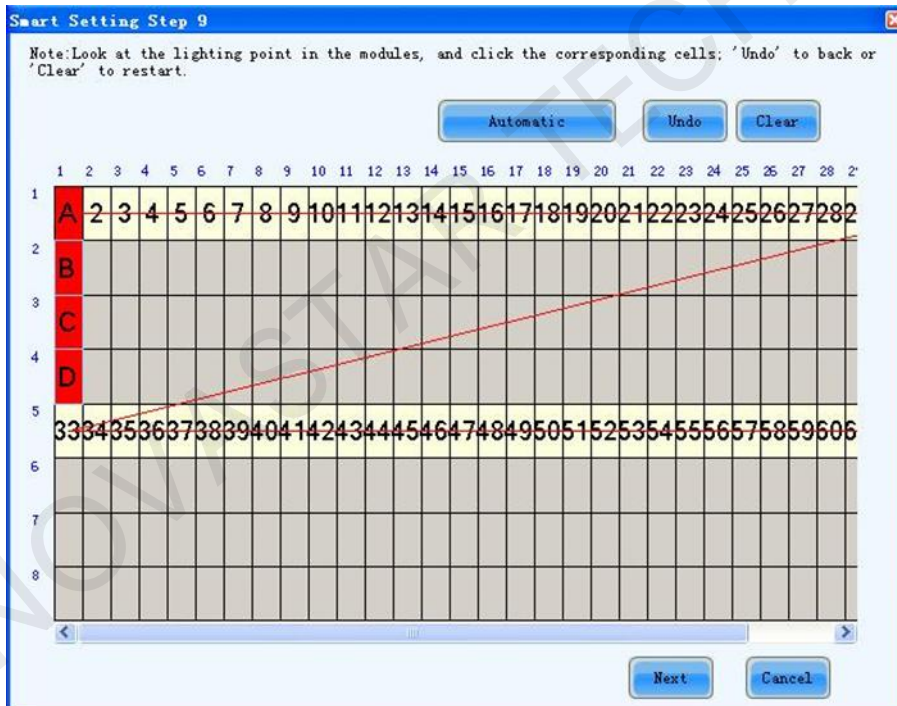


Fig. 10-4 Smart Setting

	<p>Notice :</p> <p>Press left button and drag the mouse to accomplish quick routing drawing.</p> <p>Use "Automatic" button to accomplish drawing routing lines of the same pattern.</p>
--	--

A prompt box will pop up to remind the completion of scanning after it is completed according to the display screen. Click Finish button and the dialog of Save module will pop up. Please save
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module to file or to database if it is necessary for the convenience of quick start the display screen with same module next time. Then click Save. Click Finish directly if it is not necessary to save.

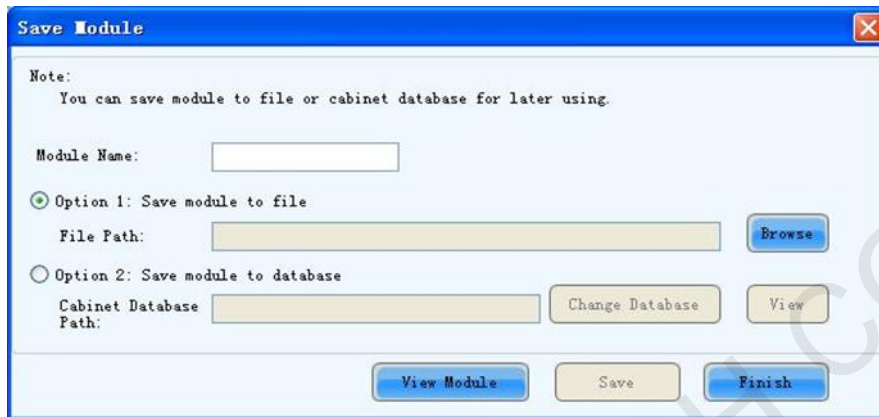


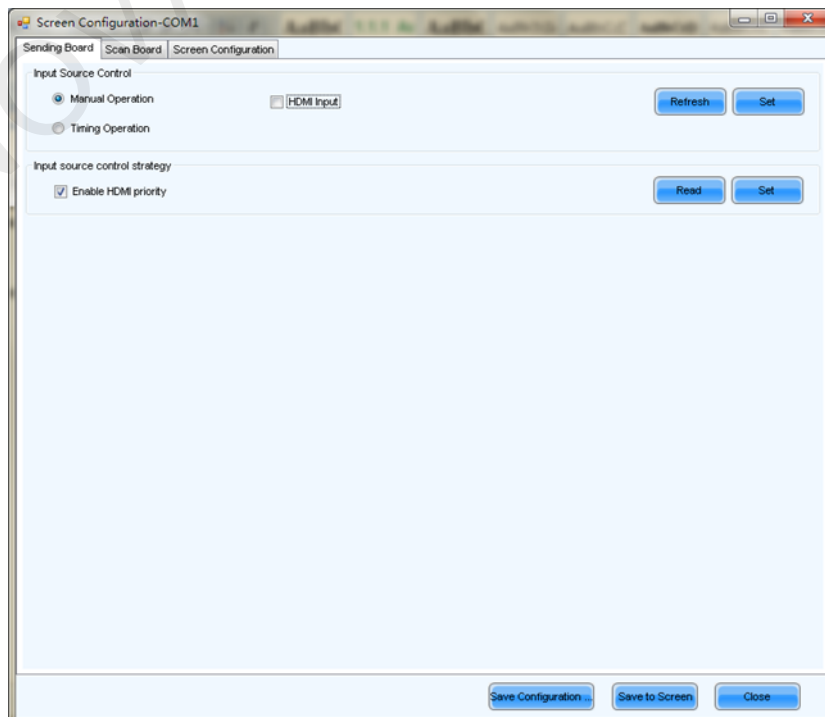
Fig. 10-5 Save module information

10.2.2 Screen configuration

Click "Screen configuration" on the main interface to enter the interface of "Send board" .

10.2.2.1 Input source configuration

Asynchronous will be used when HDMI Input Source is not checked as shown below.



Synchronous mode will be used if HDMI Input Source is checked as shown below. Resolution of input source can be set now.

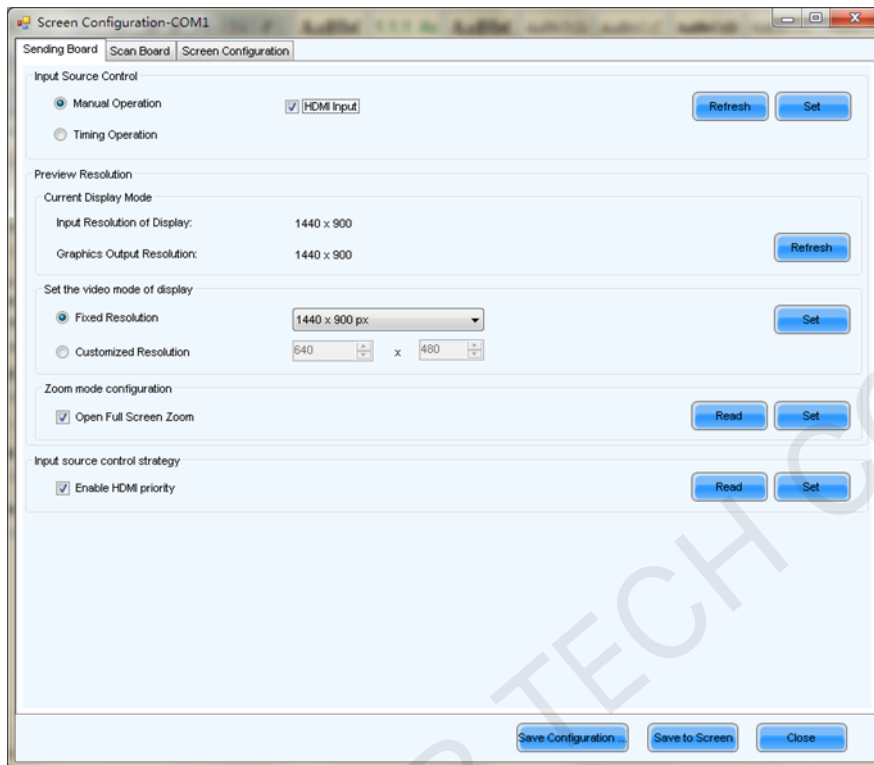


Fig. 10-6 Resolution settings

HDMI input: video source as a way for HDMI input get the connection to images from PC.

Play box display mode setting:

Fixed resolution: the required resolution can be chosen from the provided groups of built-in resolution.

Custom resolution: users can customize the resolution of player according to the quality of image.

PBOX150 will default to synchronous mode after power on if HDMI priority is enabled.

10.2.2.2 Screen configuration

Screen can be divided into three types: simple screen, standard screen and complex screen.

The following part is the introduction of the settings of three different types of screen.

a) Simple screen configuration

Simple screen refers to each scan board with same load capability. Edit the options of the

interface in the figure below according to the actual situation of the screen.

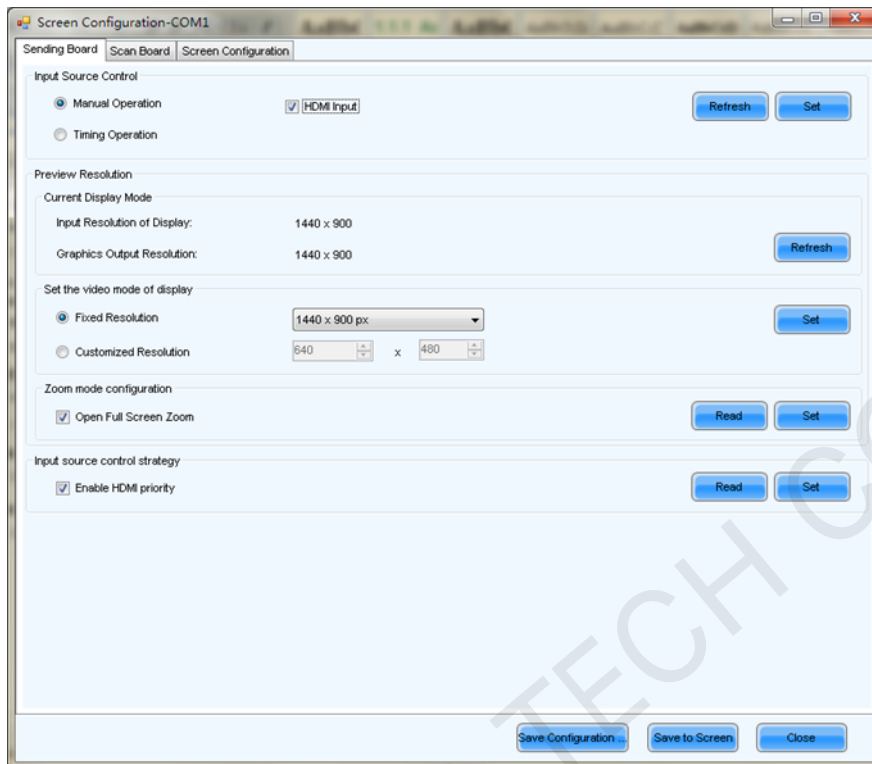


Fig. 10-7 Simple screen configuration

Send board mode: if checked, asynchronous board without loading cabinet work as the cascading scan board of send card.

Side channel mode: if checked, switches between synchronous system and asynchronous system when display screen is connected to asynchronous system and synchronous system. For example, images of synchronous system will be displayed when asynchronous system is switched off, and vice versa. Images connected earlier will be displayed when two systems are switched off.

Configure More screens: if checked, more screens can be configured.

Load file: Load files of the saved screen information from control computer.

Save file: save screen configuration information as screen information file (*.scr)

Send to hardware: send screen configuration information to asynchronous card of PBOX150.

Save to screen: save all hardware parameters to flash in case of loss after the power is

terminated.

Coordinates : set the initial map position. The default initial position is (0,0) which is the coordinates (0,0) on the top left corner of the mapping display.

Virtual mode: choose the screen with virtual pixel or real pixel. Virtual pixel includes three lights and four lights.

Columns and rows of scan board: input based on real display modules.

Width, Height: single board pixel and in accordance with cabinet setting on the page of scan board.

b) Standard screen configuration

Manually set the Module Cascade Type and the load capability of each scan board can be different.

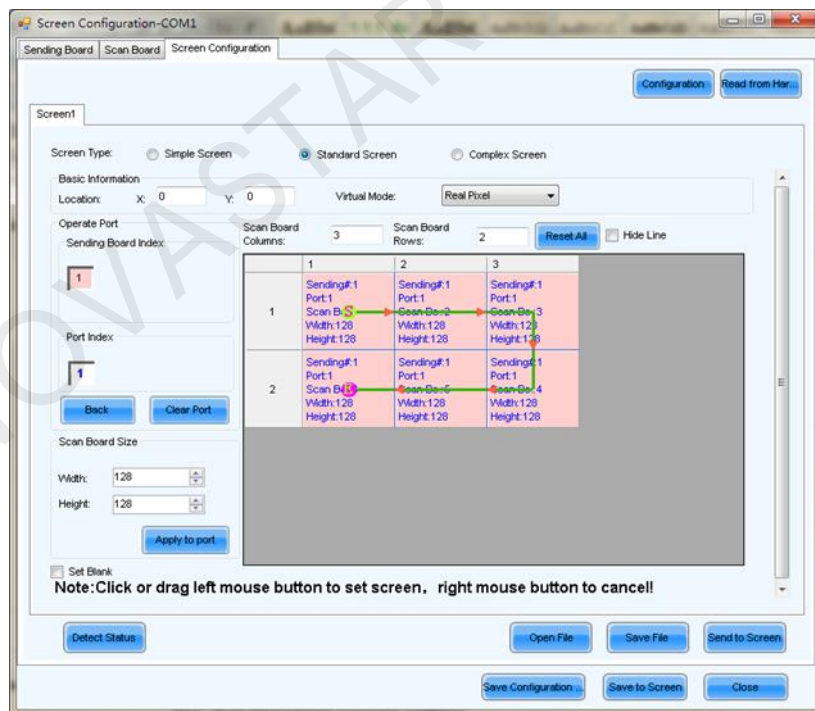


Fig. 10-8 Standard screen configuration

Coordinates : set the initial map position. The default initial position is (0,0) which is the coordinates (0,0) on the top left corner of the mapping display.

Virtual mode: choose the screen with virtual pixel or real pixel. Virtual pixel includes three lights and four lights.

Column number, Line number: input based on real display modules. Software interface will show the plane figure shown as above.

Reset all: reset all cable connections and cabinet setting.

Undo current Ethernet port: undo all setting related to current Ethernet port.

Width: width of scan board load capability

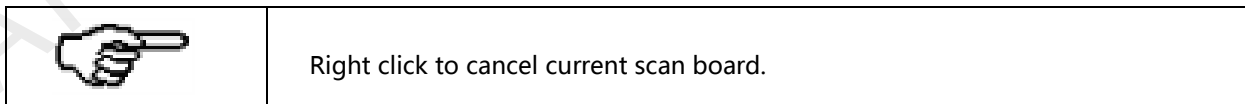
Height: height of scan board load capability

Apply to current Ethernet port: Set all the size of all cabinet connected to current Ethernet port as current width and height.

Space position : Check to leave a space to current position.

Relay: the pixel of current scan board is 0.

Methods of standard screen setting: Define scan board connected to Ethernet port as the 1st board and input corresponding data. The set the board connected to the 1st board as the 2nd board and input corresponding data. The setting will complete clicking just as the same analogy. Pixel of any scan board can be same or different. Or choose to leave a space position and then send to save in scan board or computer.



c) Complex screen configuration

Set the corresponding initial coordinates and pixel of load capability of each scan board respectively.

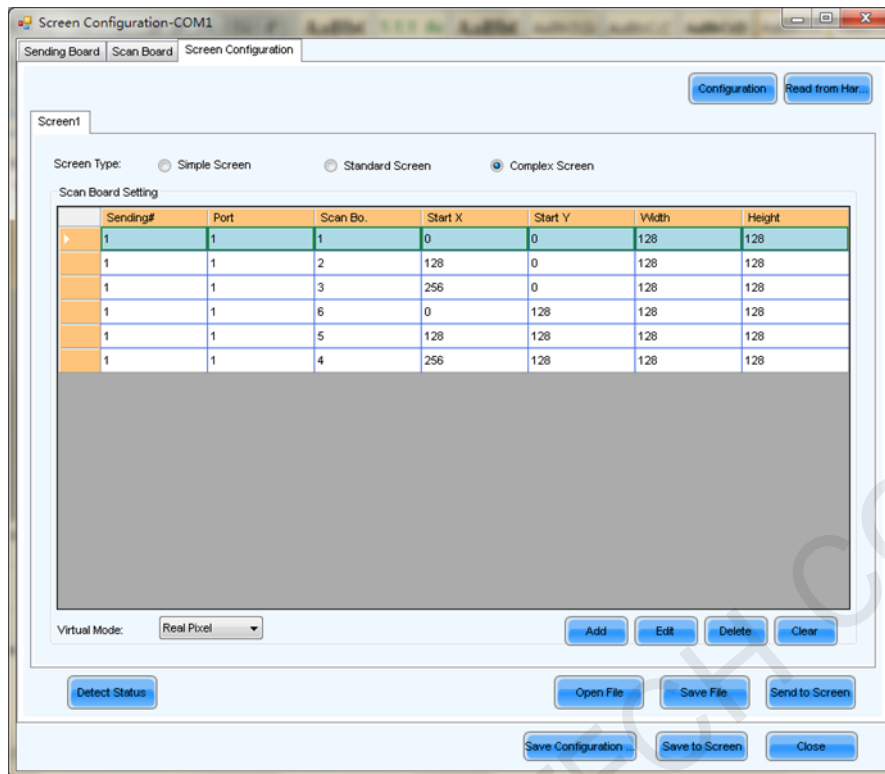


Fig. 10-9 Complex screen configuration

Add: a new window pop up and the initial coordinates and load pixel of each scan board can be set.

Edit: edit added information of scan board.

Delete: delete the selected information of scan board from the list.

Clear: clear all scan boards in the list which has been set.

11 Program Editing and Publishing by Applying PlutoManager

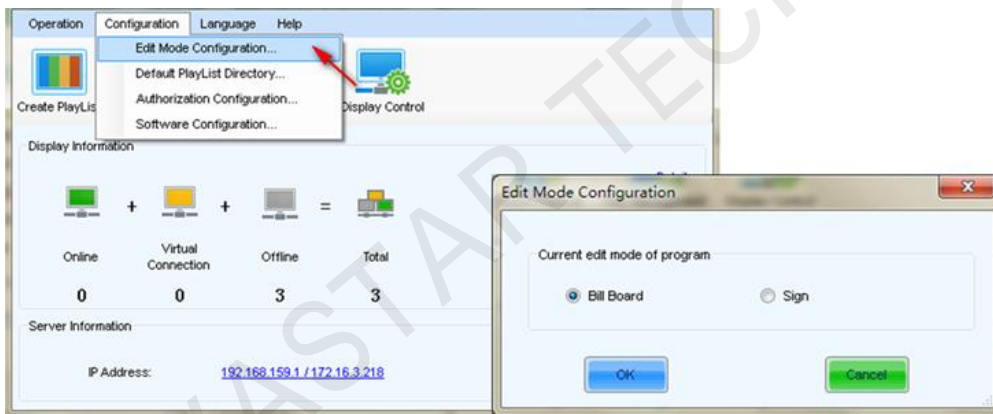
Click **【Search Now】** on the main interface of PlutoManager to search LAN terminals, specified IP terminals and part of terminals of LAN. Searched terminals could be added to specified groups.



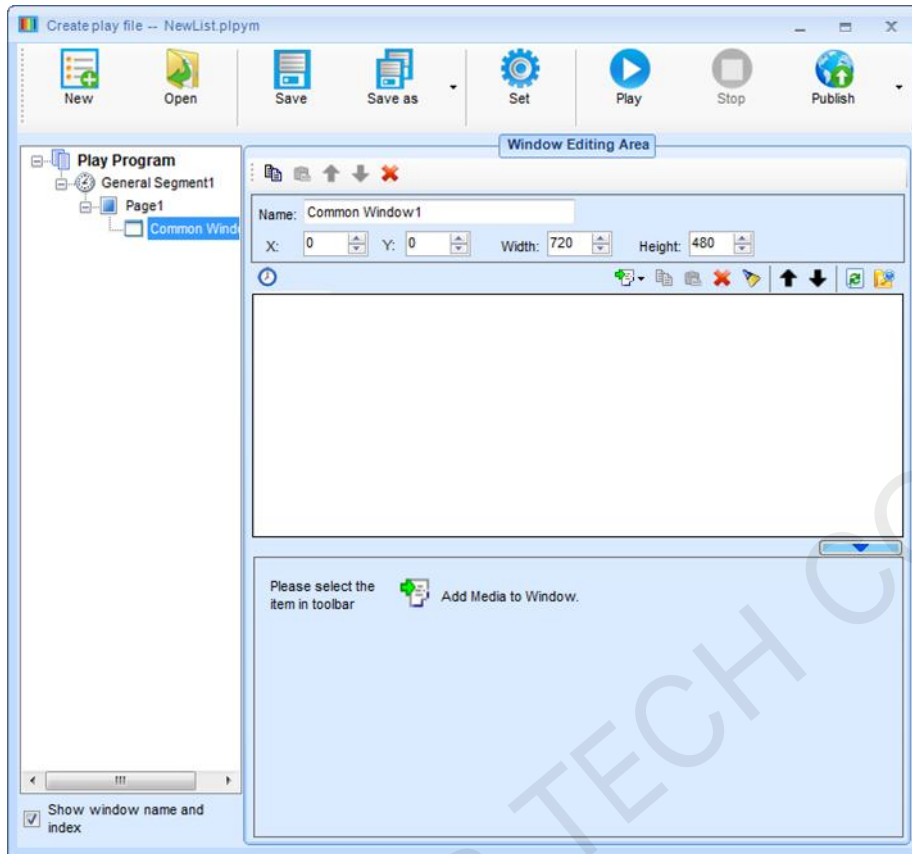
Fig. 11-1 Searching display

11.1 Editing play program

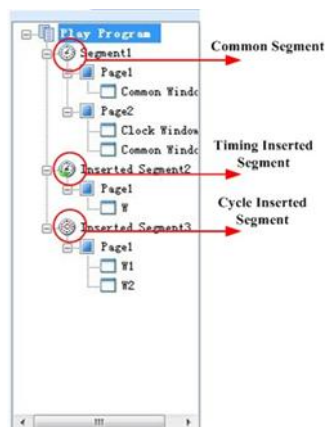
Select edit mode.



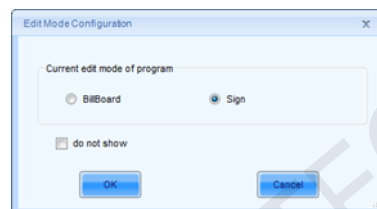
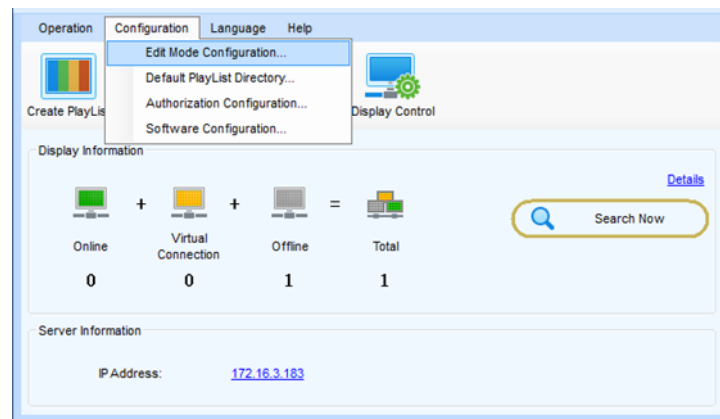
Click Create Play List on the toolbar of PlutoManager main interface to enter the Play program creating page shown as below.



Play program can be saved with the suffix of plpym. It is composed of several common segments. In addition, it also contains one or more inserted segments. The common segments and inserted segments are composed of one or more pages, and each page is composed of one or more windows. The windows can be divided into Common Window, Clock Window, Scroll Text Window, Countdown Timer Window, and Weather Window. The Common Window can add one or more different types of media. Play program structure is shown as follows.



11.2 Editing Sign list



Click **Create PlayList** to open the main interface of Edit Play List. The interface is divided into many windows. Each window is named according to the functions as the following figure.

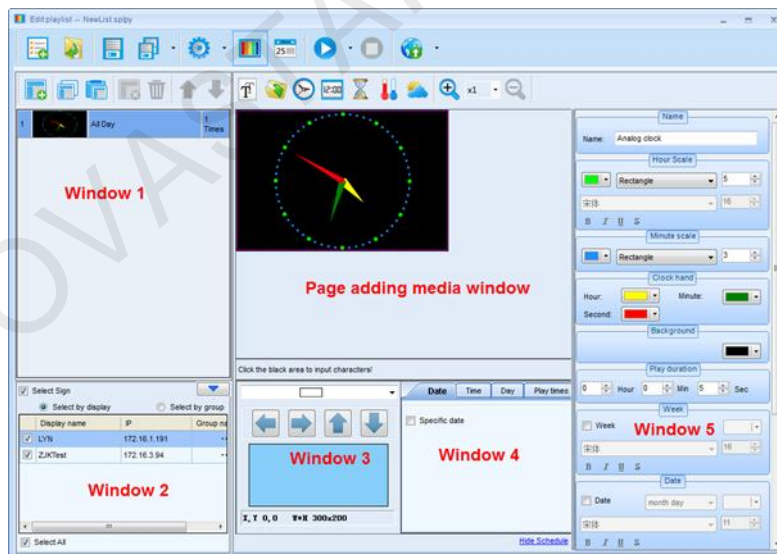


Fig. 11-2 Page function distribution

11.3 Setting the size of display window



Click  to set play window information.

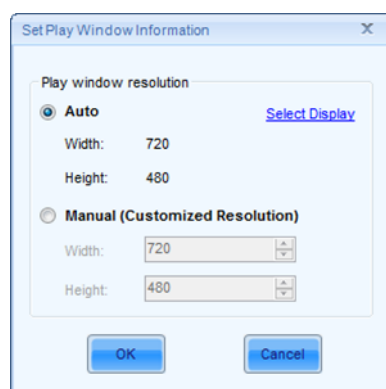


Fig. 11-3 Play window information

Size of play window: width and height can match the selected display and adjust automatically.

Play window size

- **Set size manually:** Set based on the actual size of display screen.
- **Select client:** Select client from terminal list to directly read the size of terminal display.

11.4 Configuring playlist directory

After clicking save in playlist editing page, playlist will be automatically saved to default directory (factory default: My Documents\NovaPluto\ PM-PlayList). Users 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 the configuration of playlist directory:

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

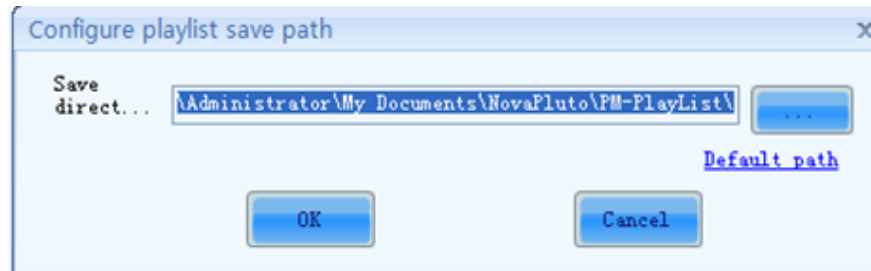


Fig. 11-4 Configuration of playlist directory

11.5 Publish

11.5.1 Online publish

- 1) Click on the main interface of PlutoManager or directly click on Edit play list window to enter the interface of Play List Publish.

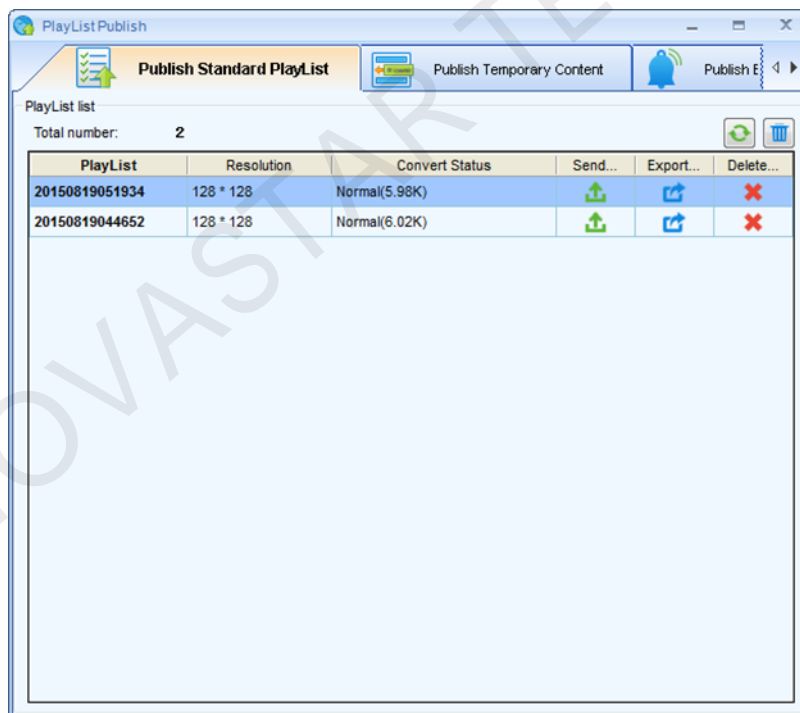



Fig. 11-5 Play program publishing page

Online publish is to publish play program to the storage space of terminal (online) via network.

Operating steps:

 Refresh: click to view all completed Play programs;



Clear: delete all current 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 drive.

2) Select play programs which is going to be converted. More play programs can be selected by pressing "Ctrl". Right click mouse to choose "Convert" and the following window will pop up. Click "Advanced" to set detailed parameters. Converting will depend on default parameters without advanced setting.

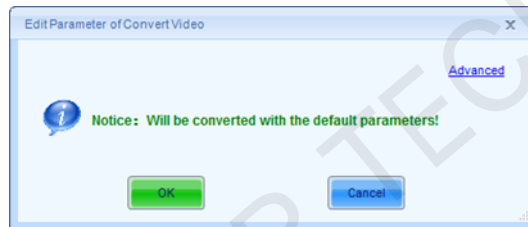


Fig. 11-6 Convert video

3) Click the corresponding button of "Publish" after conversion of the play program to enter the interface below.

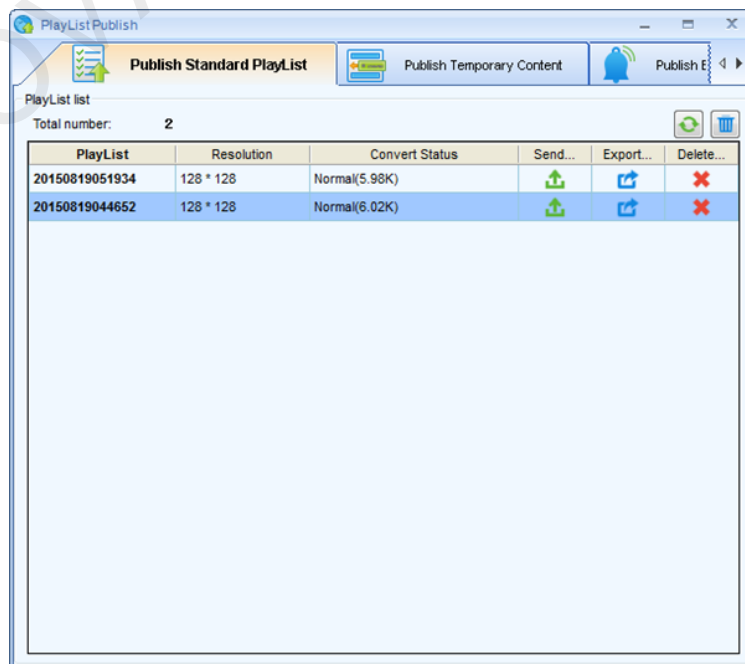


Fig. 11-7 Conversion completed

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;

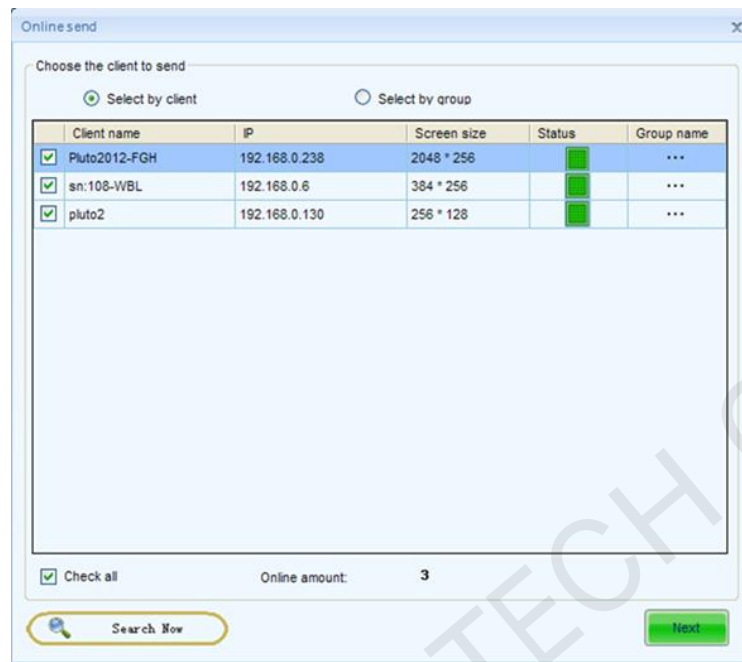



Fig. 11-8 Choose the client to be sent

	<p>System will choose to play by adopting self-adapting window if the size of terminal display and play program display is different and users still ask for sending play program, which may lead to distortion of the image on terminal display.</p>
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4) It is suggested to check "Pause client playing while sending media" . Set play program and send it to the storage location of terminal. Click "Next" to start sending and the interface after it has been sent is shown in the figure below.

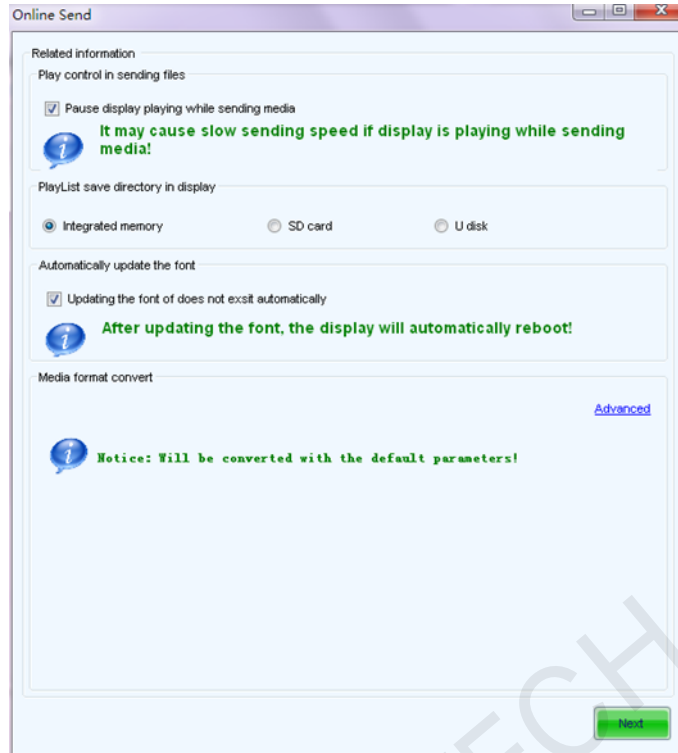


Fig. 11-9 Send related information

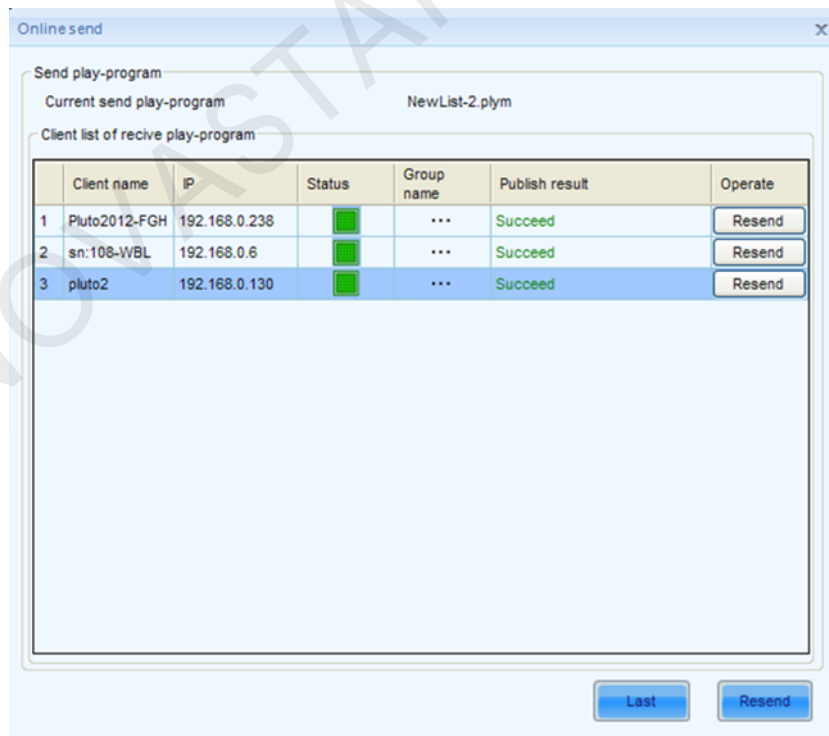


Fig. 11-10 Send successfully

11.5.2 Offline export

Offline export is to export current play program to USB drive and then connect the USB drive to terminal to play.

Operating steps:


1) Click  on the interface shown in Fig. 11-3 to enter setting interface of Offline export.



Fig. 11-11 Offline export

Play after copying to other storage devices: under this mode, Play programs and programs will be copied to selected storage device to play after connecting USB drive to client.

Play without copying: under this mode, Play programs and programs will be played directly by Asynchronous system connecting to USB drive.

2) Click “Export” to export current play program to USB drive after setting completed.

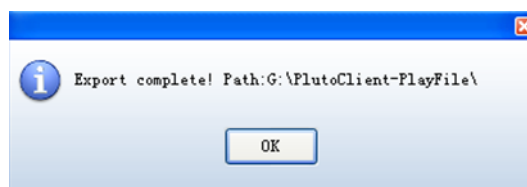


Fig. 11-12 Export completed

11.5.3 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. Immediate play and delay play are optional by the degree of urgency. Delay time can be set freely.

Click Publish Temporary Content to enter the emergency insert play page.

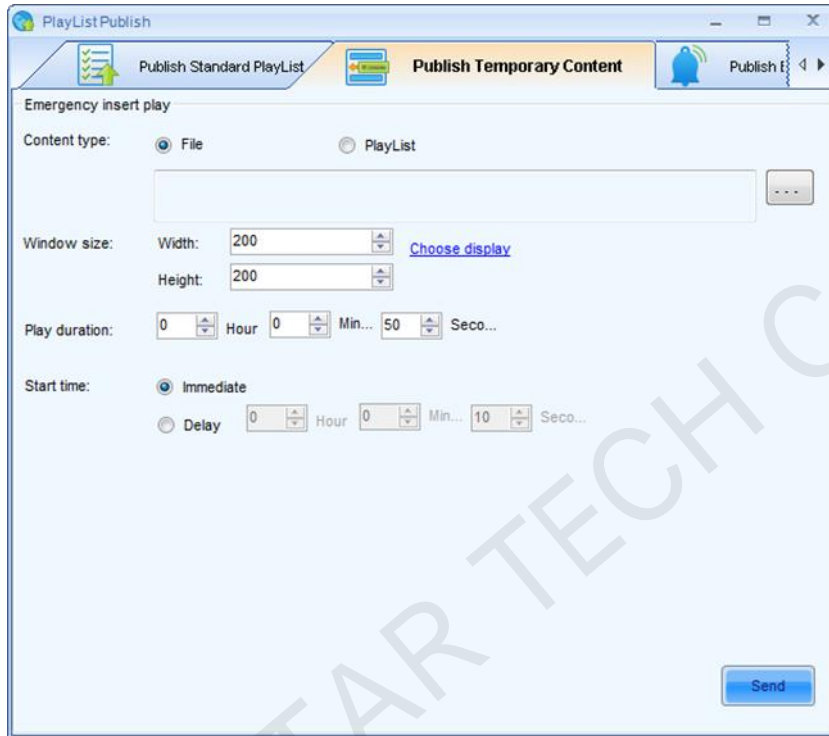


Fig. 11-13 Publish Temporary Content

Content type: file, playlist



: Click to import local files or Play program.

Window size: size of the current client display;

Play duration: total play time of inserted media file or play program.

Start time:

- Immediate: inserted files of media or play program will be played immediately once successfully published;
- Delay: the playing will be delayed for a period of time that can be set after successful publishing.



: Click to send insert contents to specified terminals.

11.5.4 Immediate notification

Immediate notification is mainly to publish some text information. Once published, the
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information will be played immediately on the terminal display prior to all other tasks.

Return to the main interface of Play List Publish and click "Immediate Notification" shown as below:

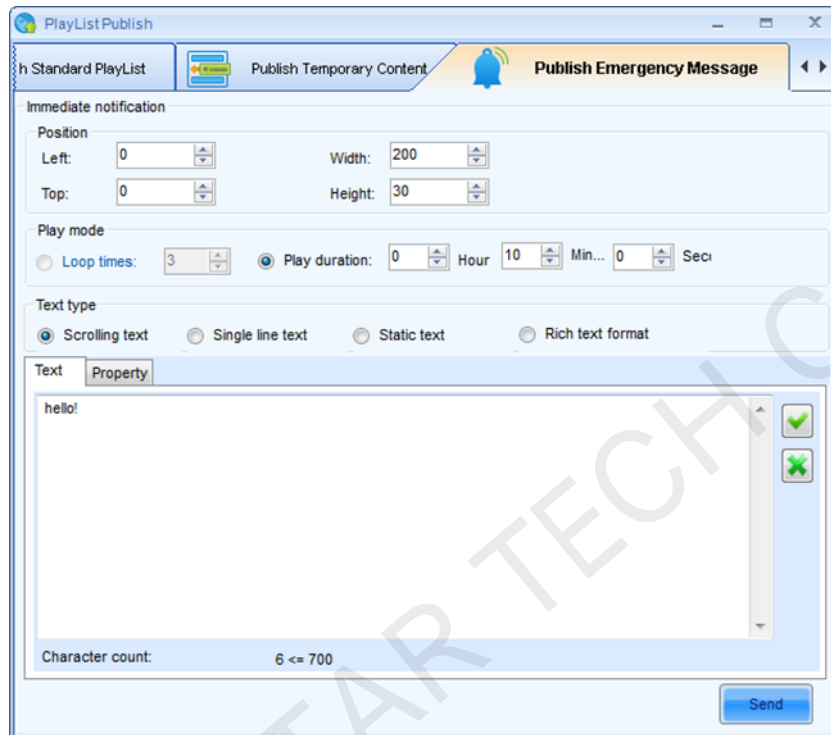


Fig. 11-14 Immediate notification

Position: Position of immediate notification textbox on the display;

- Width: Textbox width \leq window width;
- Height: Textbox height \leq window height;
- Left edge: If the coordinates of 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 \leq 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 \leq 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, transparency, background, text effects, text color, font, loop, scrolling speed, play duration, etc.
- Single line text: Editable text, transparency, background, text effects, font, entrance/exit effects, retention time, etc.
- Static text: Editable text, transparency, background, paragraph, font, play duration, etc.
- Complex text: Text editor, transparency, background, entrance/exit effects, retention time, etc.



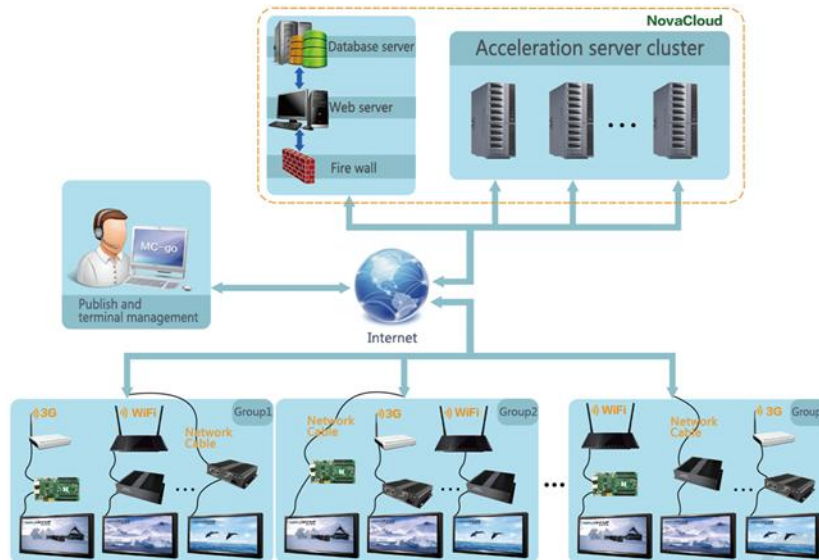
: Click this button to send immediate notification to specified terminals.

12 Remote Cluster Play& control system

Provide the terminal display access to the Internet and register terminal on the service platform provided by Nova through browser. Terminal display could be remotely controlled through center management software to allow operations such as remote media and play program, monitoring of display status, remote control of display brightness and power switch etc.

Nova display cluster management can be divided into three parts: service platform: NovaCloud(download link: <http://www.novaicloud.com/>), management centre software Mc-go(download link: <http://www.novaicloud.com/>), terminal control software synchronous system software is MarsSite while asynchronous system is embedded with terminal software.

Network structure of cluster management program of Nova display is as the following figure:



Following the operating steps below in remote cluster program:

- 1) Software installation. Install MarsSite in synchronous system and Mc-go in management center.
- 2) Information register. Open cluster system website <http://www.novaicloud.com/> through browser to register a free account.
- 3) Login of Cloud sever. System management according to groups which make it convenient for unified management and sending play program.
- 4) Configuration of terminal software including three parts: terminal setting, play setting and picture monitoring.
- 5) Programming, publishing, log management, picture monitoring, system monitoring and terminal monitoring in management center.

13 Specifications

Input Power	AC100 ~240V 50/60Hz
Overall Power Consumption	15W
Operating temperature	-20°C ~ 60°C
Storage temperature	-40°C ~ 80°C
Size	242×137.1×34 (mm)
Net weight	718g