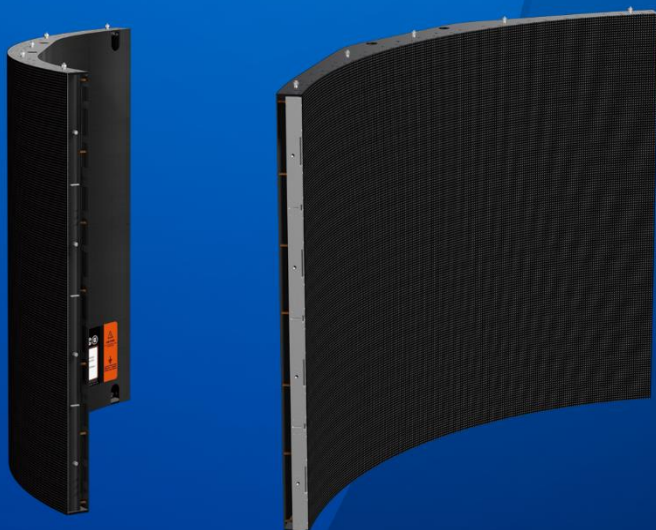


Unilumin

UHF

PRODUCT MANUAL

Flexible LED Display



UNILUMIN GROUP CO.,LTD.

Revision Records

| No. | Version | Revised Content | Date |
|-----|---------|-----------------|------------------|
| 1 | 01 | Initial release | January 09, 2020 |

The manual may be modified without any prior notice.

Instructions

Thank you for choosing our product. Please read the Product Manual carefully before using the product. The manual may contain errors despite all our efforts, and may be subject to change without prior notice. Contact us if you have any questions or suggestion when using the manual. We will try our best to help you resolve the problems in time, and highly appreciate your suggestions.

Copyright

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Read the following content carefully to ensure correct use of the indoor LED display products:

◆ WARNING!

The LED display may be damaged and become irreparable if you ignore the following warnings.

- 1) Do not place the LED display upside down or throw it during transport and storage.
- 2) Do not incline, scratch, or crash the LED display during installation.
- 3) Do not wet or submerge the LED display into water.
- 4) Do not direct the air outlet of an air conditioner to the LED display.
- 5) Do not place or use the LED display in an environment with volatile, corrosive or flammable chemical products.
- 6) Do not use the LED display outdoors in rainy days or when the humidity is higher than 80%.
- 7) Do not clean the LED display with water or chemical solvents.
- 8) Do not use any electrical accessories not approved by the equipment manufacturer.
- 9) Make sure the LED display and its auxiliary devices are grounded correctly and reliably before they are used.
- 10) Switch off the power immediately and contact the professional personnel when the LED display has any abnormal conditions such as peculiar smell, smoke, electric leakage, and abnormal temperature.

◆ **CAUTION!**

The optimum displaying effect may fail to be achieved if you ignore the following cautions.

- 1) Wear antistatic gloves when installing or repairing the product.
- 2) Ensure good ventilation for the LED display when designing the heat dissipation solution.
- 3) Keep the storage environment of the LED display well ventilated and dry, with a humidity not exceeding 85%.
- 4) Use single-phase power supply for an LED display with the total power consumption not exceeding 3 kW, and three-phase power supply for an LED display with the total power consumption exceeding 3 kW.
- 5) Ensure that the LED display is powered on at least twice per week, and at least 2 hours each time.
- 6) Installing the LED display in the following places may result in an equipment failure and reduce its lifespan: near the sea, in an area with salt and alkali or sulphurous gases, near a kitchen exhaust position, or at a place where the difference between indoor and outdoor temperatures is great. Consult our professional personnel at the service center if the LED display must be installed in any of these places.
- 7) Altitude during operation (m):5000m or less.

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Chapter 1 Product Introduction

The UHF series is the flexible series LED display product of Unilumin, which is highlighted for cabinet made of aluminum sheet metal, light weight, ultrathin structure, and good heat dissipation performance. UHF can achieve the creative effect of inner and outer arcs.

The UHF series has such features as detailed and true-to-life HD display quality, stable pictures, and wide viewing angle, and supports wide-range adjustment of color temperature and brightness. Outstanding safety design of the product delivers prominent safety performance, and has been awarded the CE, CB and CCC certifications.

1.1 Features

- 1) achieve the creative effect of inner and outer arcs.
- 2) Ultrathin and lightweight, front installation and front maintenance.
- 3) No fan power supply, zero noise, low power consumption, metal heat dissipation and long lifespan.
- 4) Magnetic structure of module, magnetic tool for replacing module, quick installation and maintenance.
- 5) Wide color gamut, adjustable brightness and color temperature, making it available for different application.

1.2 Cabinet Appearance

UHF is a product that needs to be customized, the module size of 2.5mm pixel pitch is 304 x 228mm, and the arc, size of the product can be customized according to the actual project.

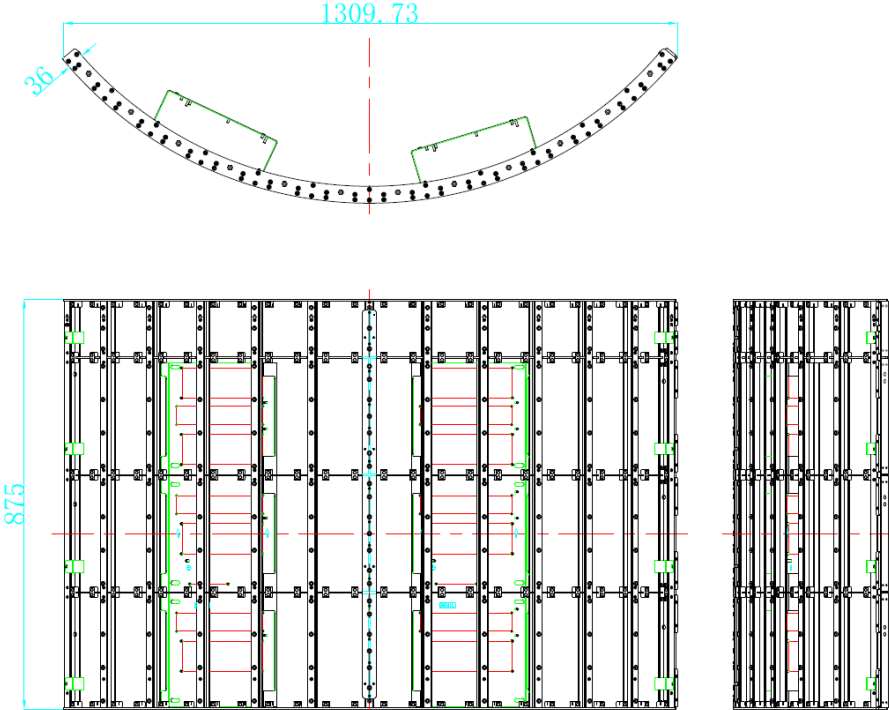


Figure 1-1 Cabinet Appearance

1.3 Specification

| Parameter | | UHF1.95 |
|------------------------|--|--|
| Physical Parameters | LED type | Three-in-one SMD LED |
| | Pixel pitch(mm) | 1.95 |
| | Module resolution(WxH) | 128X128 |
| | Module size(mm) | W250xH250 |
| | Cabinet weight(kg) | 26kg/m ² |
| | Deviation of center distance of luminous point | ≤3% |
| | Brightness uniformity(after calibration) | ≤97% |
| | Chroma uniformity(after calibration) | Within ±0.003Cx,Cy |
| Electronic parameter | Grey scale (bit) | 14 |
| | Refresh rate(Hz) | 1920 |
| | Frame frequency(Hz) | 50/60 |
| | Data interconnection | Signal cable≤100m; Multi-mode fiber≤300m; Single-mode fiber≤10km |
| Optical parameter | Brightness(nits) | 700 |
| | Color temperature(K) | 2,000~9,300(adjustable) |
| | Contrast ratio | 3,000:1 |
| | Viewing Angle(°) | 140/120 |
| Electrical parameter | Input voltage | AC 200~240 IN, 4.6V Out |
| | LED lifespan(Hours) | 100000 |
| | Input power <max/typical >(W/panel) | 150 |
| | Input power <typical>(W/panel) | 50 |
| Circumstance parameter | Storage temperature and humidity(°C/RH) | -20~+55/10~90% |
| | Working temperature and humidity(°C/RH) | -10~+45/10~85% |
| | Maintenance method | Front |

1.4 Scope of Application

The UHF series products can be assembled seamlessly into a screen of any size, and are extensively used as fixed LED displays for advertisements in public places such as retail brand stores, shopping malls, hotels, banks, churches, airports, bus stations, theatres, cinemas, company lobbies, high-end clubs, museums, and large conference rooms.



Exhibition Hall



Commercial Center

Chapter 2 Installation and Wiring

2.1 Installation

Fully hermetical wall installation: LED display is fixed on the load-bearing wall with the installation structure. All around must have package edge to cooperate, in order to achieve sealing effect, avoid direct contact with the power supply and wire inside the screen body.

2.2 Signal Cable Connection

Figure 2-1 shows the signal cable connection for cabinets with an arrangement of 1 cabinet (Width) × 1 cabinet (Height). Signal cables shall be connected based on the wiring diagram of the delivered products for the project.

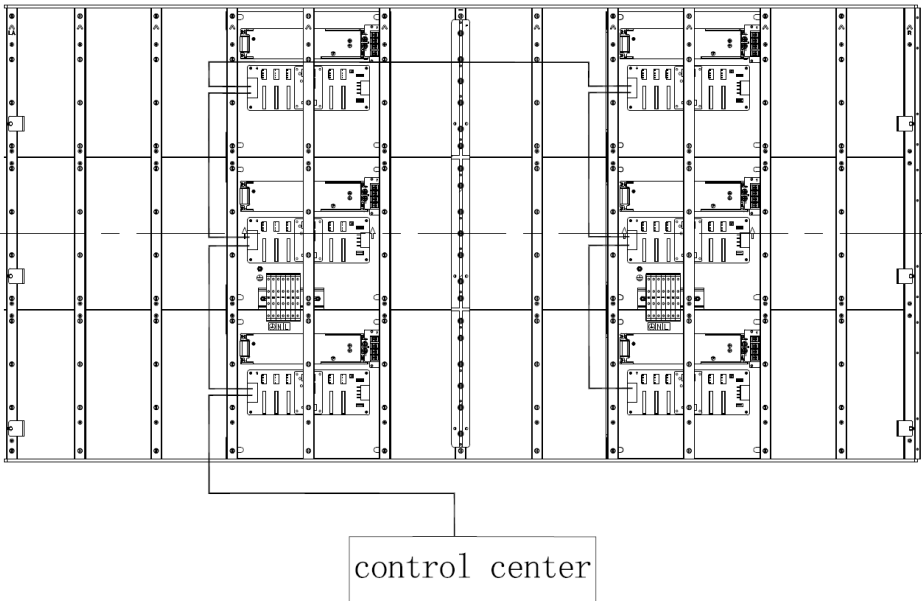


Figure 2-1 Signal Cable Connection Diagram

2.3 Power Cable Connection

Figure 2-2 shows the power cable connection for cabinets with an arrangement of 1 cabinet (Width) × 1 cabinets (Height). Power cables shall be connected based on the wiring diagram of the delivered products for the project.

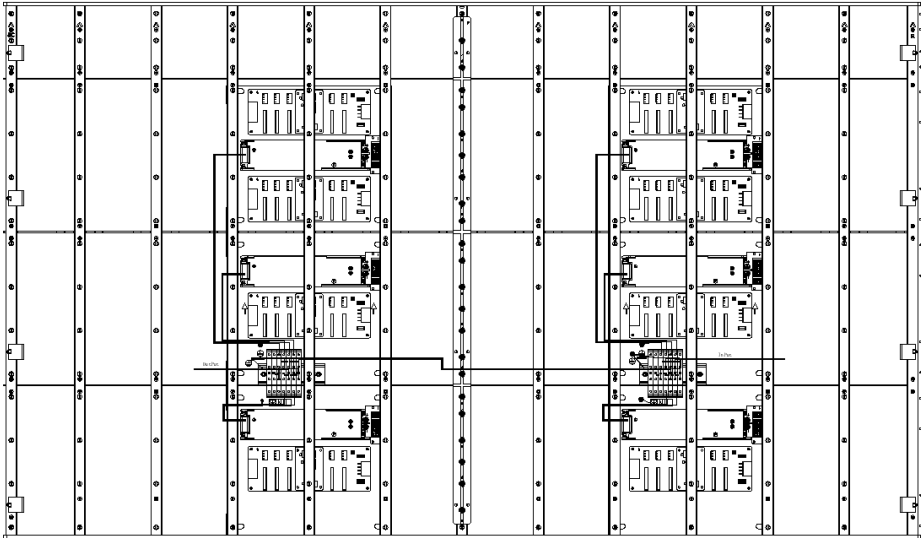


Figure 2-2 Power Cable Connection Diagram

2.4 Smart Control Distribution Box

The Smart Control Distribution Box can be used for distributing electric power to the LED display, and has the function for real-time monitoring of the temperature, humidity, smoke, and mains voltage of the external environment. The control software has the scheduled start/stop function, allowing you to set any time for the LED display to be remotely started or stopped.

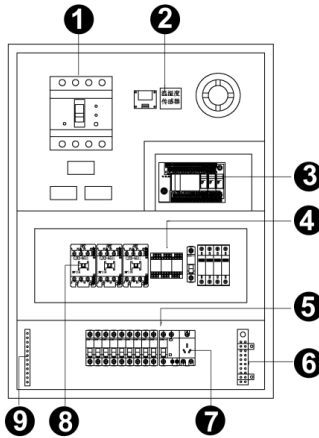


Figure 2-3 Internal Structure of Distribution Box

| SN | Component | Remark (s) |
|----|---------------------|--|
| 1 | Main switch | MCCB |
| 2 | Temperature sensor | Used for temperature detection |
| 3 | PLC | Used for smart control |
| 4 | Relays | Used to control the ON/OFF of the AC contactor |
| 5 | Circuit breaker | MCB , Connect to display live wire |
| 6 | Neutral wire socket | Connect neutral wire |
| 7 | Power Port | / |
| 8 | AC Contactor | Used to control the ON/OFF of the current |
| 9 | Earth wire socket | Connect earth wire |

PLC connection of the smart control distribution box:

The PLC communication system is RS485, it uses converter from control computer RS232 to RS485. For more detail information, please refer to our *Intelligent Power Distribution Management System Manual*.

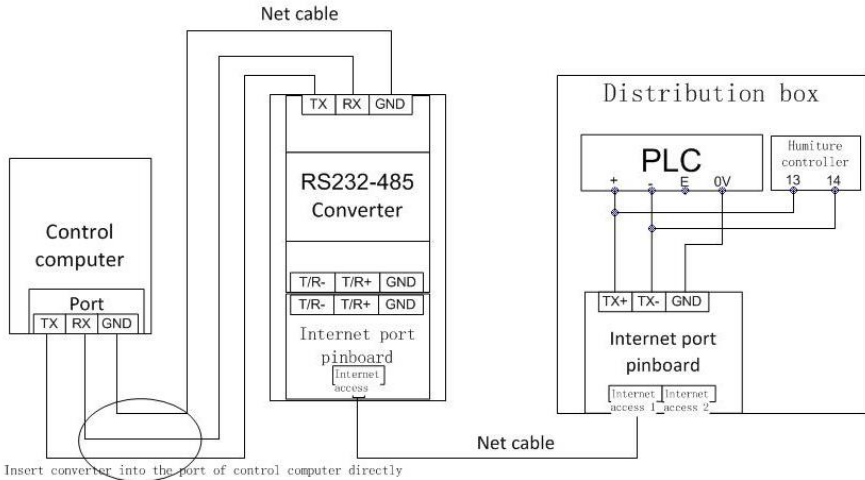


Figure 2-4 Distribution Box PLC Connection Diagram

Chapter 3 LED Display Control-setting

3.1 Power-on Testing

Before performing control setting on the LED display, confirm that each device is connected correctly.

- 1) Before turning on the power of the LED display, you must use a multimeter to test the live wire, neutral wire, and ground wire of the AC power supply, in order to ensure they are not conductive with each other.
- 2) The ground wire must be in reliable contact with the ground, and kept away properly from the live wire. The connected power supply shall be distant from high-power equipment.
- 3) When the 3-phase and 5-wire system is adopted, the load shall be distributed evenly among the phases to ensure three-phase balance as far as possible.
- 4) The input voltage must meet the voltage requirements indicated the cabinet rating label.
- 5) Connect the USB cable provided for the sending box to the USB port on the control PC.
- 6) Check whether cables for the LED display are connected in accordance with the power cable and signal cable connection diagrams provided for the delivered products.

3.2 Preparation

3.2.1 Starting the Hardware

Start the control PC Windows system. After the graphics card driver is activated, set graphics card of the control PC to replication mode and confirm that the green indicator of the sending box is blinking normally (blinking once per second).

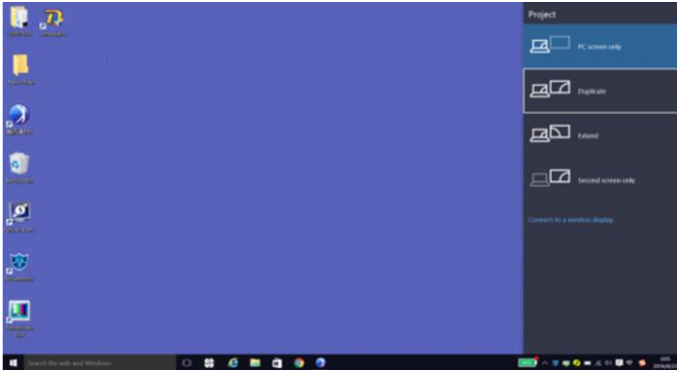


Figure 3-1 Replication Mode

3.2.2 Installing the Software

Open the optical disk provided for the delivered products. Install the LED control software UniLCT-Mars stored in the optical disk to the control PC. Then install UniStudio.



Fig 3-2 Software Installation

NOTE: You can follow the software installation wizard to install the software.

3.3 Display Configuration

Run UniLCT-Mars. Make sure that **Control System** on the main window is 1. Click the **User** option and select **Advanced Login**, as shown in Figure 3-3:

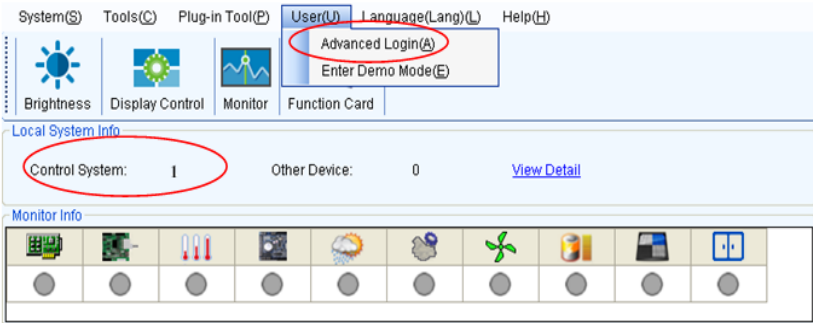


Figure 3-3 Main Window of UniLCT-Mars

Enter the initial password “admin”, as shown in Figure 3-4, to go to the advanced user window:

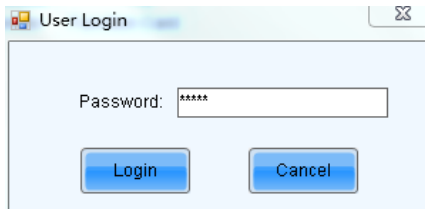


Figure 3-4 User Login

After login, click **Screen Config** on the main window, as shown in Figure 3-5:

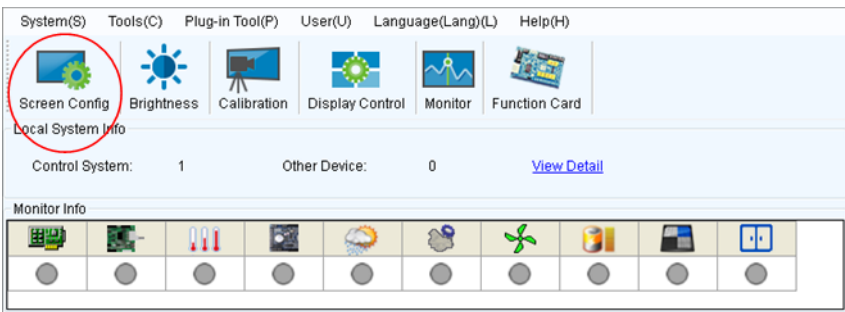


Figure 3-5 Main Window for Advanced User

Click **Next**, as shown in Figure 3-6:

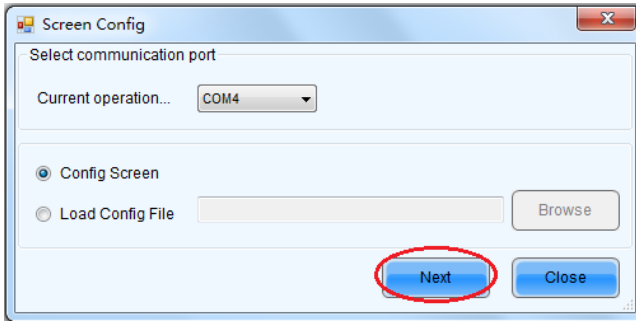


Figure 3-6 Screen Config

The following window is displayed. Set **Sending Board Resolution** (1920×1080 recommended). Set **Graphics Output Resolution** to the same value as **Sending Board Resolution**. Then click **Save** to save the settings:

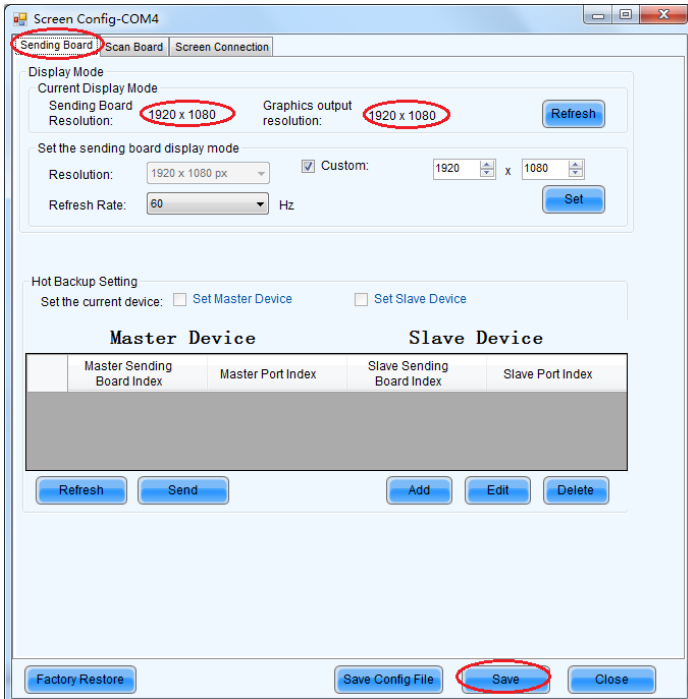


Figure 3-7 Sending Board Configuration

After configuring the parameters on the **Sending Board** page, click **Scan Board** to display the following window:

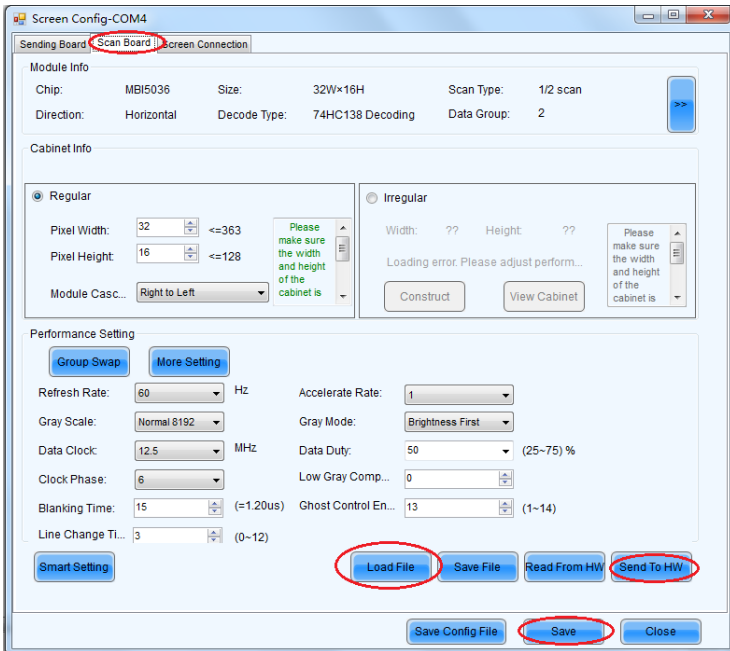


Figure 3-8 Scan Board Configuration

- 1) Click **Load File** to load the file xxxx.rcfg stored in the optical disk.
- 2) Click **Send To HW**.
- 3) After sending, confirm that the loaded picture received by scan board is normal on the screen. Then click **Save**.

After configuring the parameters on the **Scan Board** page, click **Screen Connection** to display the following window:

- 1) Click **Load File** to load the file xxxx.scr stored in the optical disk, as shown in Figure 3-9:

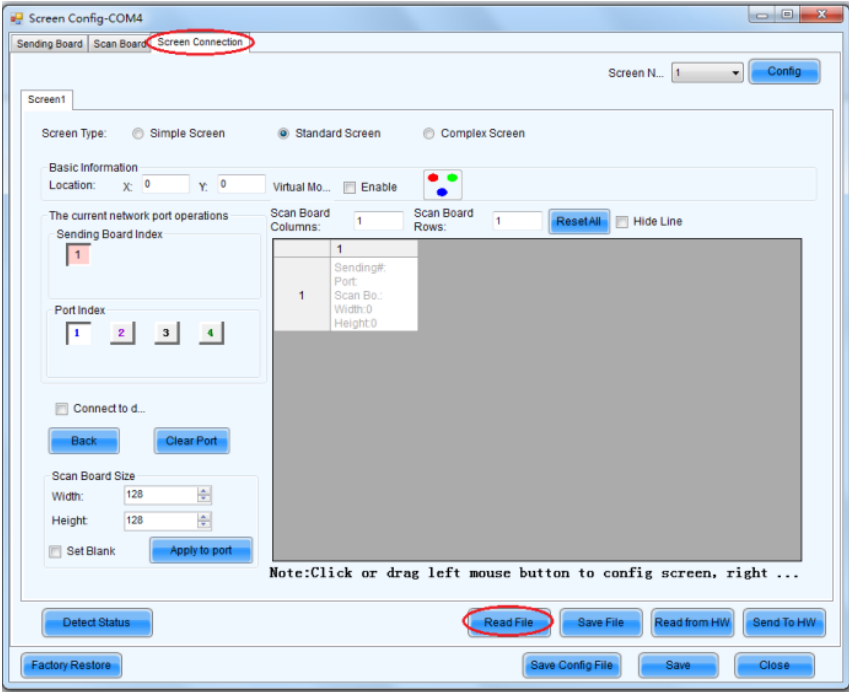


Figure 3-9 Screen Connection 1

- 2) Click **Send to HW**.
- 3) After sending, confirm that the screen is complete. Then click **Save**.

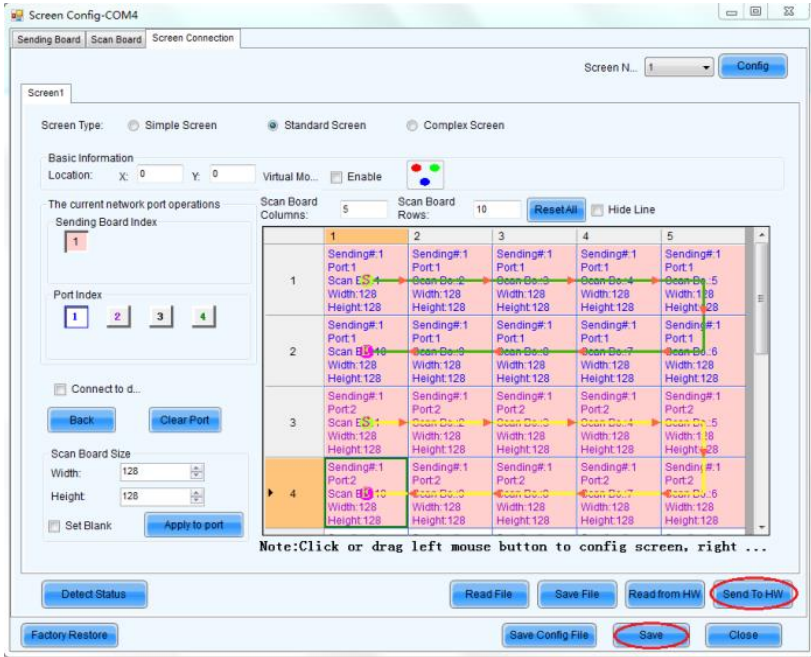


Figure 3-10 Screen Connection with Loaded File

3.4 Brightness Adjustment

On the main window, click **Brightness**, as shown in Figure 3-11, to display the brightness adjustment interface:

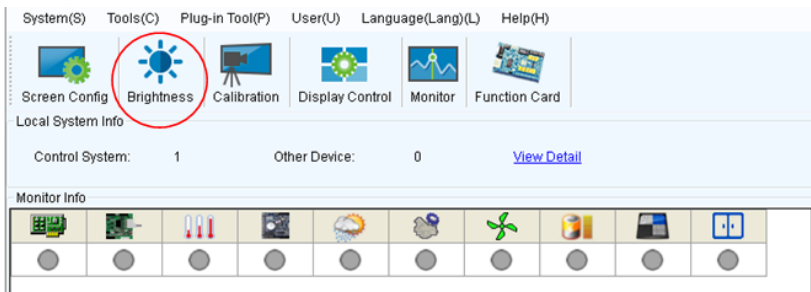


Figure 3-11 Main Window for Advanced User

There are four brightness adjustment modes, namely **Manual**, **Schedule**, **Auto**, and **Auto Adjustment by Hardware**. After adjustment is finished, click **Save to HW** to save the adjustment results to the hardware.

1. Manual Adjustment

Select **Manual** and adjust the brightness by dragging the scroll bar below **Brightness Adjustment** or directly modifying the brightness value (the maximum value is 255) next to the scroll bar.

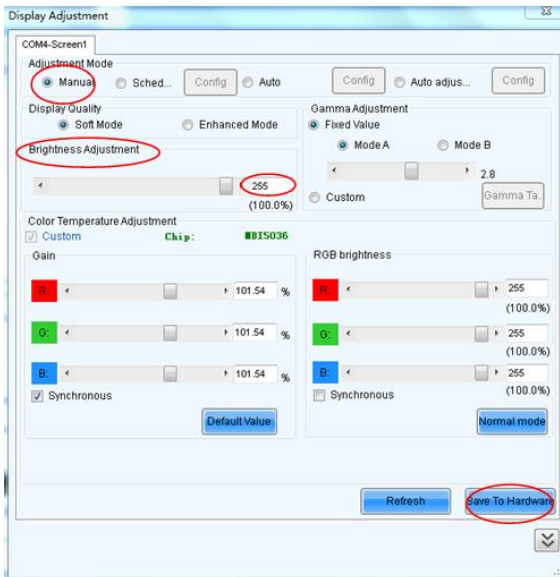


Figure 3-12 Manual Adjustment

Display Quality: Includes Soft mode and Enhanced mode. The Soft mode is generally used for indoor LED displays while the Enhanced mode is used for outdoor LED displays.

Gamma Adjustment: Includes Mode A and Mode B. The LED display in Mode A can light up earlier than that in Mode B.

Gain: For chips with current gain function, adjusting the current gain can improve the chip's current output.

RGB brightness: Adjusts the brightness of Red (R), Green (G) or Blue (B) separately.

2. Automatic Adjustment

Schedule, Auto, and Auto Adjustment by Hardware are automatic adjustment modes. Automatic adjustment function is not recommended for indoor LED display products because the indoor environment has stable ambient light and is rarely affected by the ambient brightness. If you really need to use this function, you can configure this function by using the wizard.

3.5 Correction Coefficient Management

Part of the Uslim series products have been subject to correction before shipment. To ensure the optimum displaying effect of the screen, you need to activate the correction function when using the LED display, and to reload the correction coefficients after replacing the modules or receiving card. This Section introduces how to upload the correction coefficients after replacing the modules or receiving card.

On the main window, click **Calibration**, as shown in Figure 3-13, to display the screen calibration interface:

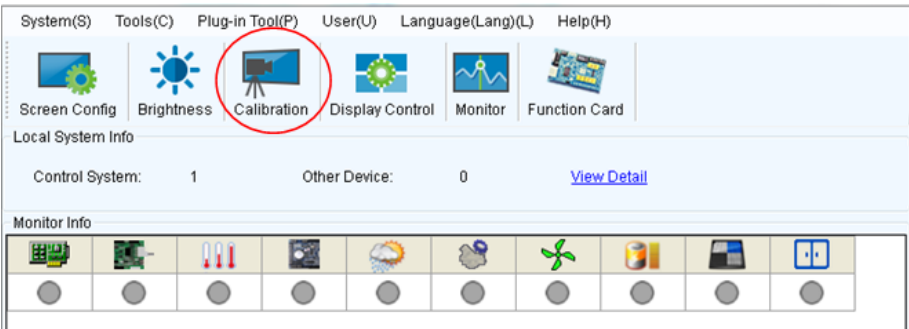


Figure 3-13 Main Window for Advanced User

Configure **Enable/Disable Calibration to Brightness**, click **Save**, and then click **Manage Coefficients** to display the following window:

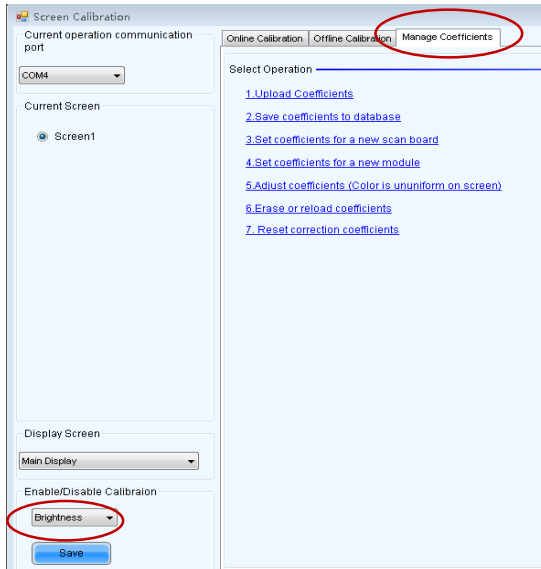


Figure 3-14 Manage Coefficients

Upload coefficients: Upload the correction coefficient database generated by the software or read back by the display screen to the screen.

Save coefficients to database: Read back and save the coefficients from the screen to the coefficient database.

Set coefficients for a new scan board: After replacing the scan board (receiving card), set the correction coefficients for the new receiving card.

Set coefficients for a new module: After replacing a module, set the correction coefficients for the new module.

Adjust Coefficients (Color is ununiform on screen): Adjust the correction coefficients for a selected area on the screen to achieve a satisfactory effect.

Erase or reload Coefficients: Erase or reload the correction coefficients for a selected area on the LED display.

Reset Correction Coefficients: Reset the calibration coefficients on whole or selected section of LED display.

3.5.1 Setting Coefficients for a New Receiving Card

- 1) As shown in Figure 3-15, select **Topology or List**. Select the position of the replaced receiving card. Click **Next**:



Figure 3-15 Selecting Area for New Receiving Card

- 2) Select the coefficient source. Click **Browse** at **Select Database**.

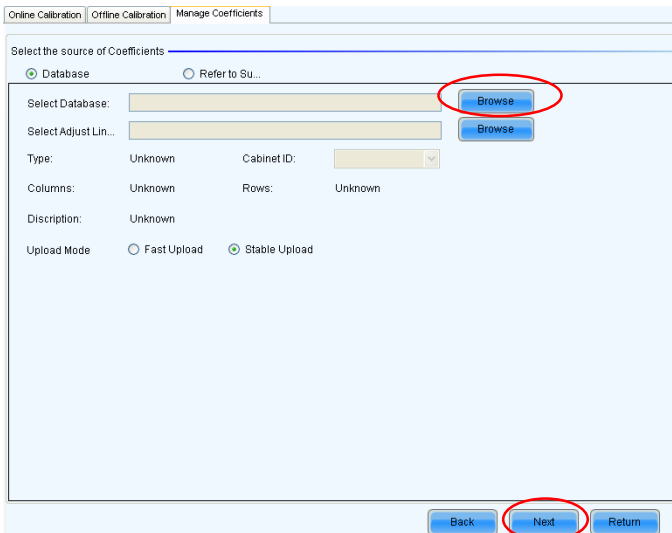


Figure 3-16 Obtaining Correction Coefficients for Receiving Card

Chapter 3 LED Display Control-setting

3) Select the corresponding correction coefficients:

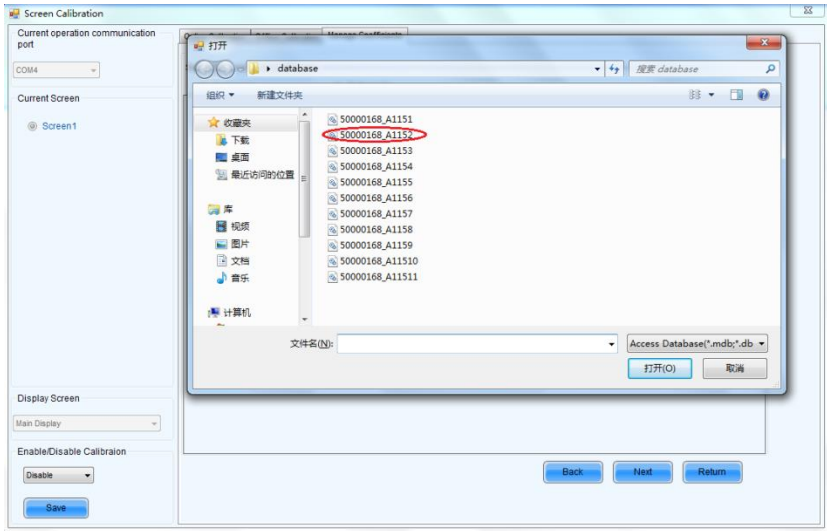


Figure 3-17 Selecting Correction Coefficients for Receiving Card

4) Select **Stable Upload** and click **Next**:

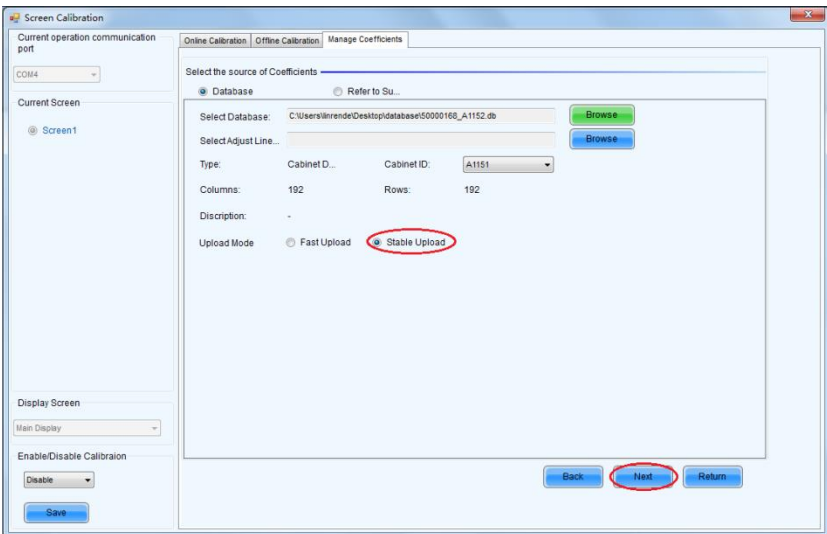


Figure 3-18 Uploading Correction Coefficients

- 5) Adjust Coefficient: Perform a simple adjustment if the displaying effect is not good enough after you upload the coefficient. Then click **Next**.

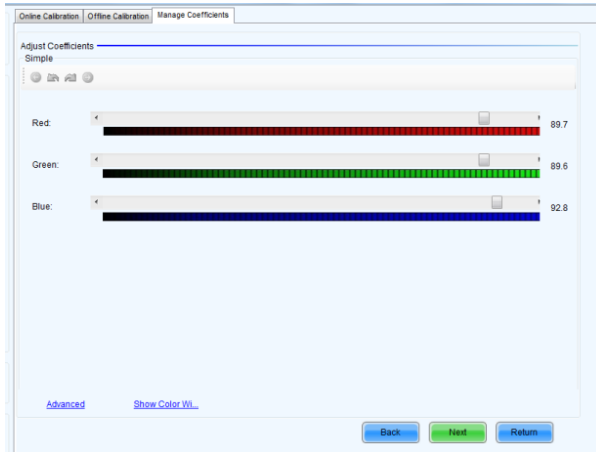


Figure 3-19 Simple Adjustment

Red: Adjust the red brightness value of calibration coefficients.

Green: Adjust the green brightness value of calibration coefficients.

Blue: Adjust the blue brightness value of calibration coefficients.

- 6) Save Coefficients: Click **Save** to save the correction coefficients to the hardware. The saved coefficients are retentive even after a power failure. Then click **Finish**.

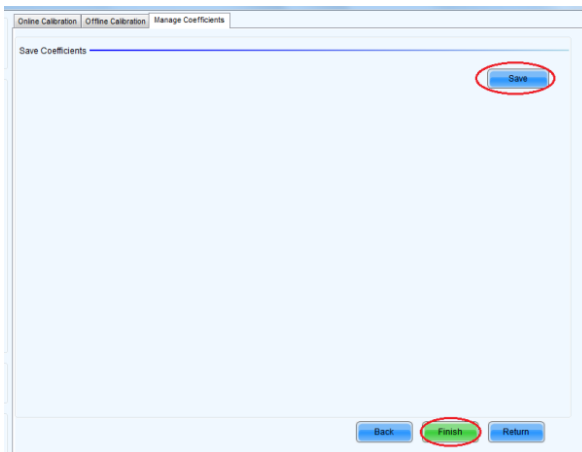


Figure 3-20 Saving Correction Coefficients

3.5.2 Setting Coefficients for a New Module

- 1) Select Position of the New Module: Select **Topology or List**. Then select the position of the receiving card where the new module is located. Double click the selected position:



Figure 3-21 Selecting Cabinet for the New Module

- 2) Choose **Display Mode** to **Modules**. Select the position of the new module and click **Next**.

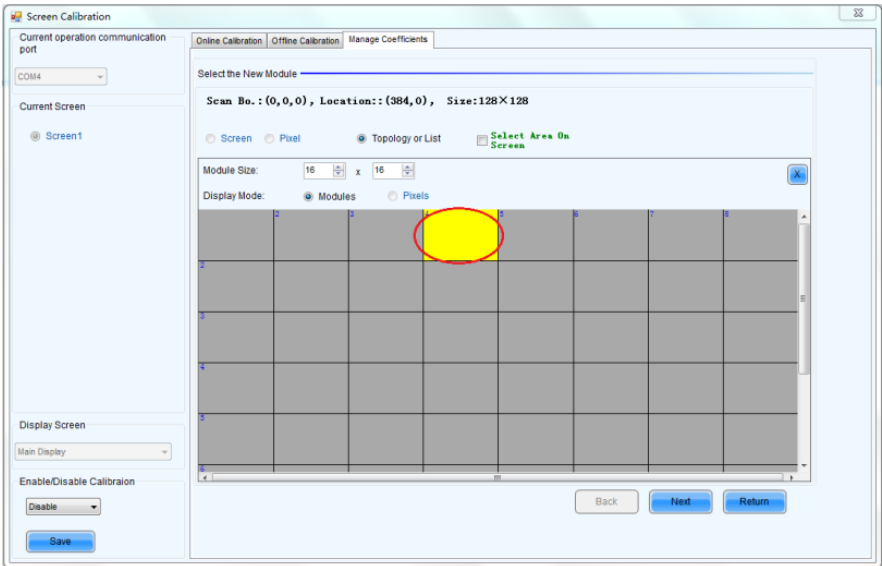


Figure 3-22 Selecting Position of New Module

Module Size: Set the size of the module in a cabinet. The software determines each module arrangement based on module size and cabinet size.

- 3) Adjust the coefficients (similar to the steps of coefficient adjustment in setting coefficients for a new receiving card). For details, refer to Step 2 and Step 3 in Section 3.5.1).

- 4) Save the correction coefficients to the hardware (Use similar steps in setting coefficients for a new receiving card. For details, refer to Step 4, Step 5, and Step 6 in Section 3.5.1) so that they are retentive after a power failure.

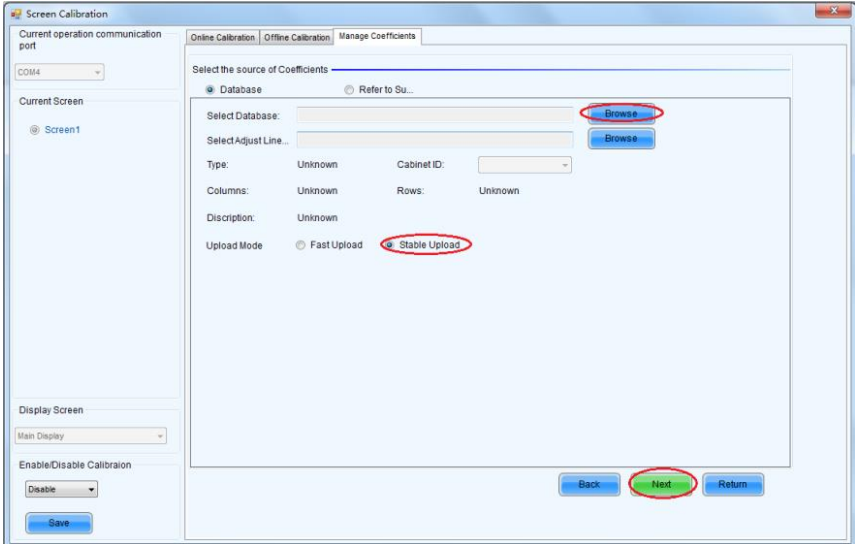


Figure 3-23 Obtaining Correction Coefficients for a New Module

3.6 Pre-storing Picture

On the Prestore Picture interface, you can save a picture as the prestored picture for the screen. This prestored picture can be set as a screen displayed upon booting, signal cable disconnection, or DVI signal absence.

On the main window, click **Tool** and select **Prestore Picture**, as shown in Figure 3-24.

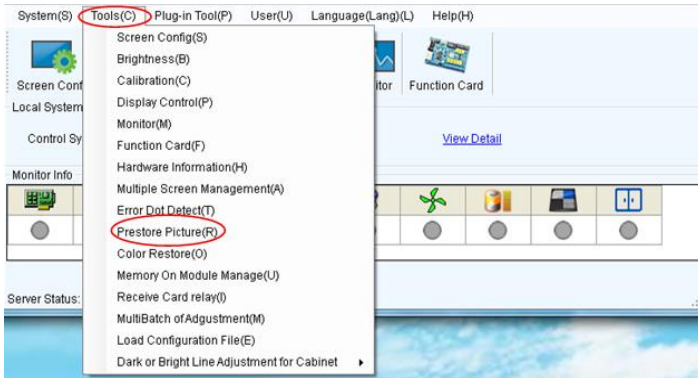


Figure 3-24 Prestore Picture

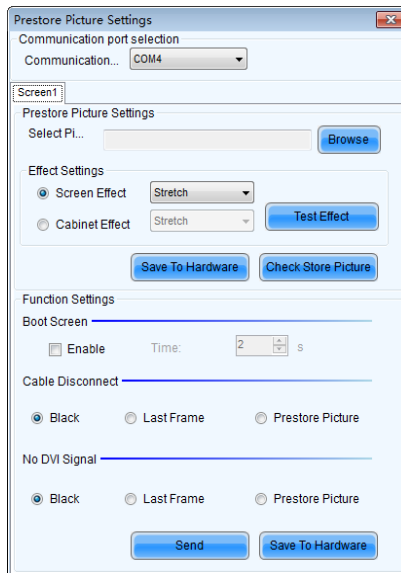


Figure 3-25 Prestore Picture Settings

1) Prestore Picture Settings

Select Picture: Click **Browse** to select the directory of the picture.

Screen Effect: Set the selected picture to be displayed on the whole screen by means of stretching, tiling, or centering.

Cabinet Effect: Set the selected picture to be displayed on each cabinet of the screen by means of stretching, tiling, or centering (the number of pictures displayed by each cabinet shall be equal to the number of receiving cards in the cabinet).

Click **Test Effect** to display the selected picture on the screen.

Click **Save to Hardware** to save the picture as a prestored picture to the hardware.

Click **Check Store Picture** to display the stored picture on the screen to check its effect.

2) Function Settings

Boot Screen: Set whether to use the prestored picture and set the displaying time of the prestored picture when the screen is powered on.

Cable Disconnect: Set the picture to be displayed by the cabinet whose signal cable is disconnected.

No DVI Signal: Set the picture to be displayed in the period in which the screen does not receive any DVI signals.

Click **Send** to the settings to the hardware (the settings will be lost if you do not click **Save to Hardware**).

Click **Save to Hardware** to save the current settings so that these settings are retained even if there is a power failure.

Chapter 4 Playing on the LED Display

4.1 Selecting a Playing Solution

The playing software UniStudio has three playing modes, namely Simple playing program, Professional playing program, and Priority programs of the page. Professional playing program is used most commonly. This Section introduces the Professional playing program only.

Run the software to enter the main window. Click **Setting > Switch schedule mode**. On the editing mode setting window, select **Professional playing program** and click **OK**. As showed in Figure 4-1 and Figure 4-2.

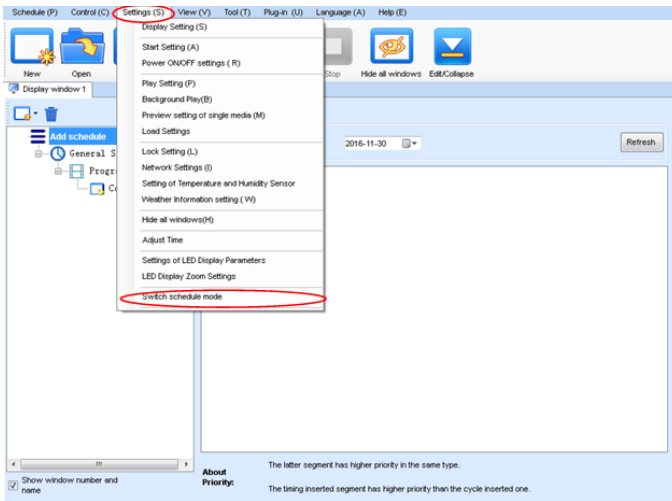


Figure 4-1 Switching Schedule Mode

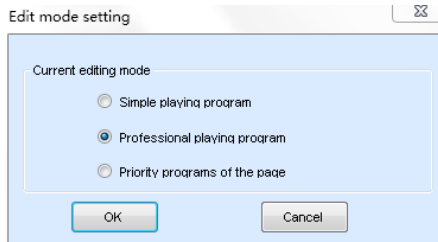


Figure 4-2 Edit Mode Setting

4.2 Playing Setting

4.2.1 Display Window Setting

Run the UniStudio, click **Settings** and select **Display Setting**, as in following fig:

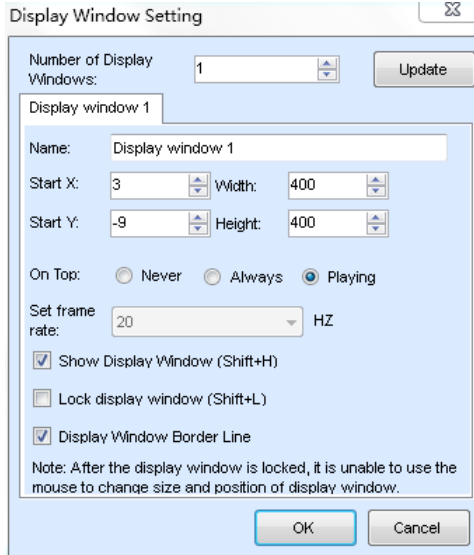


Figure 4-3 Display Window Setting

Number of Display Windows: Indicates the number of display windows. To increase or decrease the number of display windows, re-enter the number of display windows in the box next to **Number of Display Windows** and then click **Update**.

Start X: Indicates the horizontal start point of the display window.

Start Y: Indicates the vertical start point of the display window.

Width: Indicates the horizontal pixel value of the display.

Height: Indicates the vertical pixel value of the display.

Other configuration items are set to the default values.

4.2.2 Startup Setting

On the main window of the software, click **Setting > Start Setting** to enable the software to run automatically upon startup of the PC and to automatically activate a playing solution. See Figure 4-4:

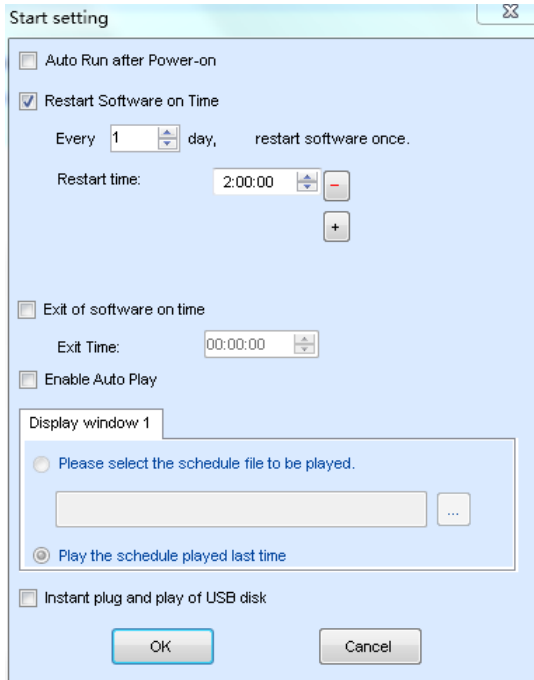


Figure 4-4 Startup Setting

Auto Run after Power-on: If you enable this function, UniStudio will run automatically the next time when the PC is started.

Restart Software on Time: If you enable this function, set the restart interval and time, and click **OK**, UniStudio will be automatically restarted after the PC time reaches the preset restart time. After the software is restarted, the window information and playing status before restart will be automatically recovered.

Exit of software on time: If you enable this function and set the exit time, the software will exit automatically upon the preset time. This function can prevent damages to the uploaded data caused by forcible exit of the software.

Enable Auto Play: If you enable this function and specify a playing solution for the screen, the software will automatically activate the specified playing solution once the software is started.

Instant plug and play of USB disk: If you enable this function, the PC will automatically read and activate the playing solution once the USB flash drive is inserted to the PC. If you do disable this function, the PC cannot implement the plug-and-play function even though you have inserted the USB flash drive to the PC.

4.3 Editing Professional Playing Solution

4.3.1 Editing the Time Segment

1) Creating a playing solution

On the main window of the software, click **Schedule > New**, as shown in Figure 4-5:

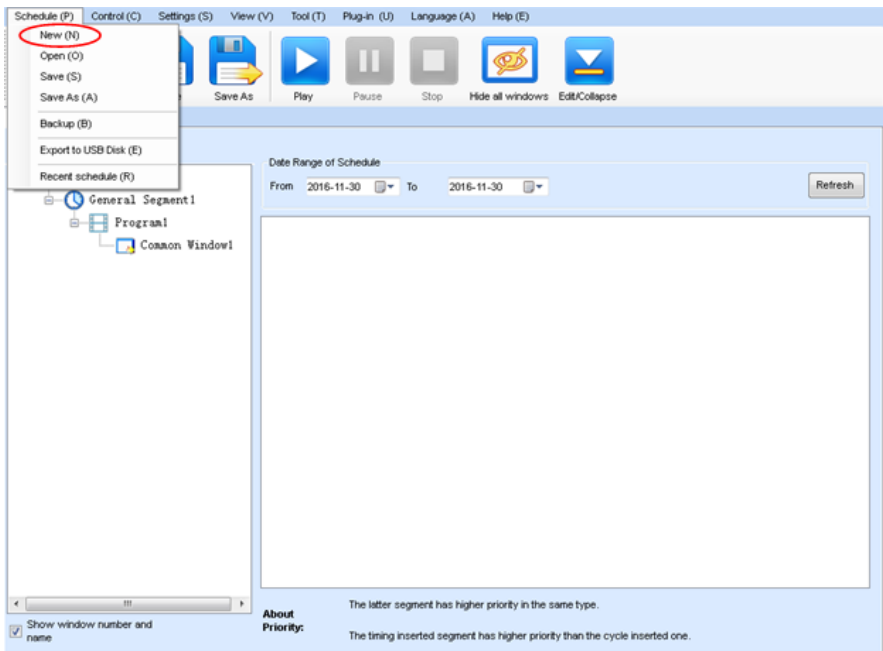


Figure 4-5 Creating a Playing Solution

2) Editing the properties of the playing solution

After adding a general time segment or interstitial segment, click **General Segment 1** to edit the properties displayed in the segment editing area on the right side, as shown in Figure 4-6:

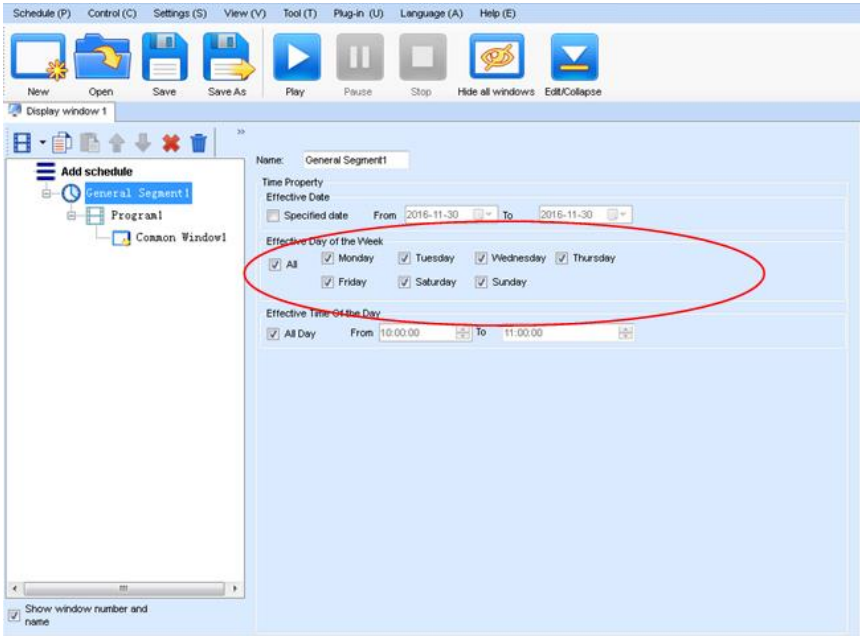


Figure 4-6 Properties of General Time Segment

4.3.2 Editing the Program Page

1) Creating a program page

As shown in Figure 4-7, right click **General Segment** or click the **Add Program Page** in the toolbar to create a program page:

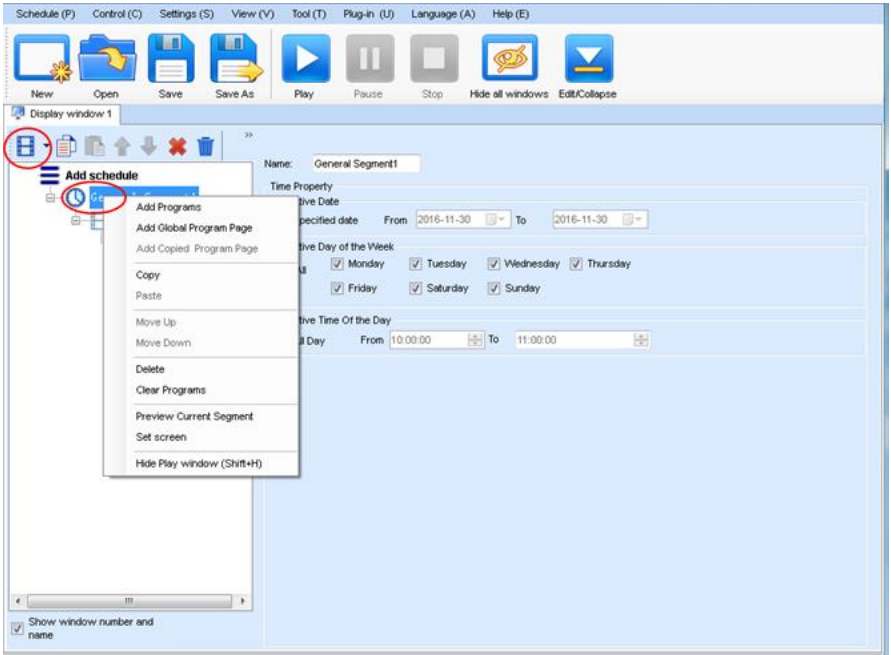


Figure 4-7 Creating a Program Page

2) Setting the properties

After creating the program page, click **Program 1** and set the background, displaying mode, and other properties displayed on the property page on the right side. See Figure 4-8:

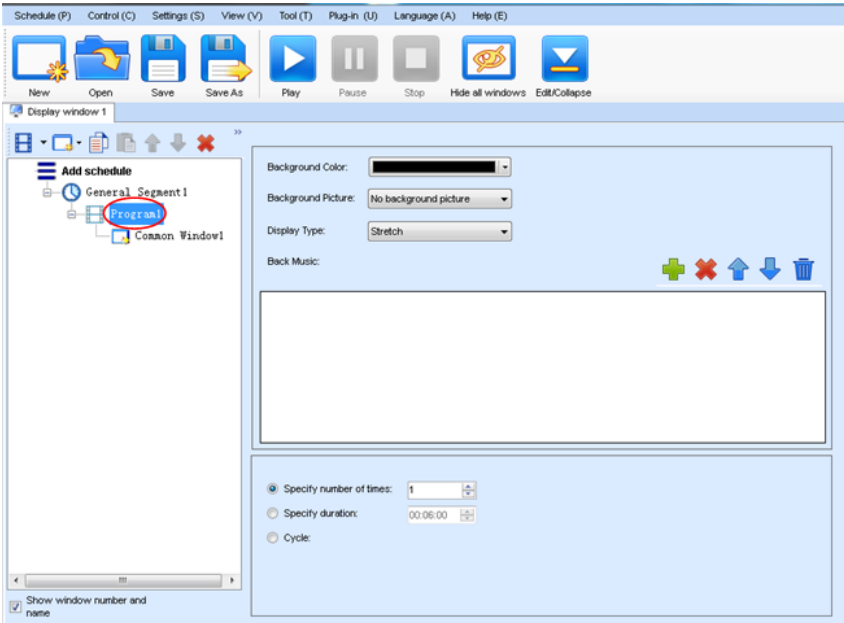


Figure 4-8 Properties of Program Page

If you select **Specify Number of Times**, the next general program page is played after the preset **Times to Play** for the display window with the longest playing time on the current program page has been reached.

If you select **Specify Duration**, the next program page is played after the preset **Play Duration** for the current program page has been reached.

If you select **Cycle**, the current program page will be played cyclically all the time.

When the current program page is played, the background picture or colour of the program page is displayed in the area not covered by the display window, as shown in Figure 4-9:



Figure 4-9 Background of Program Page

After adding the program page, you can move, copy, paste, or delete the program page by using the toolbar in the program page editing area, or by using the short-cut menu, as shown in Figure 4-10.

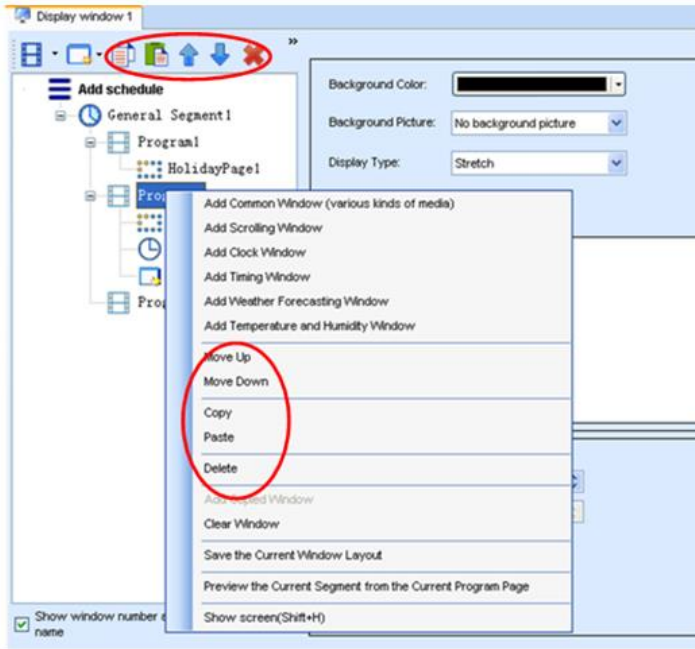


Figure 4-10 Program Page Operation Menu

4.3.3 Editing the Display Window

1) Adding a display window

After adding a program page, you need to add a display window to this program page. Click **Add Window** on the toolbar of the program page to add a window to the current program page. See Figure 4-11:

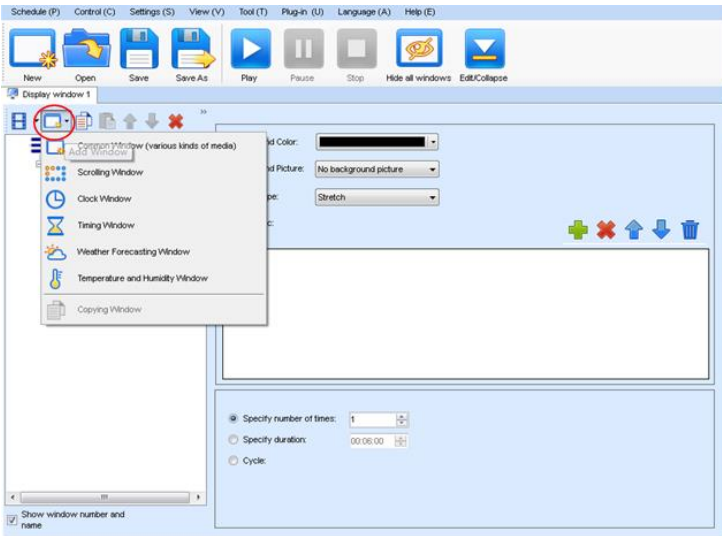


Figure 4-11 Adding a Window to Program Page

After the window is added, the added window is selected and displayed on the screen, as shown in Figure 4-12:

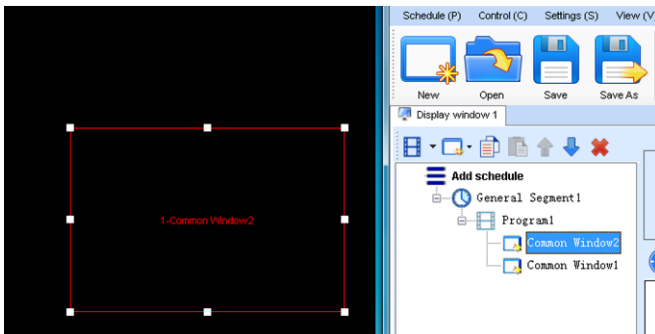


Figure 4-12 Added Window

2) Setting the location and size of the display window

The location and size of the new window is generated randomly and can be adjusted based on actual conditions by using either of the following two methods:

- a) Directly specify the new location and size in the setting pane, as shown in Figure 4-13:

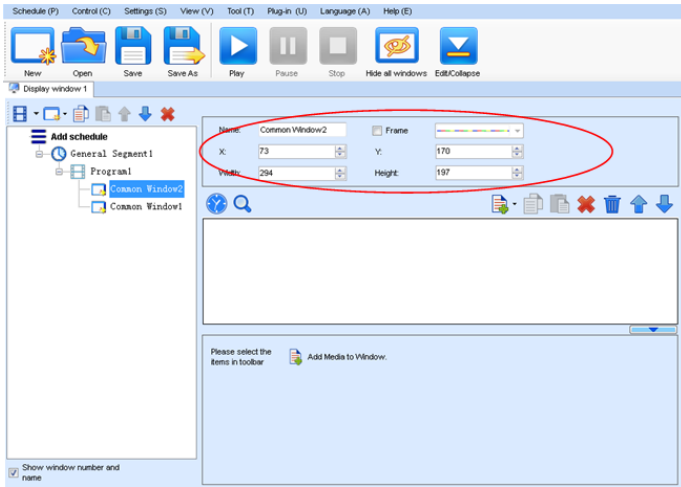


Figure 4-13 Setting the Window Size

- b) Click the display window on the screen and adjust its size by using the mouse, as shown in Figure 4-14:

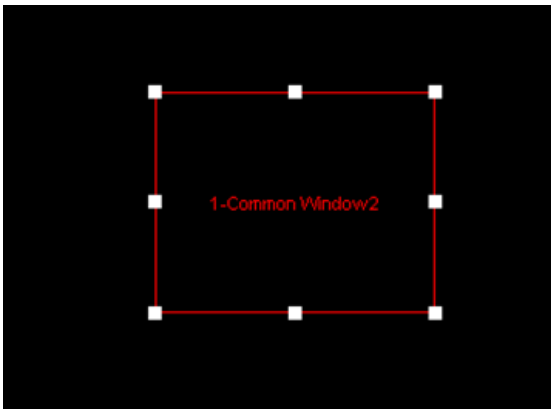


Figure 4-14 Adjusting the Window Size Using the Mouse

3) Deleting a display window

Select the window to be deleted. Click the delete key to delete the window, as shown in Figure 4-15:

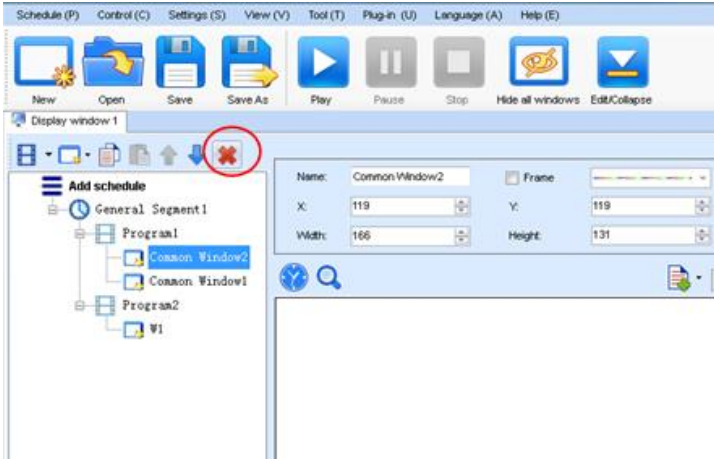


Figure 4-15 Deleting the Display Window

4) Moving a display window

Select the program or window. Click the direction key to adjust the playing sequence, as shown in Figure 4-16:

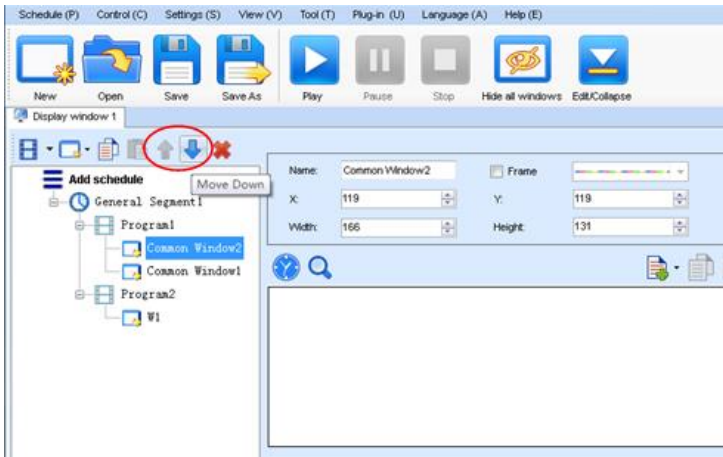


Figure 4-16 Moving a Display Window

4.3.4 Editing the Media

1) Adding the media

The type of window for adding the media is **Common Window**. Click the **Add Media** button of a common window to select media of different types to be added into the media list. See Figure 4-17:

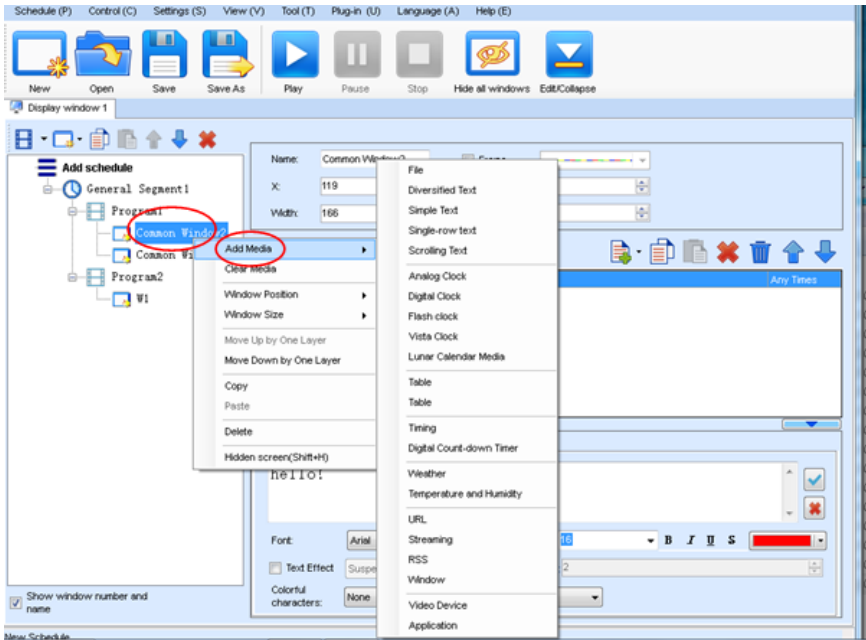


Figure 4-17 Adding the Media

After adding the media, you can set the media texts and properties, as shown in Figure 4-18.

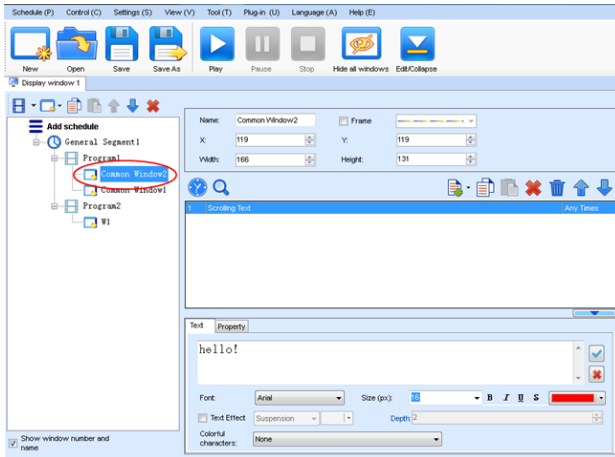


Figure 4-18 Media Setting Window

2) Setting the media properties

Different media have different properties. After a medium in the media list is selected, the property page of this medium is displayed below the selected medium. On this property page, you can change the properties of the medium. See Figure 4-19:

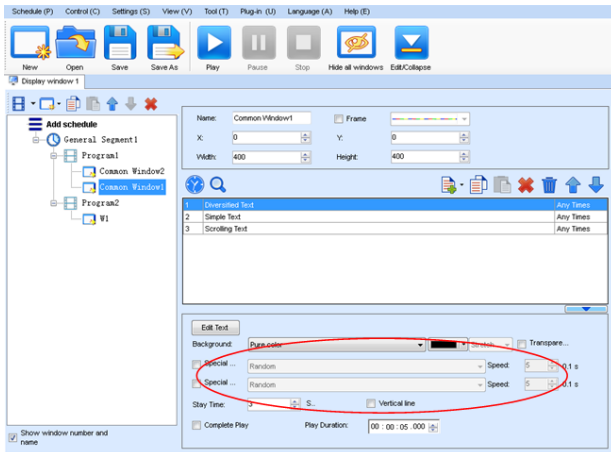


Figure 4-19 Properties of Medium

3) Editing the media in the common window

In an actual application, if different playing times are required for different media, you can select the media in the media list and then double click times to play to modify the playing times by either entering a new value or selecting a value from the drop-down list. See Figure 4-20:

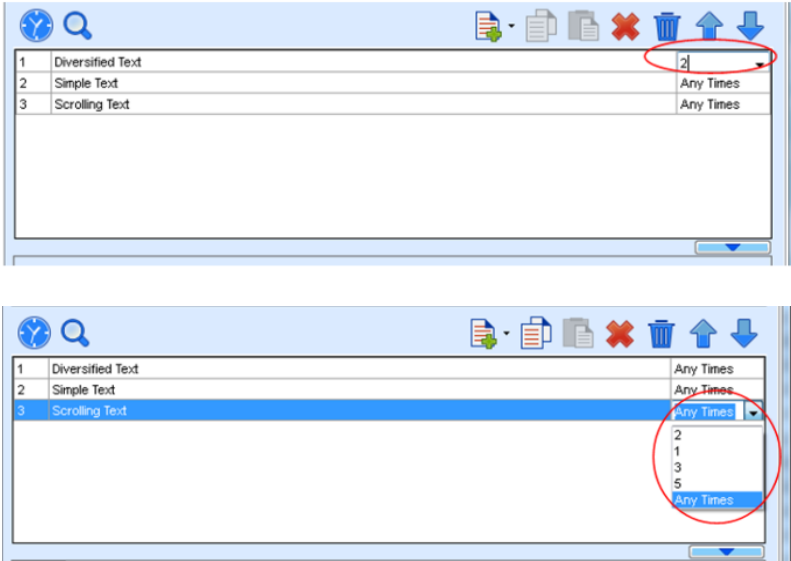


Figure 4-20 Changing the Media Playing Times

Right click the media to perform operations on the selected media, as shown in Figure 4-21:

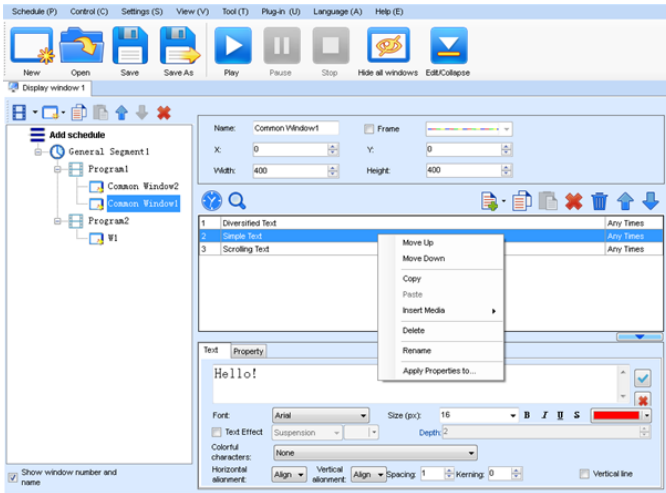


Figure 4-21 Media Operation Menu

Right click a blank area in the media playlist. A media playing menu is displayed, as shown in Figure 4-22:

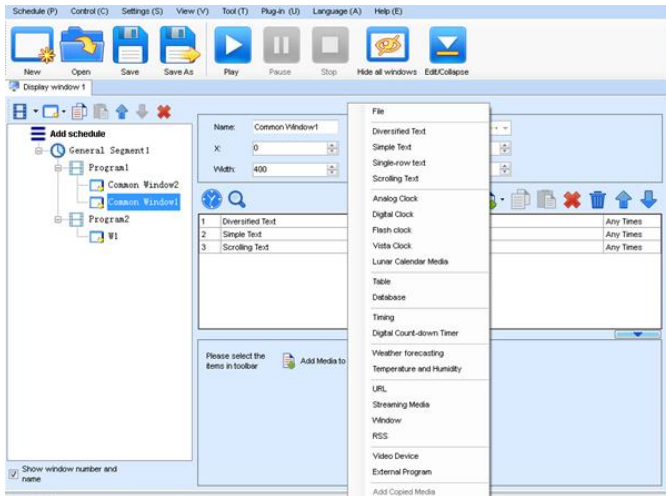


Figure 4-22 Media Playing Menu

4.3.5 Playing the Media

After the playing mode is edited or loaded, click the play key on the main toolbar to start the current playing mode, as shown in Figure 4-23:



Figure 4-23 Play Key on the Toolbar

After play is activated, the editing page is switched to the playing page, as shown in Figure 4-24:



Figure 4-24 Play Information Page

Clicking **Pause** or **Stop** on the toolbar can pause or stop the currently played program. You can also perform this operation by using the operation menu that appears when you right click the display window. See Figure 4-25:



Figure 4-25 Short-cut Menu

All display windows on the same program page plays simultaneously. If the display windows overlap with each other, the upper-layer windows will cover the lower-layer windows. For example, if you add a common window and then a clock window of the same size and coordinate, the common window will cover the clock window when they are playing. If you want to display the clock window, you need to click **Pause**, perform the **Move Up** operation to move the clock window to the front side of the common window, and then click **Play**. If the clock is displayed transparently, the clock will overlay the media of the common window when the playing solution is played upon the moving operation. Figure 4-26 shows the displaying effect:

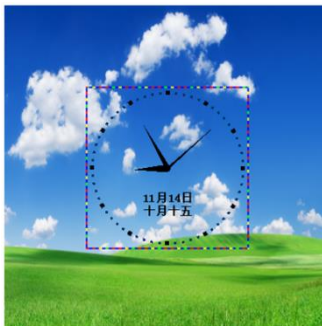


Figure 4-26 Transparent Displaying Effect of the Clock

4.4 Saving and Opening a Playing Solution

Save: After a playing solution is created, you can click **Schedule** on the toolbar and select **Save** or **Save As** to save the playing solution in the format of **xxxx.plym**. See Figure 4-27:

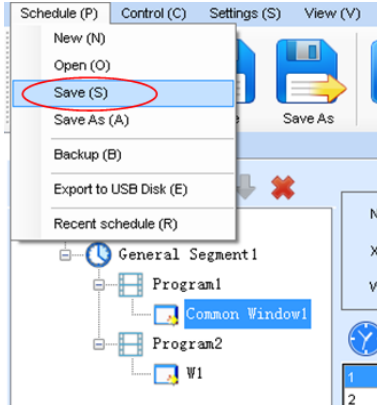


Figure 4-27 Saving a Playing Solution File

Open: After a playing solution is saved, you can directly click **Schedule** in the toolbar and select **Open** to open the playing solution. See Figure 4-28:

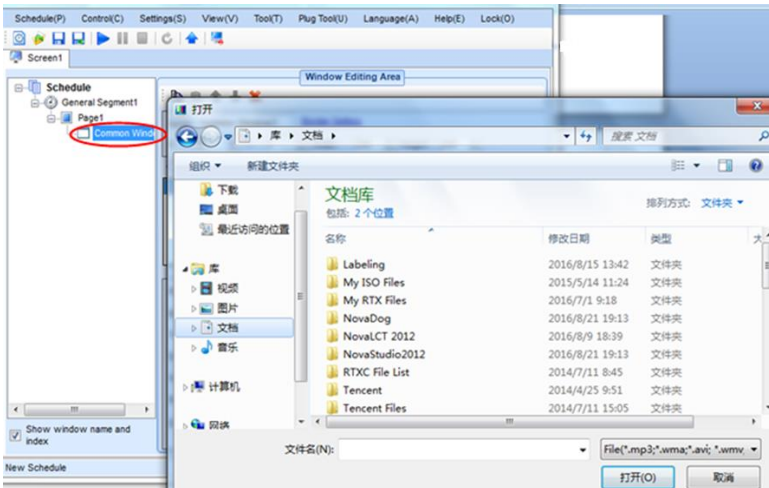


Figure 4-28 Opening a Playing Solution File

Chapter 5 Startup, Shutdown, and Maintenance of the LED Display

5.1 Startup Sequence

- 1) Start the distribution box for the LED display.
- 2) Start the control computer.
- 3) Start the video processor.
- 4) Start the sending box.
- 5) Screen color will reach to best status after 5 minutes lighting up.(Color gradually changes as the temperature warms up)

5.2 Shutdown Sequence

- 1) Shut down the video processor.
- 2) Shut down the sending box.
- 3) Shut down the control PC.
- 4) Shut down the distribution box for the LED display.

5.3 Maintenance on Indoor Product

- 1) It is recommended that you should use the LED display and its auxiliary devices twice a week and two hours each time. Before using the LED display, perform warm-up operations on the LED display if it has been idle for a long period of time (for details about warm-up operations, see Section 5.5).
- 2) Check the parts in the distribution box quarterly. Check whether the power cables and signal cables for the LED display are connected securely and safely, and whether the display is grounded reliably.
- 3) Check whether the steel structure of the fixed LED display is secure on a yearly basis.
- 4) It is recommended that you should use a soft antistatic brush to clear dust on the screen surface monthly in order to achieve an optimum displaying effect.
- 5) In dry seasons, perform warm-up operations on the LED display and its auxiliary

devices at least once every two months if it is idle for a long period of time.

- 6) In wet seasons, perform warm-up operations on the LED display and its auxiliary devices at least once a month if it is idle for a long period of time.

5.5 Warm-up Operation

If the LED display has been idle for a long period of time, perform warm-up operations before using the LED display. Set the prestored picture as follows when you initially start the LED display. This setting is for warm-up operation only. You do not need to set the prestored picture if the LED display is used frequently.

5.5.1 Setting the Prestored Picture

For details about how to set the prestored picture, refer to Section 3.6. Select a black background picture. Set **Boot Screen** to 60 seconds. Set both **Cable Disconnect** and **No DVI Signal** to **Prestored Picture**. Then click **Save to Hardware**. See Figure 5-1.

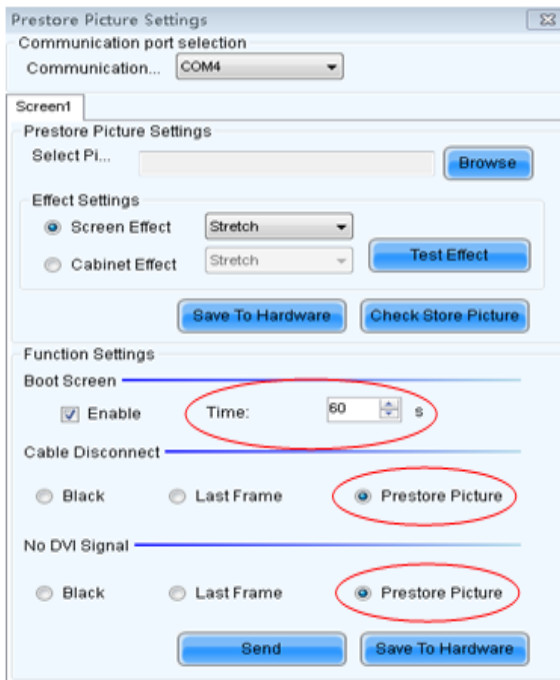


Figure 5-1 Prestore Picture Setting

5.5.2 Ageing

On the main window, click **Brightness** to enter the brightness adjustment interface, as shown in Figure 5-2:

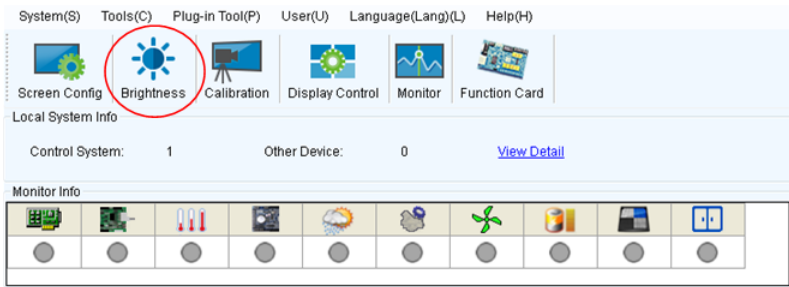


Figure 5-2 Main Window for Advanced User

Select **Manual** and set the brightness to 26 (the brightness is about 10%) by dragging the scroll bar below **Brightness Adjustment**. See Figure 5-3:

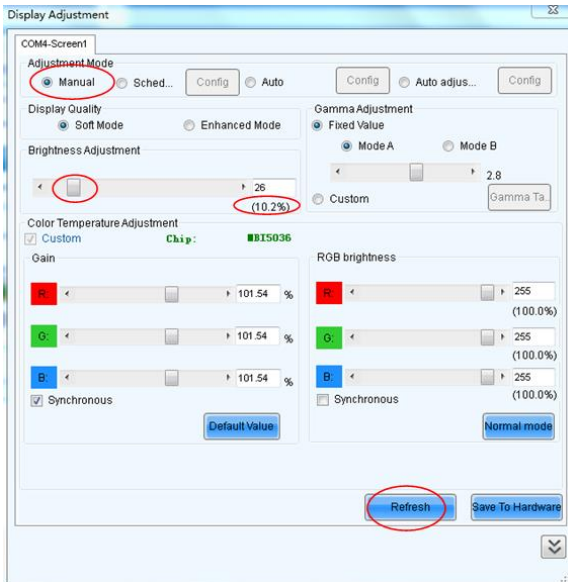


Figure 5-3 Manual Adjustment

NOTE: It is recommended that manual brightness adjustment be finished within 60 seconds.

Return to the main window. Click **Display Control** to enter the screen control interface. Set **Self Test** to **White**. Click **Send** to finish the operation. As showed in Figure 5-4 and Figure 5-5:

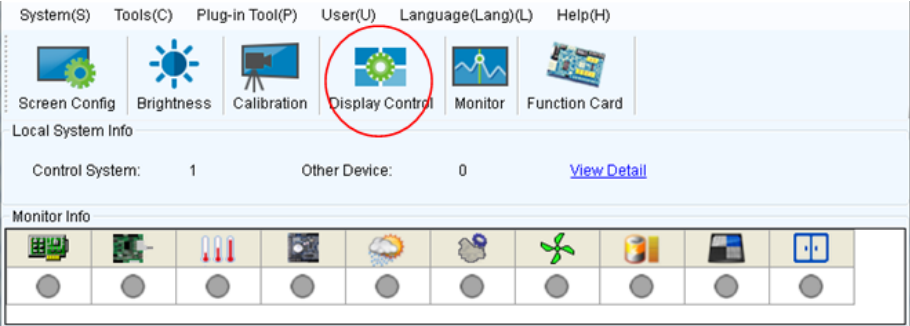


Figure 5-4 Display Control

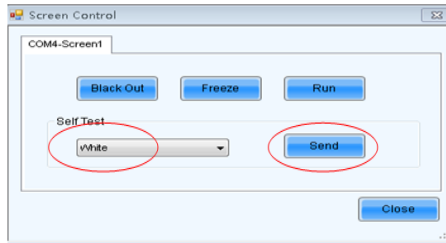


Fig 5-5 Display Control

5.5.3 Display Brightness and Ageing Time table

Adjust the screen brightness and perform ageing based on the steps described in Section 5.5.2.

| SN | Display Brightness | Ageing time |
|----|--------------------|-------------|
| 1 | 10% | 1 h |
| 2 | 30% | 2 h |
| 3 | 60% | 2 h |
| 4 | 80% | 2.5 h |
| 5 | 100% | 0.5 h |

Chapter 6 Troubleshooting and Component Replacement

6.1 Common Faults and Troubleshooting Methods

6.1.1 Failure in Lighting up the Display

Causes:

- 1) No power is supplied to the display or the control devices.
- 2) The LED display does not have input signals.
- 3) The control PC is in sleep mode or the graphics card is set incorrectly.

Troubleshooting method:

- 1) Check AC power input of the display and the control devices.
- 2) Check cables between the sending box and the receiving card. Check whether the DVI cable between the control PC and the sending box is connected reliably.
- 3) Check whether the control PC is in sleep mode or monitor protection mode. If the control PC is not in sleep mode, check whether the graphics card is configured properly on the software.

6.1.2 Incomplete Picture or Incorrect Position of Picture Displayed

Causes:

- 1) The connecting file for the screen is incorrect.
- 2) Receiving card signal cables between cabinets do not contact properly.
- 3) The displaying position and screen size are set incorrectly.

Troubleshooting method:

- 1) Check whether the display's signal cable connection method is same to that of the loaded file xxxx.scr.
- 2) Check whether the signal cable is connected to the cabinet receiving card. If the receiving card is faulty, replace the receiving card.
- 3) Check whether Displaying Position and Screen Size on the software are set to actual screen size.

6.1.3 Screen Blinking

Causes:

- 1) The ports on the sending box are loose, or the signal cables are too long.
- 2) The output resolution of the playing device or sending box is set incorrectly.

Troubleshooting method:

- 1) Check whether the DVI cable and signal cable are connected to the display and devices, or whether the length of signal cables exceeds the maximum transmission distance (the effective transmission distance shall not exceed 10 m for DVI cable, 100 m for signal cable, 300 m for multi-mode optical fiber, and 15 km for single-mode optical fiber).
- 2) Check whether the resolution of the playing device and the sending box is greater than or equal to the resolution of the screen.

6.1.4 Blinking of a Cabinet in the Display

Causes:

- 1) The output of receiving card or hub card is faulty.
- 2) The receiving card program is incorrect.

Troubleshooting method:

- 1) Check whether the receiving card signal cable and hub card in the cabinet are connected correctly.
- 2) Check the receiving card program for the cabinet or check the receiving card.

6.1.5 Failure in Lighting up of a Cabinet in the Display

Causes:

- 1) The power supply, receiving card, or hub card for the cabinet is faulty.
- 2) Signal output of the previous cabinet is faulty.

Troubleshooting method:

- 1) Check voltage at the DC side of the power supply and the receiving card power supply. Check the receiving card signal indicator light in the cabinet. Check whether the hub card contacts properly with the receiving card.
- 2) Check output signals of the receiving card of the previous cabinet, or replace the signal cable.

6.1.6 Failure in Lighting up Part of the Modules in the Cabinet

Causes:

- 1) Output of the power supply for the modules is faulty.
- 2) Output of signal which controls the related modules is faulty.

Troubleshooting method:


- 1) Check DC voltage for the modules.
- 2) Check the hub card ports or flat cables that control the modules.

6.2 Replacement of Main Components





Before performing maintenance on the LED display, switch off the power to ensure your personal safety and equipment safety. When installing a new module, connect the flat cables first and then the DC power cable and make sure the directions of the modules, DC power cable, and flat cables are correct. Keep the accessories (such as screws that are removed during maintenance) properly in order to re-install them after the component has been replaced.

In order to improve the installation accuracy of the product and achieve better arc effect, UHF combines 4 modules with a piece of memory metal. When replacing the modules, it is necessary to remove the 4-in-one module.

Replace the module based on the following steps:

| Step | Picture | Description |
|------|---|--|
| 1 |  | Switch off the power of the LED display. Located the module needs to replace |

Chapter 6 Troubleshooting and Component Replacement

| | | |
|---|--|---|
| 2 |  A close-up photograph showing a person's hands using a black magnetic tool to pull a circuit board module out of a server rack. The module is partially detached, and the tool is positioned to grip its edge. | <p>Find the right-most module in the 4-in-1 modules and remove it with the magnetic tool</p> |
| 3 |  A photograph of a server rack with a person's hands disconnecting cables from the first module. The person is pulling a red power cable and a white signal cable away from the module's connectors. | <p>Disconnect the power and signal cable of the first module, stabilize the module and pull it out.</p> |
| 4 |  A photograph showing a person's hands disconnecting cables from the third module in a server rack. The person is pulling a red power cable and a white signal cable away from the module's connectors. | <p>Disconnect the power and signal cable of the third module, stabilize the module and pull it out.</p> |
| 5 |  A photograph of a person holding a removed circuit board module. The module is a dark green PCB with various components, including capacitors, resistors, and integrated circuits. The person is holding it by the edges, showing the front side of the board. | <p>Disconnect the power and signal cable of the last module and replace with a new one.</p> |

Chapter 7 Packaging Transportation and Storage

7.1 Packaging

The UHF series products can be packaged in a plywood case, which is suitable for packaging of fixed LED displays.



7.2 Transportation

The cabinets must be packaged before transportation. The product shall not be placed upside down or horizontally, and must be protected against the wind, rain, direct sunlight, and corrosive liquid during transportation. The stacking layers shall not exceed two layers for flight cases or three layers for plywood cases.

7.3 Storage

The cabinets of indoor LED displays shall be stored in an environment with ambient temperature ranging from -20°C to $+55^{\circ}\text{C}$ and relative humidity ranging from 10% to 85% RH. For cabinets of outdoor LED displays, the ambient temperature and relative humidity for storage shall be ranging from -30°C to $+60^{\circ}\text{C}$ and 10% to 95% RH. Do not store the cabinets in an environment with chemicals that are volatile, corrosive, or flammable.

Attachment 1 - Product Warranty Card

| Product Warranty Card | | | | | |
|--------------------------|----------------------------------|----------------------|----------------------------|------------------------------|--|
| Order No. | | Shipment Date | | Warranty Period | |
| Product Model | | | | Product Quantity | |
| Customer Name | | | Contact Information | | |
| Customer Address: | | | | | |
| Remark(s): | | | | | |
| Warranty Record | | | | | |
| Warranty Date | Fault and Troubleshooting | | Completion Date | Signature of Customer | |
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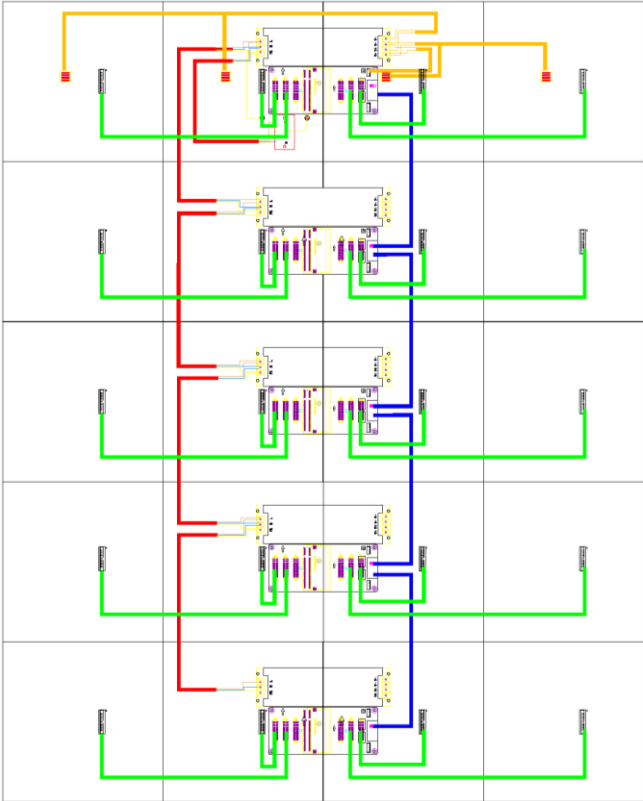
Attachment 2 - Path of Signal and Power Cable inside the Cabinet

Orange: power grounding wire

Red: power connection

Blue: cable between receiving cards

Green: connection between receiving card and module





Contact Information

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