

Unilumin

UpanelII

**PRODUCT
MANUAL**

Narrow Pixel
Pitch LED Display



UNILUMIN GROUP CO.,LTD.

Revision Records

Version	Revised Content	Date
01	Initial release	April 15, 2019
02	Add After-Sales and Warranty, Add module flatness adjustment Add Concave Installation Add MDC Function	March 31, 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.

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Trademark



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Read the following content carefully to ensure correct use of the 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) When maintain the product, please disconnect the AC power of the screen first.
- 2) Wear antistatic gloves when installing or repairing the product.
- 3) Ensure good ventilation for the LED display when designing the heat dissipation solution.
- 4) Keep the storage environment of the LED display well ventilated and dry, with a humidity not exceeding 85%.
- 5) 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.
- 6) Ensure that the LED display is powered on at least twice per week, and at least 2 hours each time.
- 7) 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.
- 8) Altitude during operation (m):5000m or less.

Contents

Chapter 1 Product Introduction	1
1.1 Features	1
1.2 Cabinet Appearance	2
1.3 Specification	3
1.4 System Solution	4
1.5 Scope of Application	5
Chapter 2 Installation and Wiring	6
2.1 Out-of-Box Inspection	6
2.2 General Installation	6
2.2.1 Installation of Fixed LED Display-Front Installation (Standard).....	7
2.2.2 Installation of Fixed LED Display- Rear Installation (Optional)	11
2.2.3 Concave Installation (0° — 2°)	13
2.2.4 Concave Installation ($\geq 2^{\circ}$)	15
2.3 Module Flatness Adjustment.....	25
2.3.1 Module Flatness Adjustment	25
2.4 Wiring for LED Display.....	26
2.4.1 Common Cables	26
2.3.2 Signal Cable Connection	27
2.4.3 Power Cable Connection	29
2.4.4 Smart Control Distribution Box	31
Chapter 3 LED Display Control Setting	33
3.1 Power-on Testing	33
3.2 Preparation.....	34
3.2.1 Starting the Hardware.....	34
3.2.2 Installing the Software	34
3.3 Display Configuration	35
3.4 Brightness Adjustment	39
3.5 Correction Coefficient Management	41
3.5.1 Setting Coefficients for a New Receiving Card	43
3.5.2 Setting Coefficients for a New Module	46

3.6 Pre-storing Picture	49
3.7 Dehumidification Mode.....	51
3.8 MDC Function	52
3.8.1 MDC mode loading ways.....	53
3.8.2 MDC mode switching ways	55
Chapter 4 LED Display Playing Setting.....	57
4.1 Selecting a Playing Solution	57
4.2 Playing Setting	58
4.2.1 Display Window Setting.....	58
4.2.2 Startup Setting.....	59
4.3 Editing Professional Playing Solution	60
4.3.1 Editing the Time Segment	60
4.3.2 Editing the Program Page	62
4.3.3 Editing the Display Window	65
4.3.4 Editing the Media.....	68
4.3.5 Playing the Media	72
4.4 Saving and Opening a Playing Solution	74
Chapter 5 Startup, Shutdown, and Maintenance	75
5.1 Startup Sequence	75
5.2 Shutdown Sequence.....	75
5.3 Daily Maintenance	75
5.4 Warm-up Operation.....	76
5.4.1 Setting the Prestored Picture.....	76
5.4.2 Ageing.....	77
5.4.3 Display Brightness and Ageing Time table.....	78
Chapter 6 Troubleshooting and Component Replacement.....	79
6.1 Common Faults and Troubleshooting Methods	79
6.1.1 Failure in Lighting up the Display	79
6.1.2 Incomplete Picture or Incorrect Position of Picture Displayed	79
6.1.3 Screen Blinking.....	80
6.1.4 Blinking of a Cabinet in the Display.....	80
6.1.5 Failure in Lighting up of a Cabinet in the Display	80

6.1.6 Failure in Lighting up Part of the Modules in the Cabinet	81
6.2 Replacement of Main Components	81
6.2.1 Replacement of Module.....	81
6.2.2 Replacement of Power Supply	82
6.2.3 Replacement of Receiving Card.....	83
6.2.4 Replacement of HUB Card	84
Chapter 7 Packaging Transportation and Storage	85
7.1 Packaging	85
7.2 Transportation	85
7.3 Storage.....	85
Chapter 8 After-Sales and Warranty	86
8.1 Warranty Scope	86
8.2 Warranty Period	86
8.3 Warranty Service.....	86
8.3.1 Warranty Service Types.....	86
8.4 Disclaimer	87
8.5 Warranty Service Process.....	88
8.6 Other	89
8.7 Product Warranty Card	90
Attachment 1 - Path of Signal Cable inside the Cabinet	91
Contact Information	92

Chapter 1 Product Introduction

The Upanell series is a new generation of small pitch LED display product launched by Unilumin. Designed for HD display application scenarios, the Upanell series has a standard aspect ratio of 16:9 and has achieved perfect match between video signals and display terminals. With excellent colour reproduction, stable pictures, and wide viewing angle, the Upanell series supports wide-range adjustment of the colour temperature and brightness. The pixel-by-pixel calibration technology can greatly improve experience of using the Upanell series product in projects. Outstanding safety design of the Upanell series delivers prominent safety performance, high protection level, and high reliability. The back of the box is completely sealed, The rear protection level is up to IP60, and the reliability is high. It can be freely and seamlessly spliced into any size display to meet the needs of the application environment.

1.1 Features

- 1) Aspect ratio of 16:9, pixel-by-pixel full HD display, and can be assembled into a 2K, 4K, or 8K standard HD screen.
- 2) Supports full front maintenance, front installation.
- 3) die-cast aluminum structure, fully sealed design ,high protection level and high reliability.
- 4) Wireless board-to-board connection between cabinets and between modules and cabinets.

1.2 Cabinet Appearance

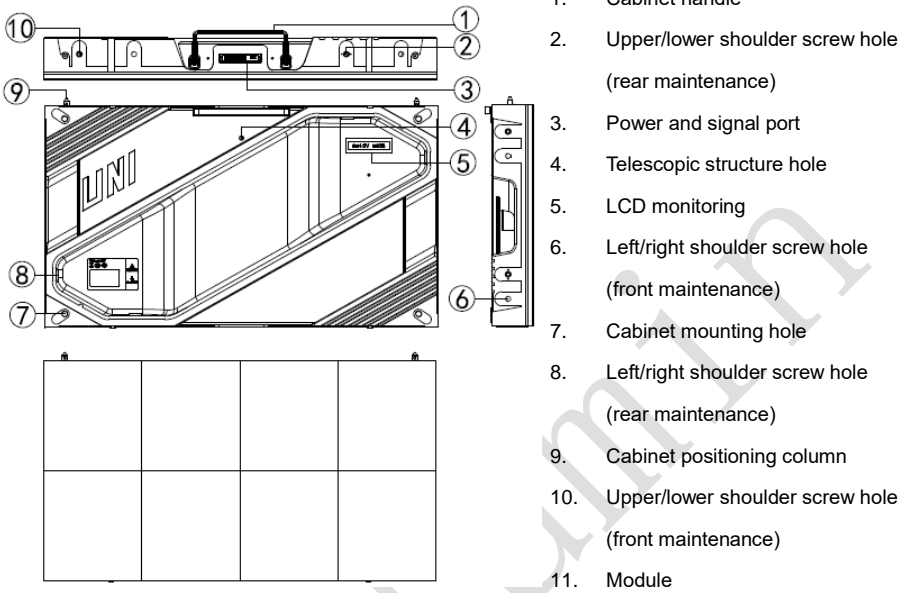


Figure 1-1 Cabinet Appearance

1.3 Specification

Parameter		UpanelIII 0.9	UpanelIII 1.2	UpanelIII 1.5	UpanelIII.9
Physical Parameter	Pixel composition	1R1G1B			
	LED type	3-in-1 Black SMD			
	Pixels per Cabinet(dots)	640x360	480x270	384x216	320x180
	Cabinet size (WxHxD)(mm)	609.92x343.08x68			
	Aspect Ratio	16:9			
	Material	Die-casting aluminum			
	Planeness (mm)	≤0.15			
	Weight(kg)	7			
	Refresh rate(Hz)	≥1,920			
	Frame frequency (Hz)	50/60			
	Data interconnection	Signal cables≤100m, Multi-mode optical fibers≤300m, Single-mode optical fibers≤10 km			
Optical Parameter	Brightness(nits)	600			
	Color temperature(K)	2,000~9,500 (adjustable)			
	Viewing angle(°)	160/160			
Electric Parameter	Input voltage(V)	AC 100~240			
	Input frequency(Hz)	50~60			
	Input power <max>(W/Cabinet)	145±15	130±15		
	Input power <typical>(W/Cabinet)	48±15	43±15		
Circumstance Parameter	Working temperature / humidity	-20~+55/10~85%			
	Storage temperature/ humidity	-10~+45/10~80%			
	Ingress protection	Rear IP60			

Note□ Specifications are for reference only and are subject to change without notice.

1.4 System Solution

The display system consists of the LED display, sending box, control PC, matrix, splicing controller and power distribution box (refer to the shipping list for details). The following shows a topology of the system for reference:

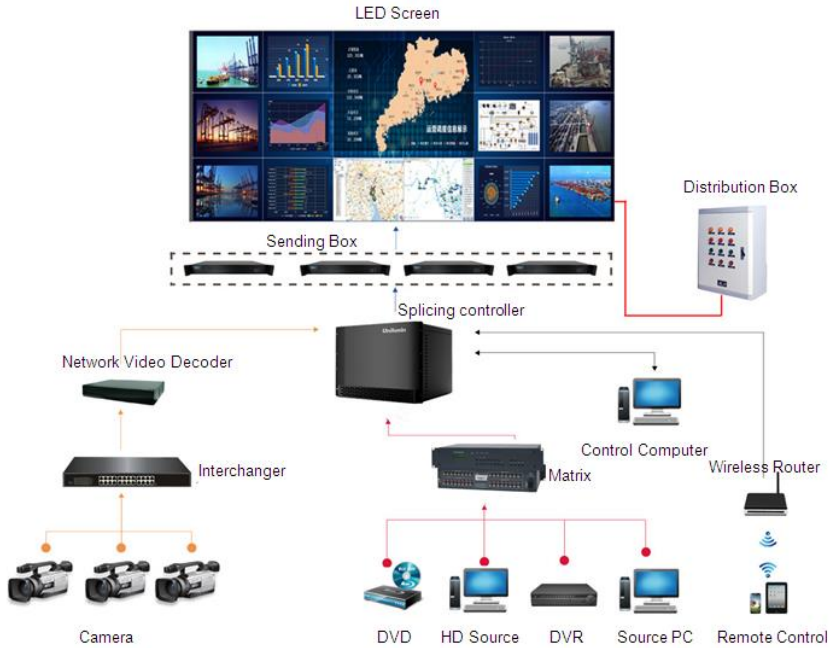


Figure 1-2 System Topology

1.5 Scope of Application

The Upanell series products can be assembled seamlessly into a screen of any size, and are extensively used 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.



TV Station



Conference Center



Advertising / Exhibition



Traffic Control Center

Chapter 2 Installation and Wiring

2.1 Out-of-Box Inspection

Check whether the packages are damaged. If the packages are intact, check the main components against the shipping list. If any inconsistency is found, contact us in time. The main components include cabinets, power and signal cable, USB cable, DVI cable, and sending box. For details about the components, refer to the shipping list.

2.2 General Installation

Screen calibration is performed on the Upanell series product before shipment, and the product needs to be installed sequentially according to the cabinet number, as shown in Figure 2-1:

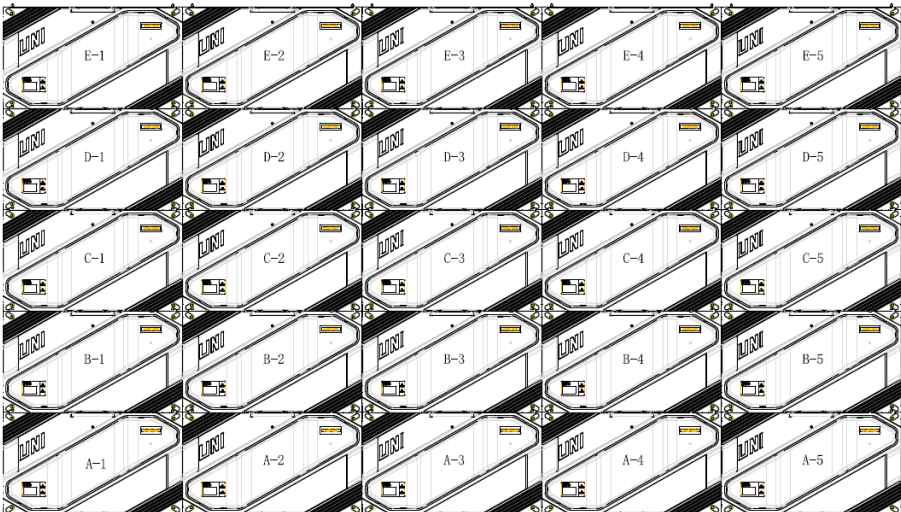


Figure 2-1 Rear View of the Display

2.2.1 Installation of Fixed LED Display-Front Installation (Standard)

- 1) Check whether the bottom beam is level. Make sure that its levelness is within $\pm 1\text{mm}$.
- 2) Install the cabinets sequentially from bottom to top and from middle to both sides. Fasten the adjacent cabinets with screws. In addition, secure the mounting plates and cabinets with socket head cap screws to the square tubes.
- 3) Keep proper joints and flatness between the cabinets during cabinet installation
- 4) After the installation of the cabinet is completed, connect the power signal cable of the upper and lower cabinets by using an Allen wrench to screw up the telescopic structure. as shown in Figure 2-5.
- 5) Install the module on the corresponding cabinets. The installation number of the single cabinet module is shown in Figure 2-6. During the module installation keep proper joints and flatness between the modules during modules installation.
- 6) After the installation of the screen is completed, install the power signal incoming cable from the top cabinet of each column. For the power signal incoming cable, please refer to chapters 2.3.2 and 2.3.3.

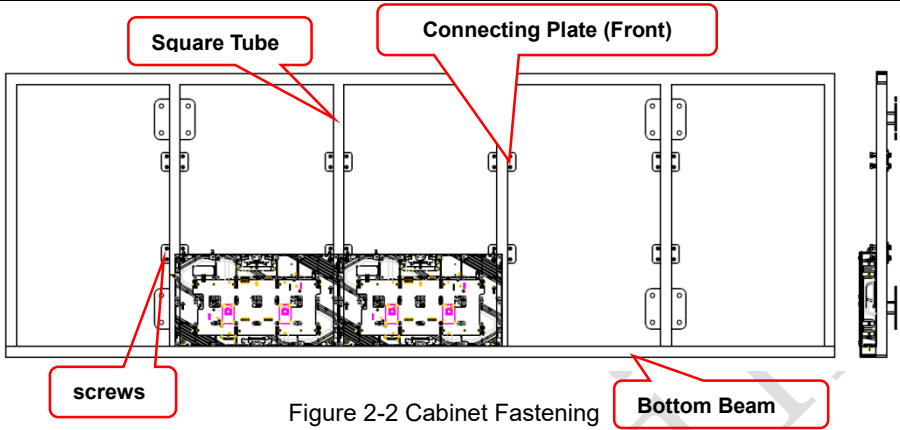


Figure 2-2 Cabinet Fastening

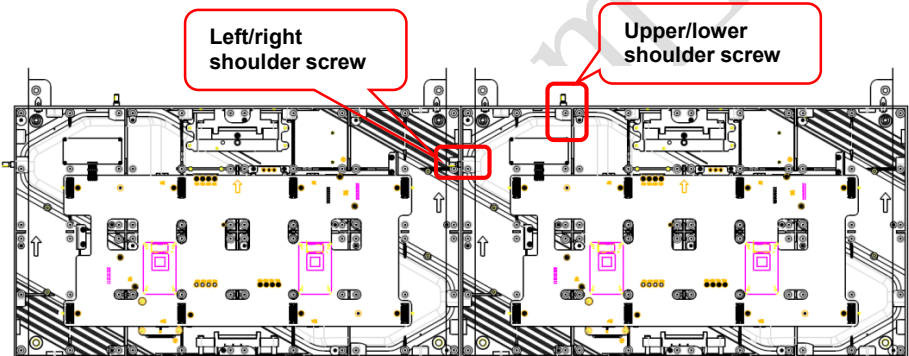


Figure 2-3 Fastening between Cabinets

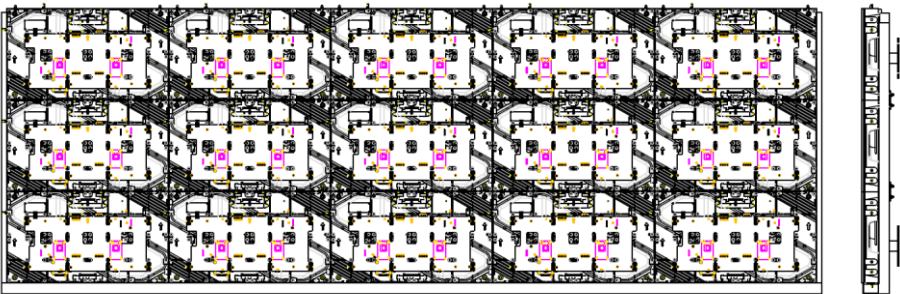


Figure 2-4 Front View of Cabinet Installation

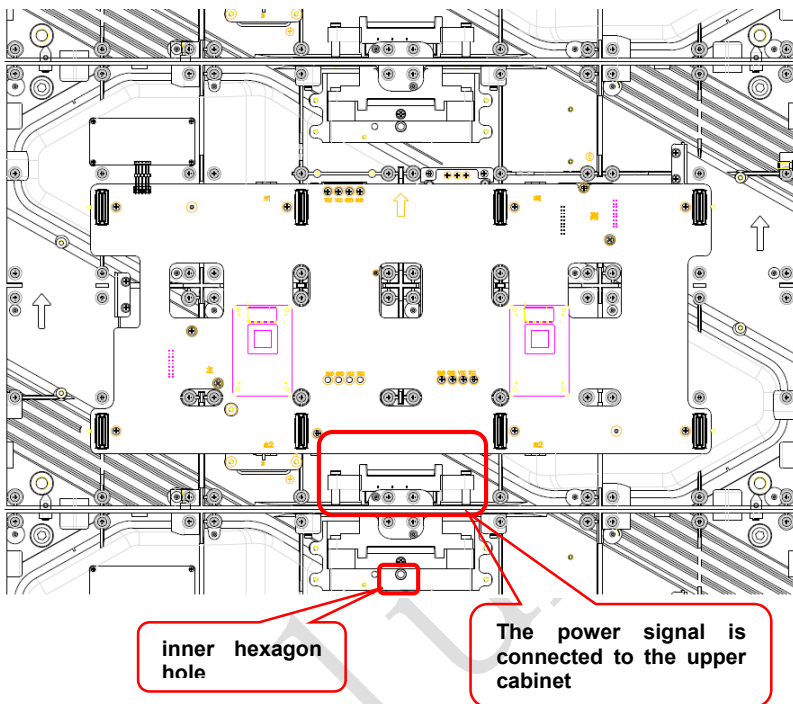


Figure 2-5 Front View of Power Signal Connection Between Cabinets

1	2	3	4
5	6	7	8

Figure 2-6 Front View of Single Cabinet Module Number

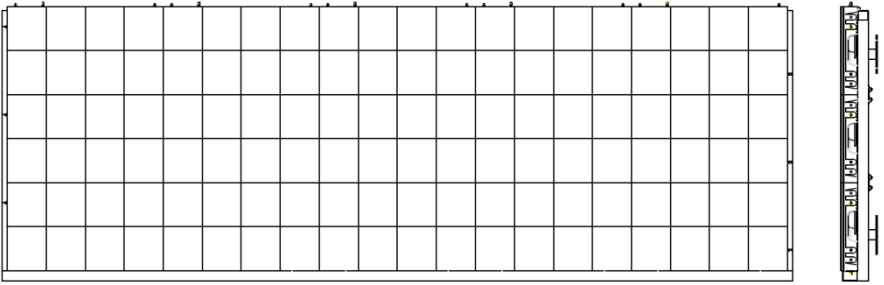


Figure 2-7 Front View of the Display

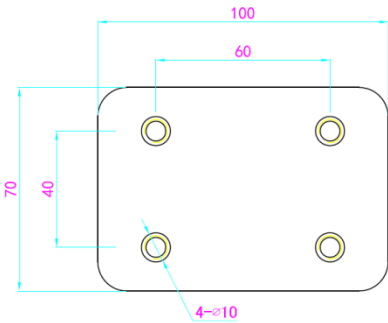


Figure 2-8 Front Connecting Plate
(Front View)

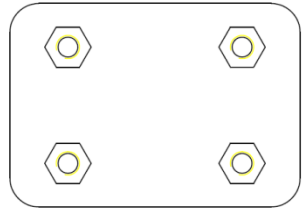


Figure 2-9 Front Connecting Plate
(Rear View)



Figure 2-10 M8 x 70 socket head cap screws (front)

2.2.2 Installation of Fixed LED Display - Rear Installation (Optional)

- 1) Check whether the bottom beam is level. Make sure that its levelness is within $\pm 1\text{mm}$.
- 2) Install the cabinets sequentially from bottom to top and from middle to both sides. Fasten the adjacent cabinets with screws. In addition, secure the mounting plates and cabinets with socket head cap screws to the square tubes.
- 3) Keep proper joints and flatness between the cabinets during cabinet installation

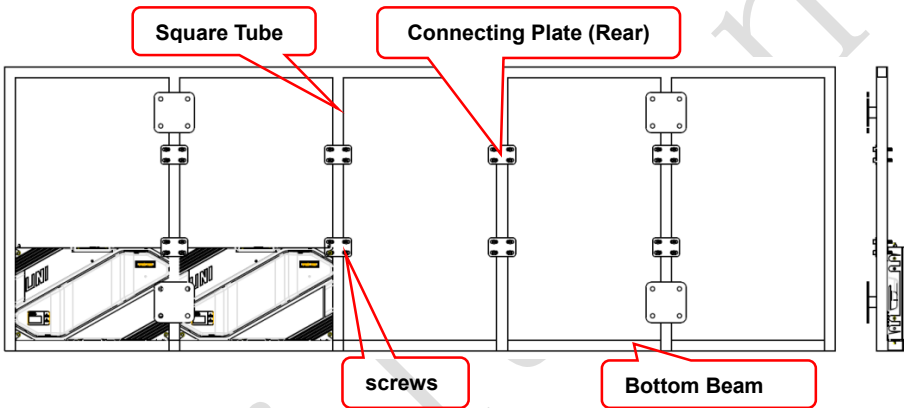


Figure 2-11 Cabinet Fastening

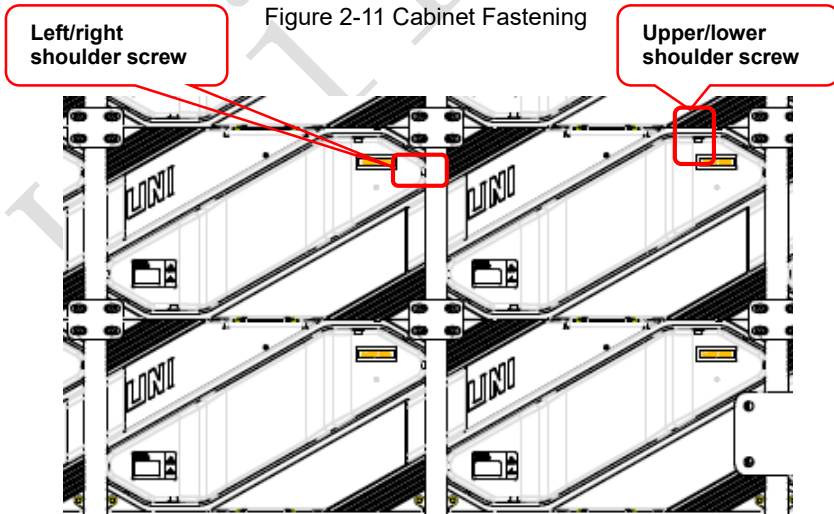


Figure 2-12 Fastening between Cabinets

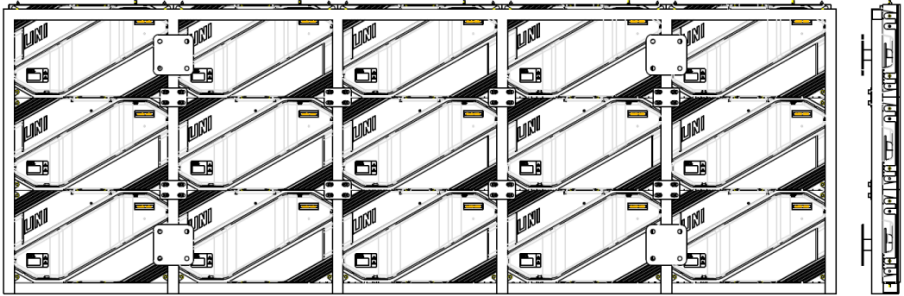


Figure 2-13 Rear View of the Display

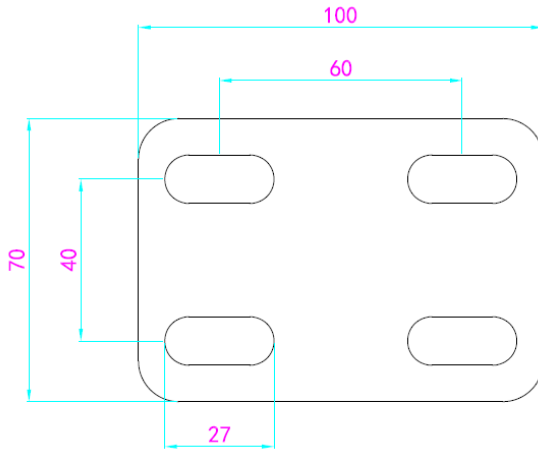


Figure 2-14 Rear Connecting Plate □front□



Figure 2-15 M10 x 60 socket head cap screws (rear)

2.2.3 Concave Installation (0° — 2°)

- 1) Make sure that the bottom beam is horizontal, and the value is within $\pm 1\text{mm}$;
- 2) Assemble the specific trimming cabinet from the bottom to the top and from the middle to both sides successively;
- 3) The left and right cabinets are fixed with left and right shoulder screw, and the mounting plate and cabinets are fixed on the square pipe with hexagon socket bolts;
- 4) After the first line of cabinet is installed, the second line of cabinet is installed, and the upper and lower cabinets are fixed with upper and lower shoulder screw;
- 5) In the process of cabinet installation, it is necessary to pay attention to the gap and flatness between cabinets.

Note: The concave installation within 2° does not use angle block, but uses special trimming cabinet for installation. During installation, pay attention to adjust the gap and flatness between cabinets.

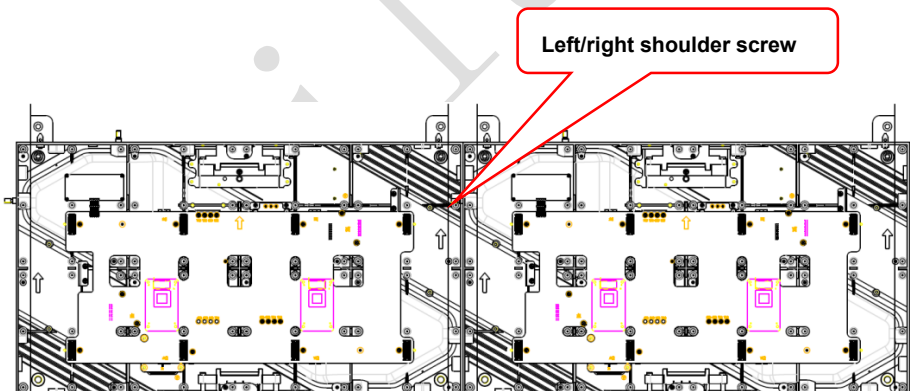


Figure 2-16 Locking of left and right cabinets completed

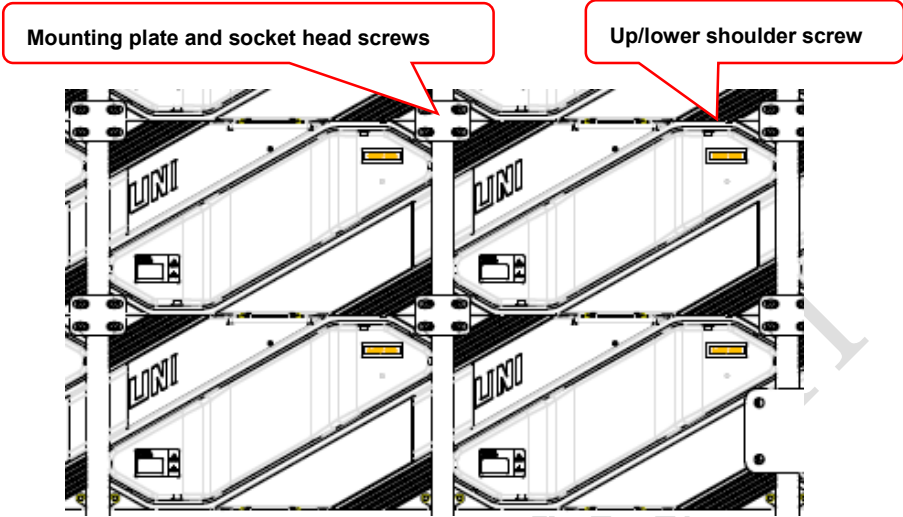


Figure 2-17 Upper and lower cabinet locked

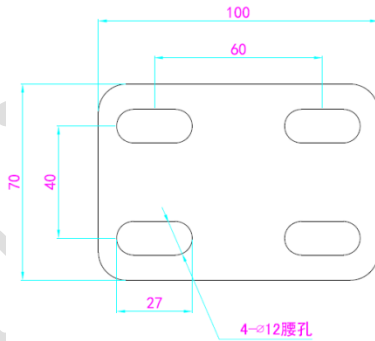


Figure 2-18 Rear Connecting Plate (front)



Figure 2-19 Rear Connecting Plate

2.2.4 Concave Installation ($\geq 2^\circ$)

- 1) Make sure that the bottom beam is horizontal, and the value is within $\pm 1\text{mm}$;
- 2) Assemble the cabinet from the bottom to the top, from the middle to both sides. Fix the angle block on the screw hole on the right side of the cabinet with KM2 * 6 screw, as shown in Fig. 2-20 and Fig. 2-21;
- 3) The left and right cabinets are fixed with M6 plug bolts, as shown in Fig. 2-23; the mounting plate and cabinet are fixed on the square pipe with hexagon socket bolts;
- 4) After the first line of cabinet is installed, install the second line of cabinet, and fix the upper and lower cabinets with upper and lower plug bolts, as shown in Figure 2-25;
- 5) In the process of cabinet installation, it is necessary to pay attention to the gap and flatness between cabinets.

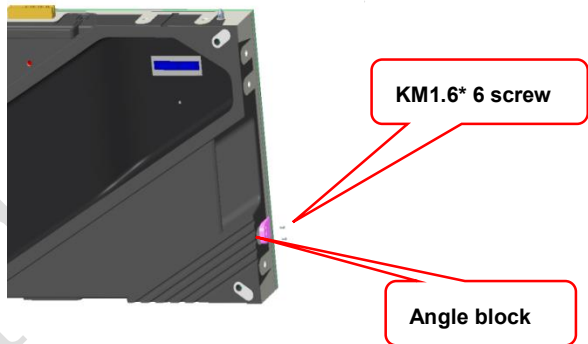


Figure 2-20 Installing angle block 1

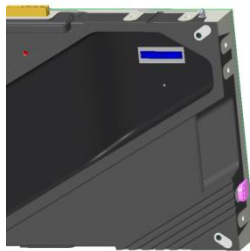


Figure 2-21 Installing angle block 2

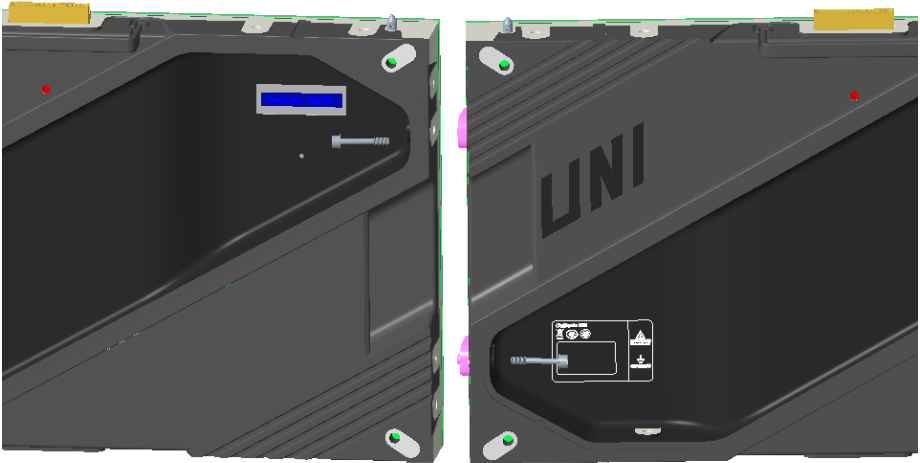


Figure 2-22 Splicing of left and right cabinet s

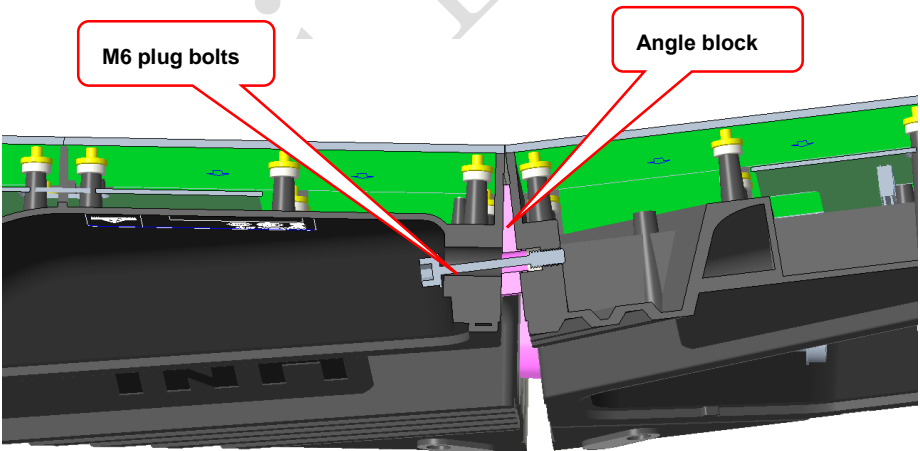


Figure 2-23 Internal drawing of left and right cabinet splicing

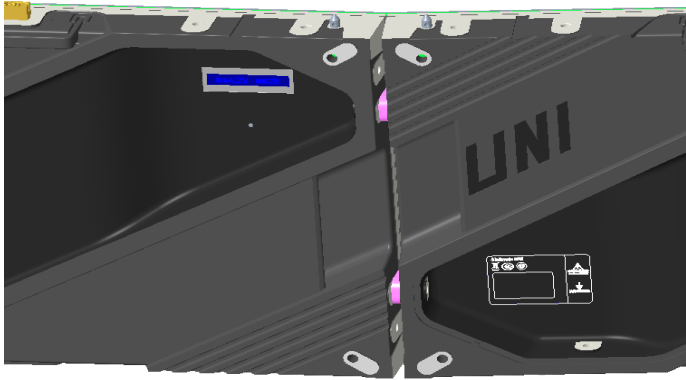


Figure 2-24 Splicing of left and right cabinets completed

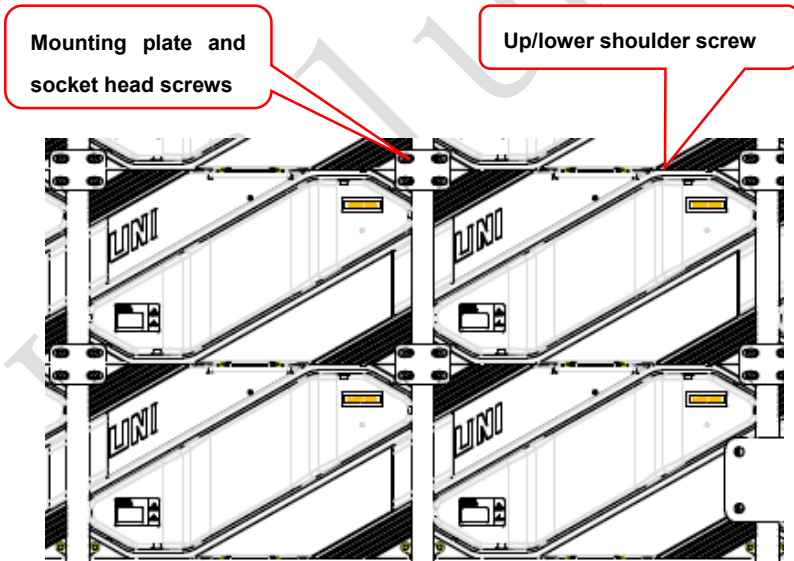


Figure 2-25 Upper and lower cabinet locked

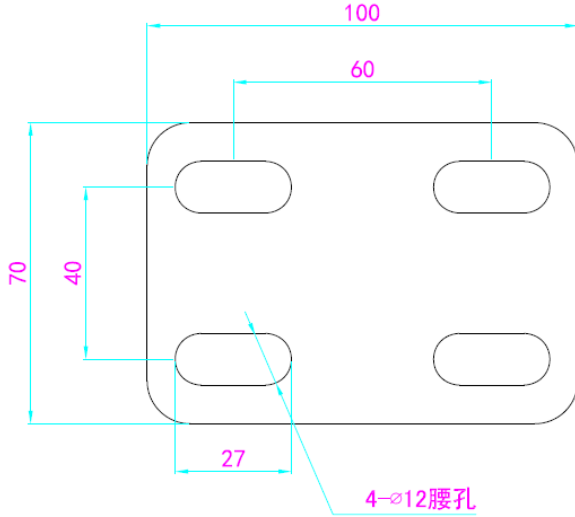


Figure 2-26 Rear Connecting Plate (front)

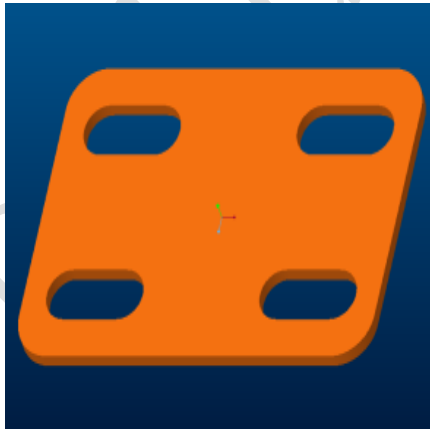


Figure 2-27 Rear Connecting Plate

2.2.5 Installation of Fixed LED Back Strip Installation(Optional)

Back strip selection:

According to the size of the display, select the corresponding back strip (2-in-1 back strip, 3-in-1 back strip, 4-in-1 back strip, 5-in-1 back strip), as shown in Figure 2-28.

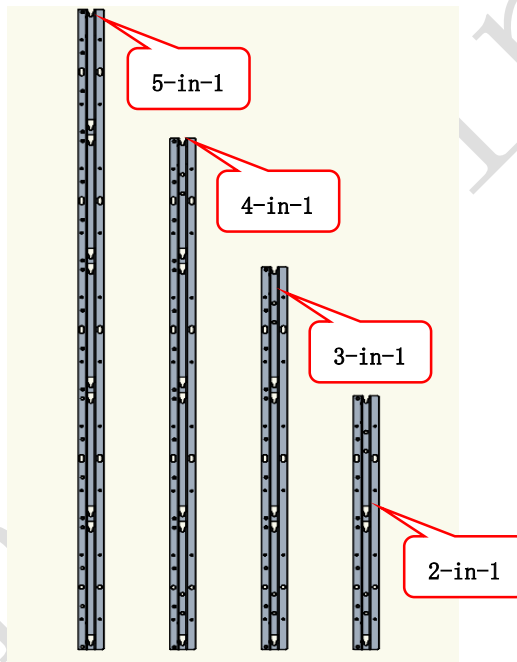


Fig 2-28 Back strips of different sizes

Installation steps:

1. Install the first back strip on the wall that needs to be fixed on according to the screen size, and check whether the back strip is vertical, as shown in Figure2-29.

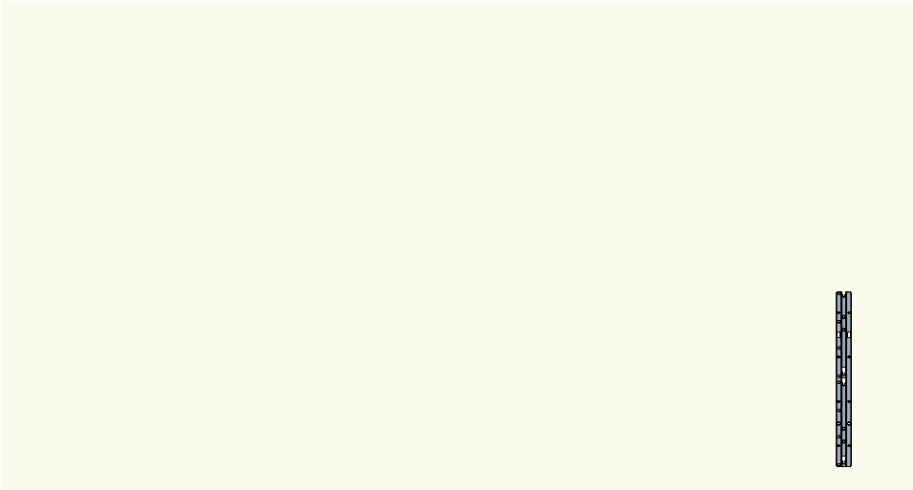


Fig 2-29 Installing the first back strip

2. Fix the positioning device on the first back strip, confirm the specific position of the second back strip, and remove the positioning device after fixing the second back strip. According to the positioning device, repeat the above steps to complete the installation of other back strips, and ensure that all back strips are vertical;

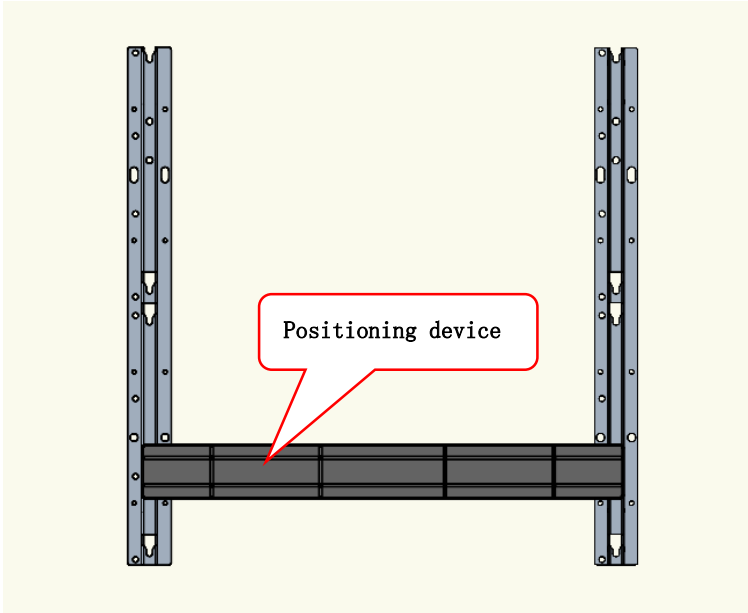


Fig. 2-30 Mounting the back strip according to the positioning device

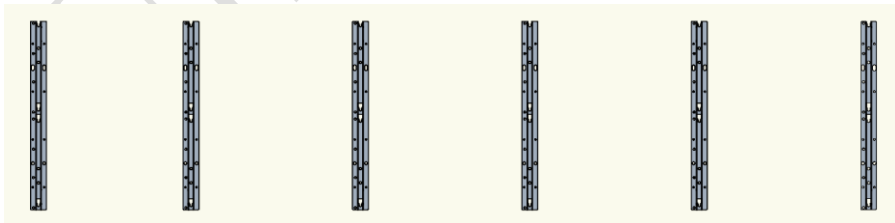


Fig 2-31 The installation of the back strip is complete

3. Install the hanging pin on the cabinet, align the cabinet with the installation hole on the back strip, and hang the cabinet on the back strip. The other cabinets are then hung on the back strip from the bottom to the top, from the middle to the sides. This is shown in Figure2-32, 2-33, 2-34.

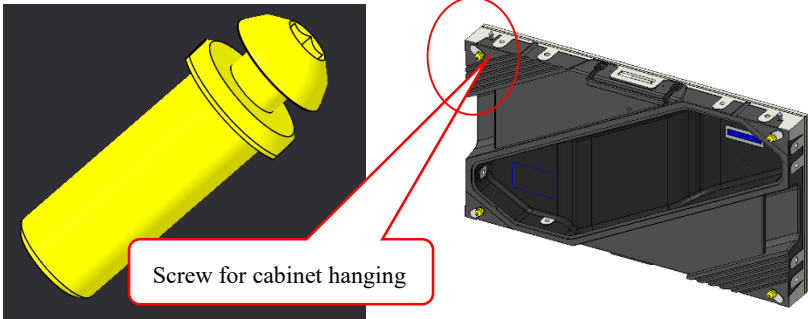


Fig 2-32 Hanging pin

Fig 2-33 Back of the enclosure

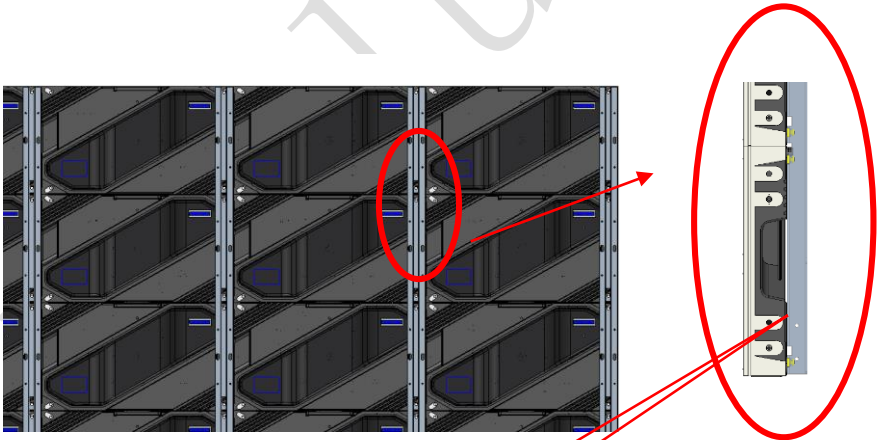


Fig 2-34 After installation is complete, the back side figure

4. If there are multiple rows of back strip to install, when installing the next row, you need to install the connector on the first back strip of the previous row, so as to confirm the position of the first back strip of the next row, connect the upper and lower back strips and ensure that the upper and lower back strips are on the same vertical line, and then repeat the above steps to complete the installation of other back strips and ensure that all the back strips are vertical. The cabinet is then hung on the back strip from the bottom to the top, from the middle to the two sides.

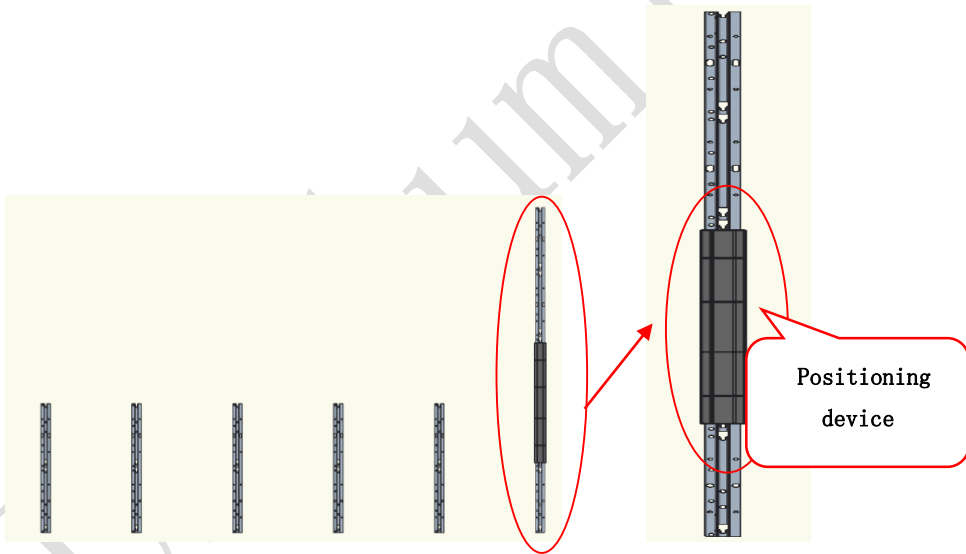


Fig 2-35

5. The installation of the back strip depends on the size of the cabinet. Different cabinet sizes have different mounting distances in the center of the back strip.

Note: Confirm the array of the back strip according to the drawing of the order, the above array is for reference only.

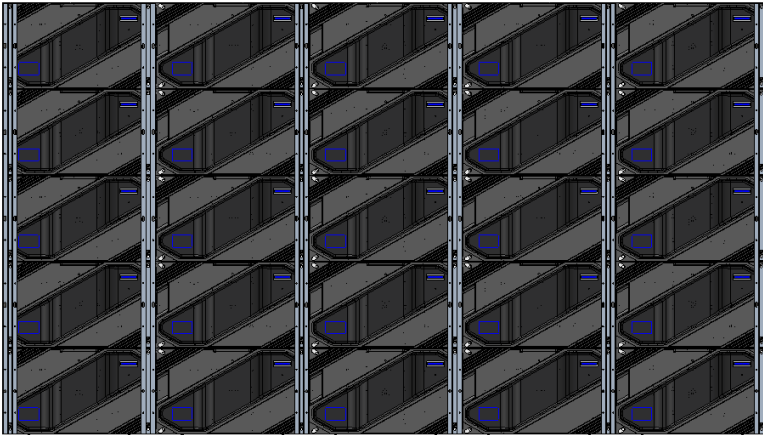


Figure 2-36 Back image after installation is complete

2.3 Module Flatness Adjustment

2.3.1 Module Flatness Adjustment

When there is a deviation in flatness between adjacent modules, use the adjustment tool to adjust the magnet on the box. At the low end, the module regulates the adjustable magnets until the module is flush with the adjacent modules. (one module has 9 adjustable magnets)

Specification of adjusting magnet: $D10 * 3 + m3 * 5$



Figure 2-37 Adjustable magnet

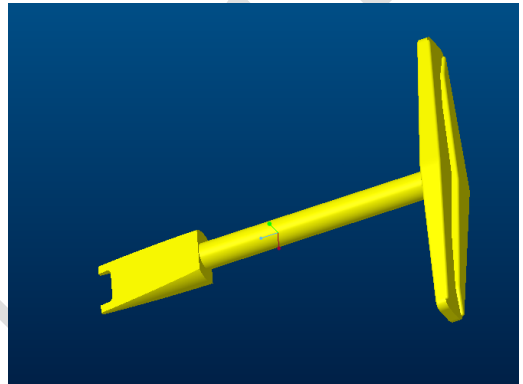
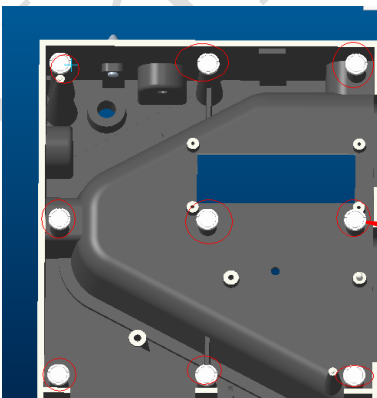


Figure 2-38 Adjusting tool



Adjustable magnet
(9 for one module)

Figure 2-39 Schematic diagram of adjustable magnet

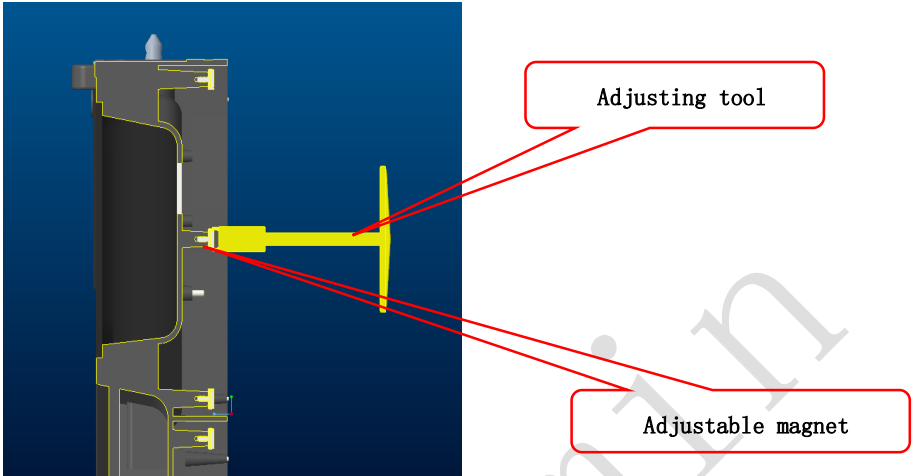


Figure 2-40 Schematic diagram of module flatness adjustment

2.4 Wiring for LED Display

2.4.1 Common Cables



Incoming Power and
signal Cable



DVI Cable



USB Cable



Incoming Signal Cable



Signal Cable Passing
Through Cabinet

2.3.2 Signal Cable Connection

Figure 2-41~ Figure 2-44 shows the signal cable connection for display with a resolution of 1920 x 1090. Signal cables shall be connected based on the wiring diagram of the delivered products for the project.

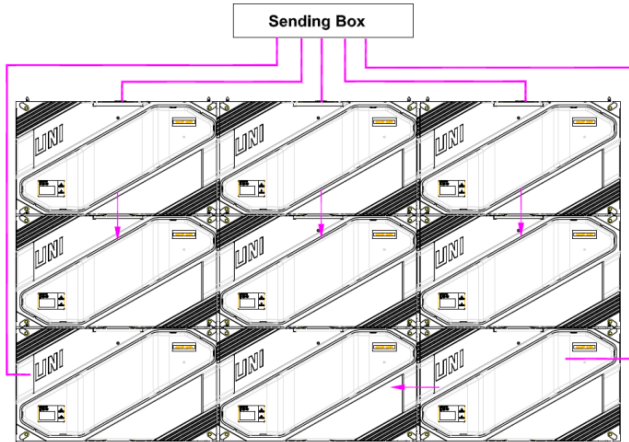


Figure 2-41 Signal Cable Connection Diagram of UpanelII 0.9

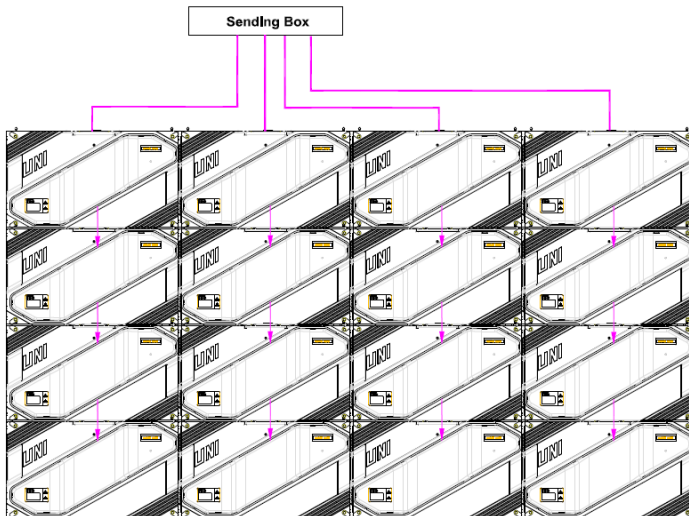


Figure 2-42 Signal Cable Connection Diagram of UpanelII 1.2

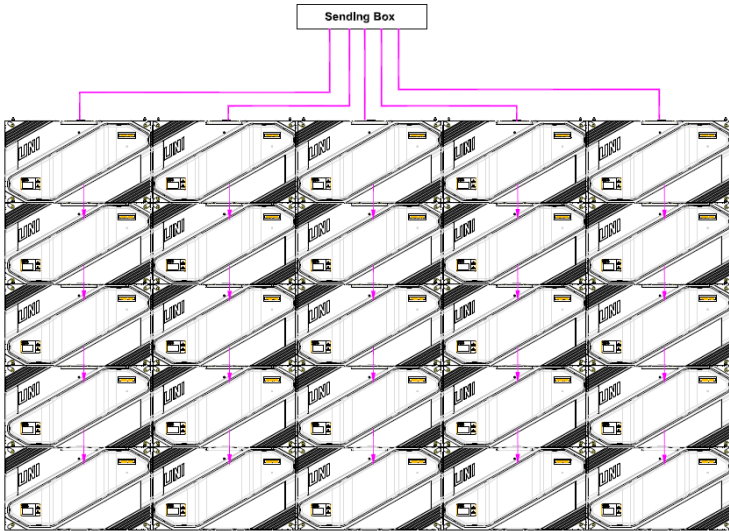


Figure 2-43 Signal Cable Connection Diagram of UpanelII 1.5

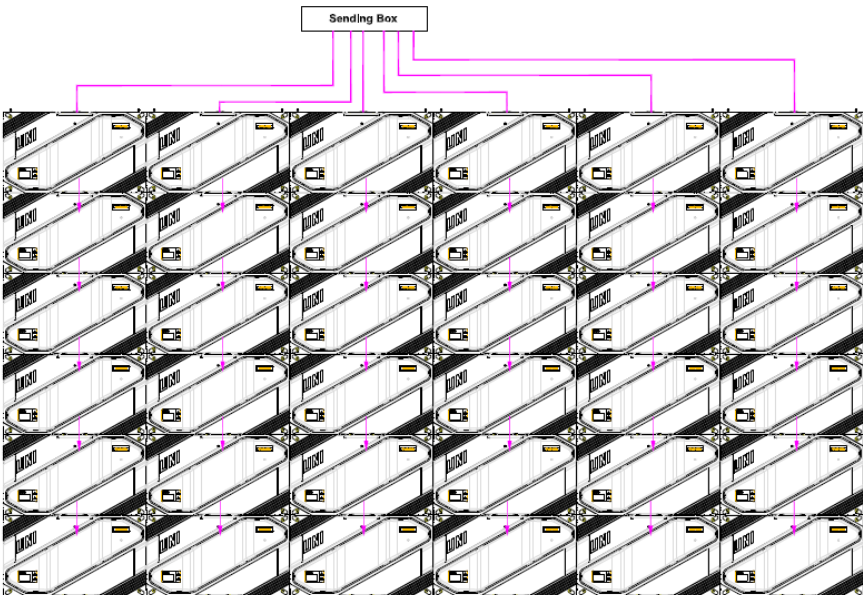


Figure 2-44 Signal Cable Connection Diagram of UpanelII 1.9

2.4.3 Power Cable Connection

Figure 2-45 ~ Figure 2-48 shows the power cable connection for display with a resolution of 1920 x 1090. Power cables shall be connected based on the wiring diagram of the delivered products for the project.

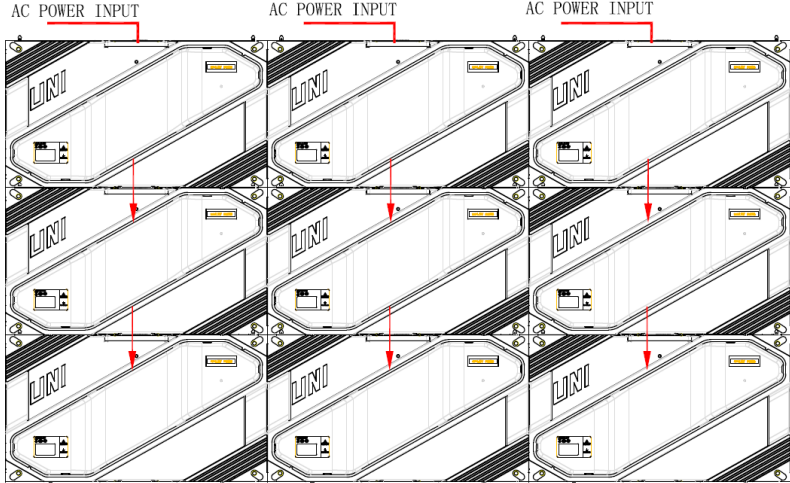


Figure 2-45 Power Cable Connection Diagram of UpanelII 0.9

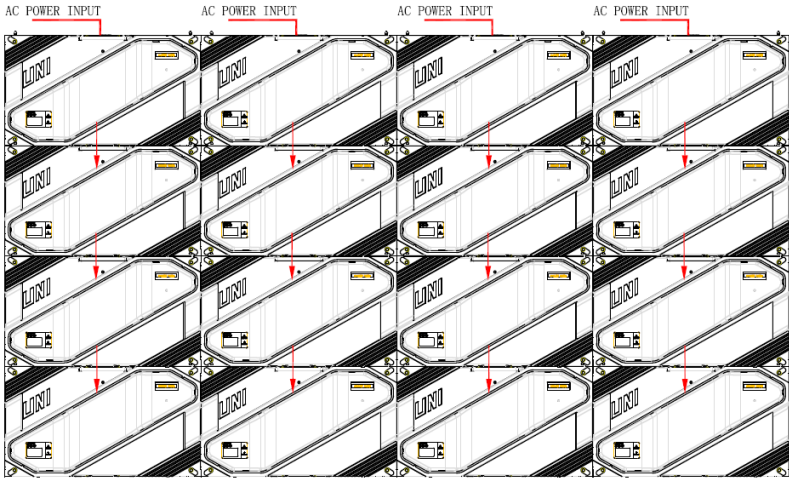


Figure 2-46 Power Cable Connection Diagram of UpanelII 1.2

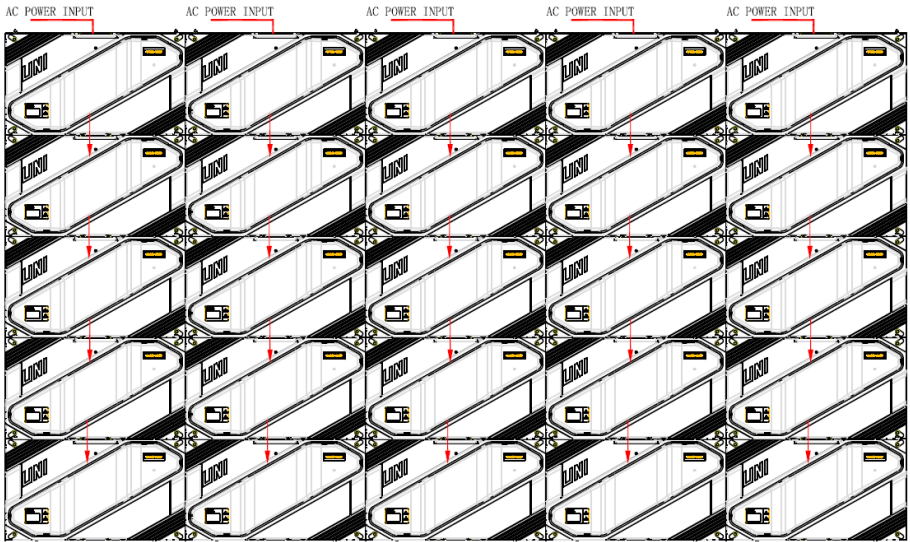


Figure 2-47 Power Cable Connection Diagram of UpanelII 1.5

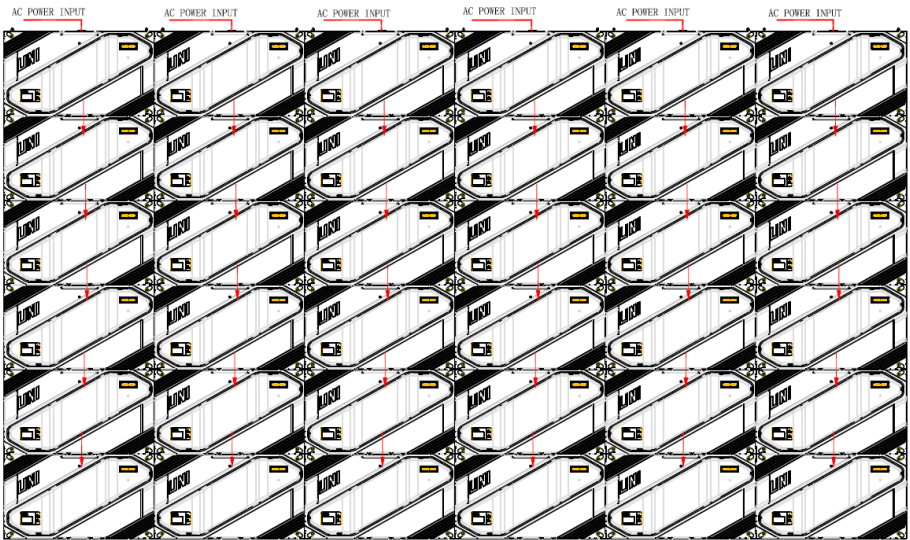


Figure 2-48 Power Cable Connection Diagram of UpanelII 1.9

2.4.4 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.

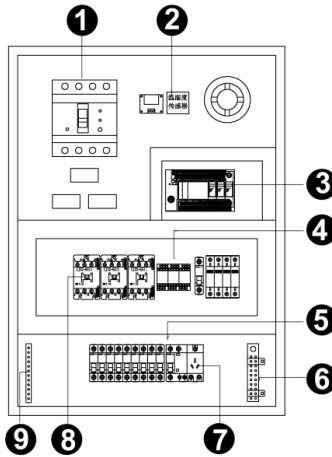


Figure 2-49 Internal Structure of Distribution Box

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*.

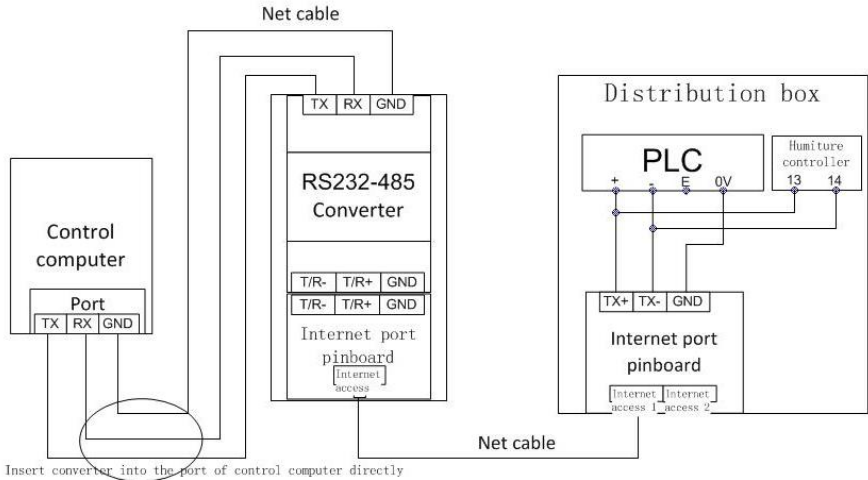


Figure 2-50 Distribution Box PLC Connection Diagram

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).

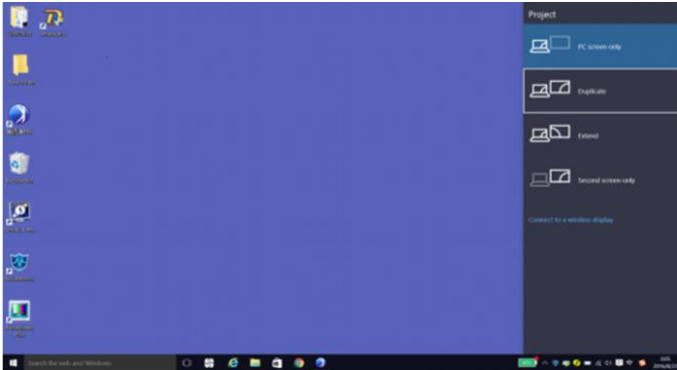


Figure 3-1 Replication Mode

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:

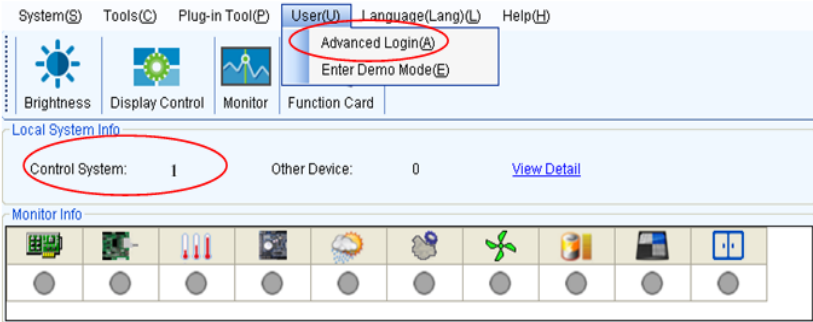


Figure 3-3 Main Window of UniLCT-Mars

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

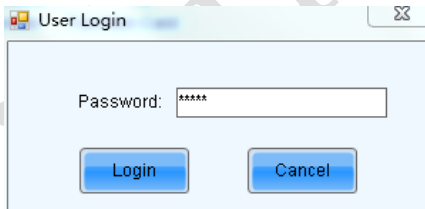


Figure 3-4 User Login

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

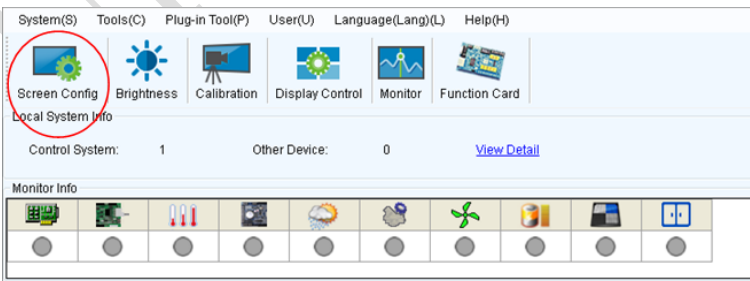


Figure 3-5 Main Window for Advanced User

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

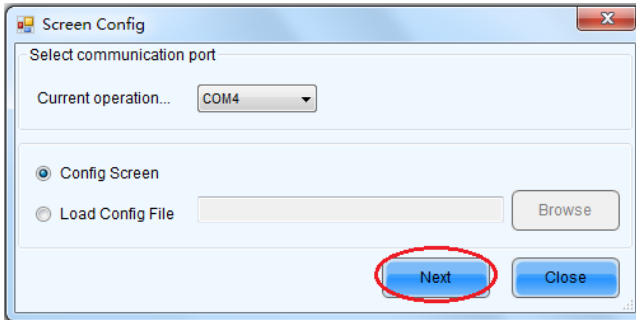


Figure 3-6 Screen Config

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.

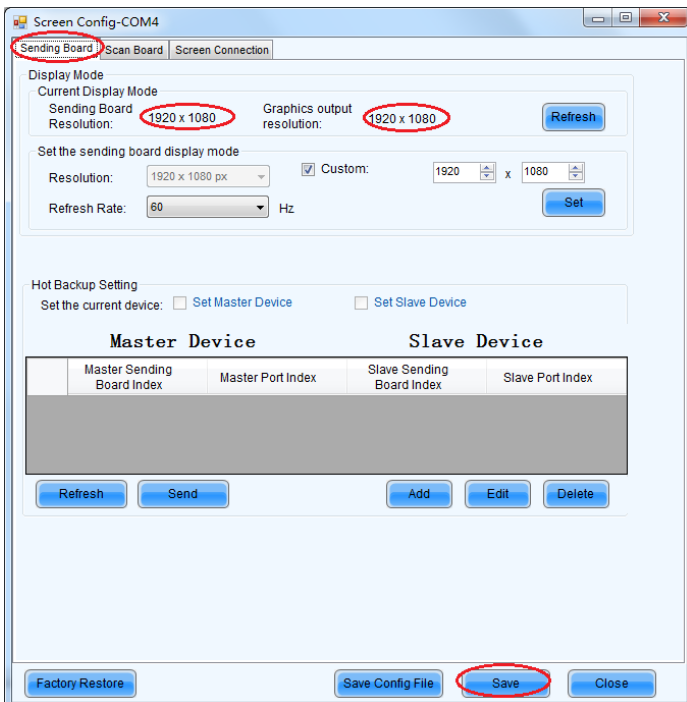


Figure 3-7 Sending Board Configuration

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

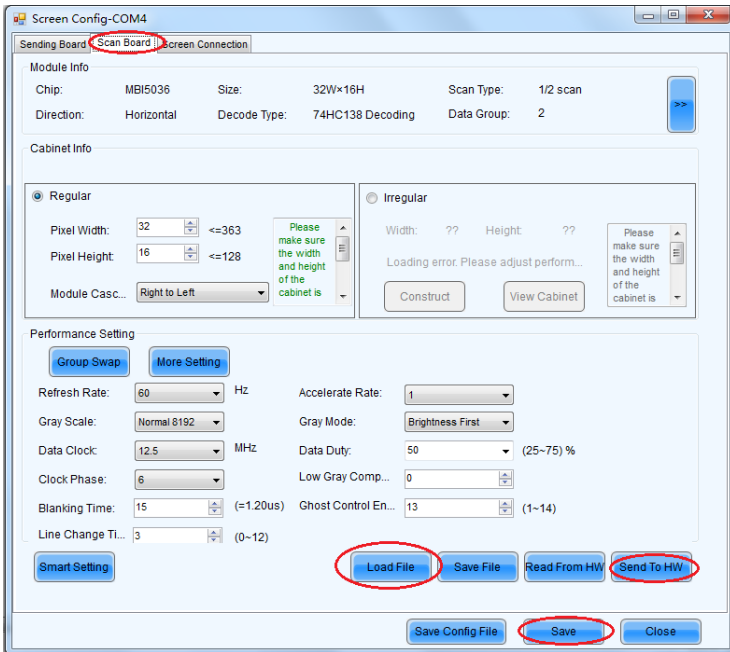


Figure 3-8 Scan Board Configuration

- 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**.

Chapter 3 LED Display Control Setting

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

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

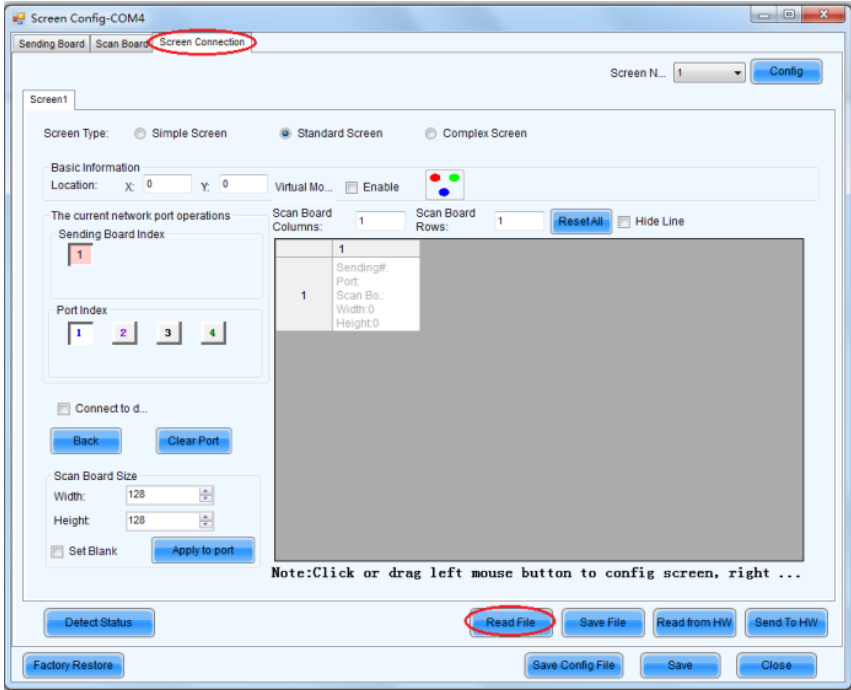


Figure 3-9 Screen Connection 1

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

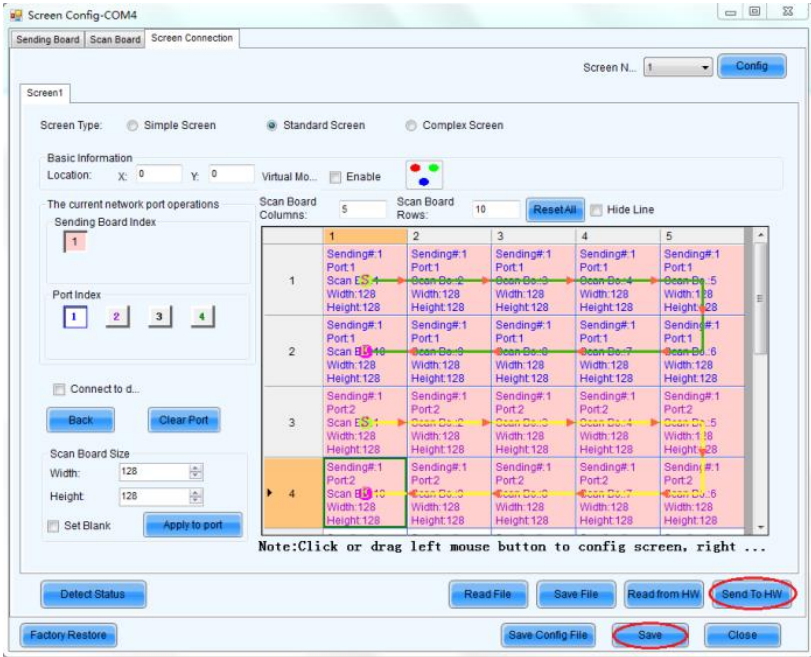


Figure 3-10 Screen Connection with Loaded File

3.4 Brightness Adjustment

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

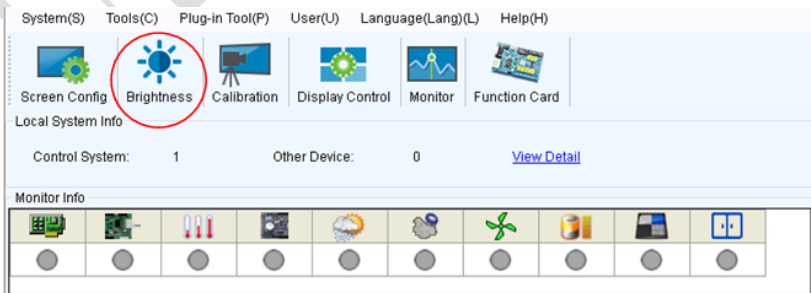


Figure 3-11 Main Window for Advanced User

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.

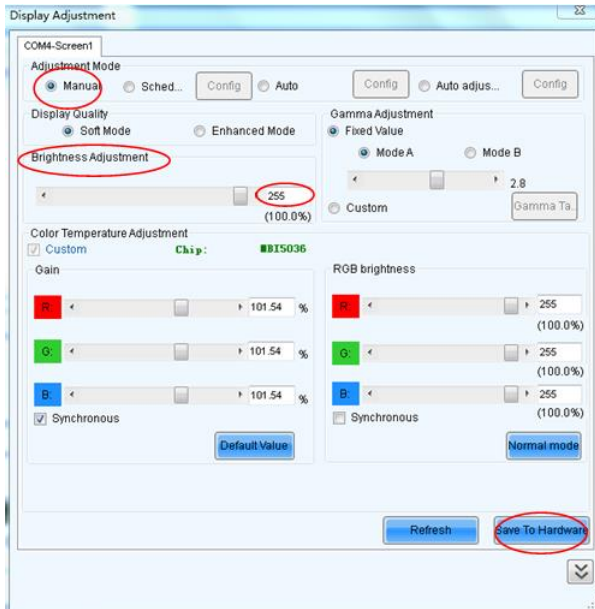


Figure 3-12 Manual Adjustment

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

The UpanelIII 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 scan board. This Section introduces how to upload the correction coefficients after replacing the modules or scan board.

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

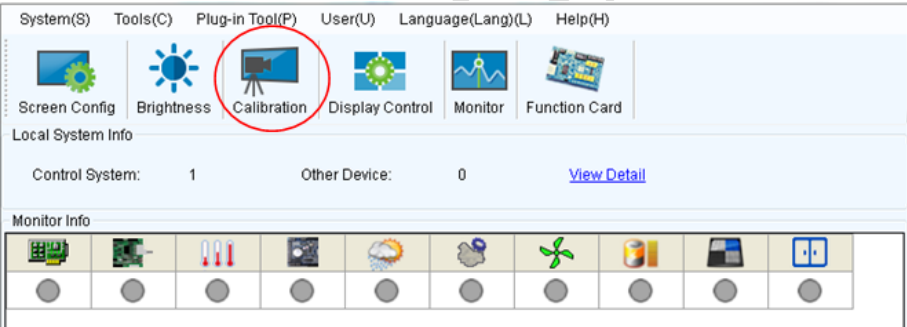


Figure 3-13 Main Window for Advanced User

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

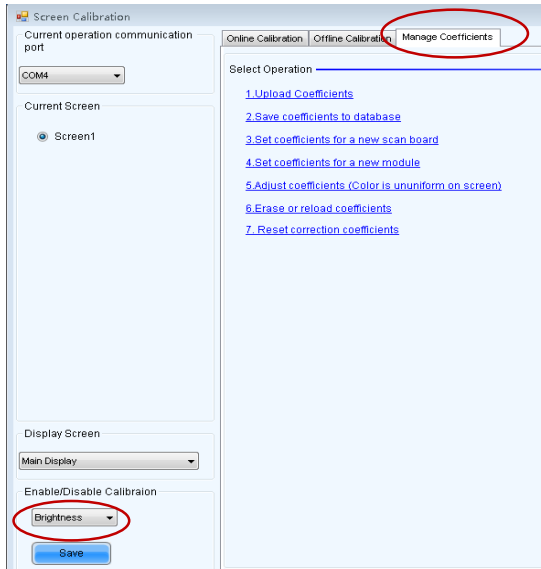


Figure 3-14 Manage Coefficients

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**.

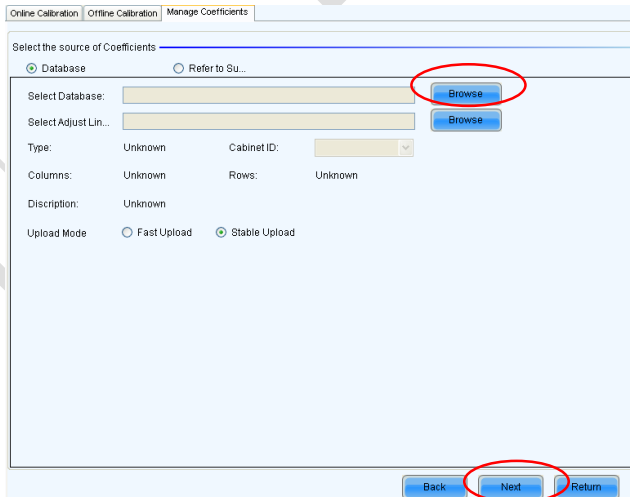


Figure 3-16 Obtaining Correction Coefficients for Receiving Card

3) Select the corresponding correction coefficients:

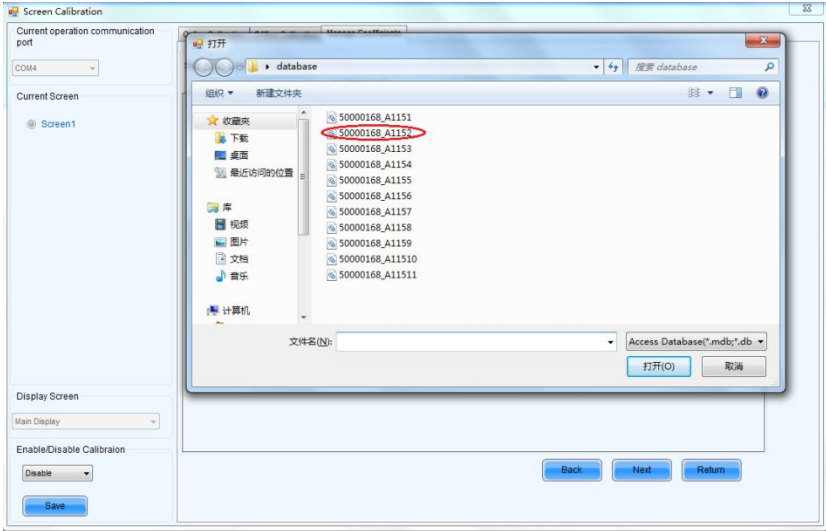


Figure 3-17 Selecting Correction Coefficients for Receiving Card

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

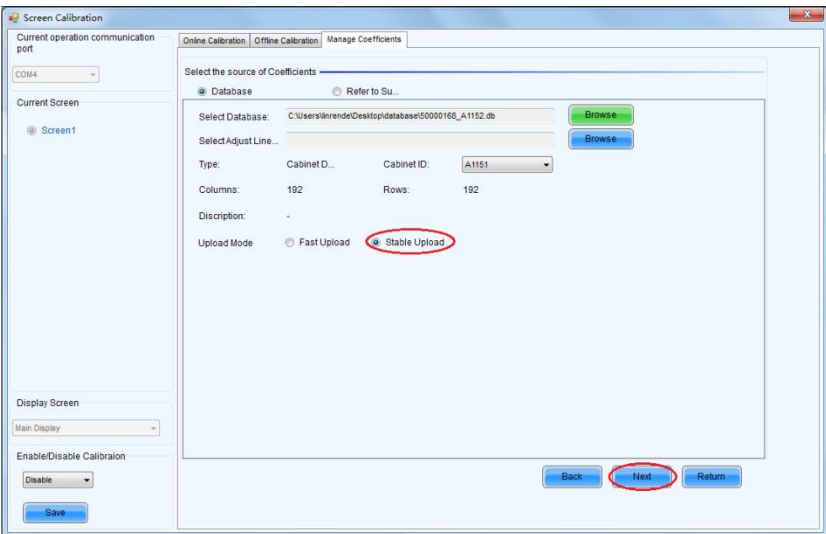


Figure 3-18 Uploading Correction Coefficients

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

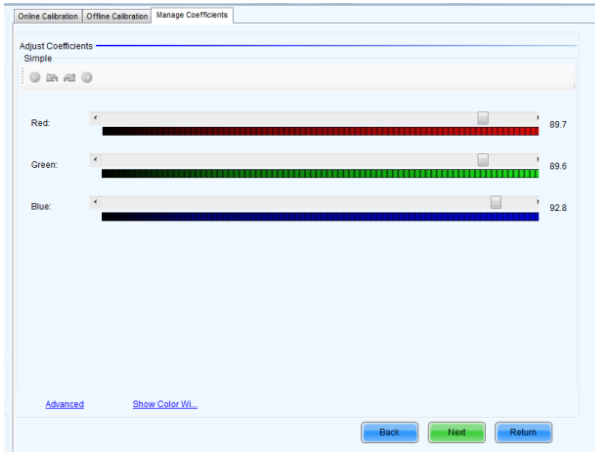


Figure 3-19 Simple Adjustment

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**.

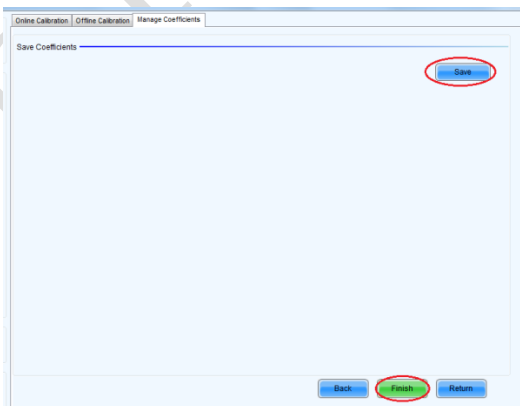


Figure 3-20 Saving Correction Coefficients

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:

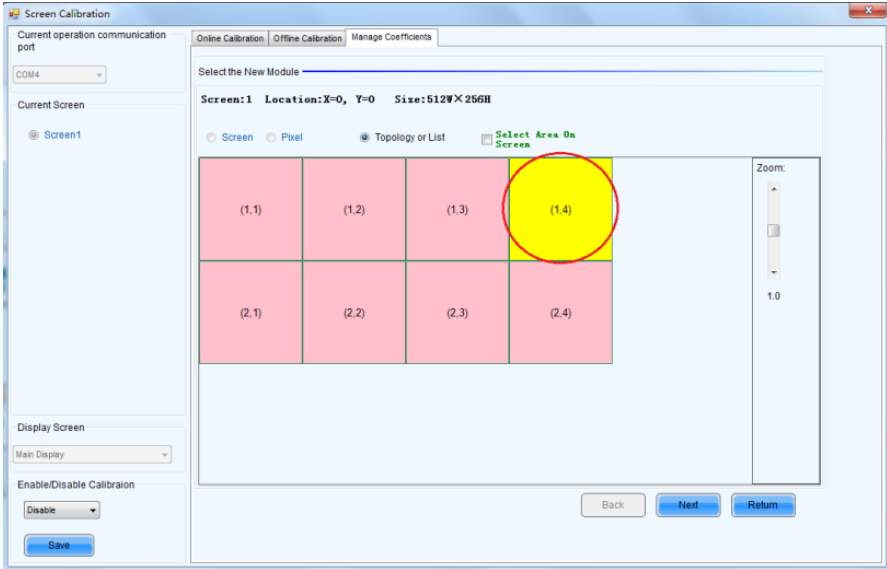


Figure 3-21 Selecting Cabinet for the New Module

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

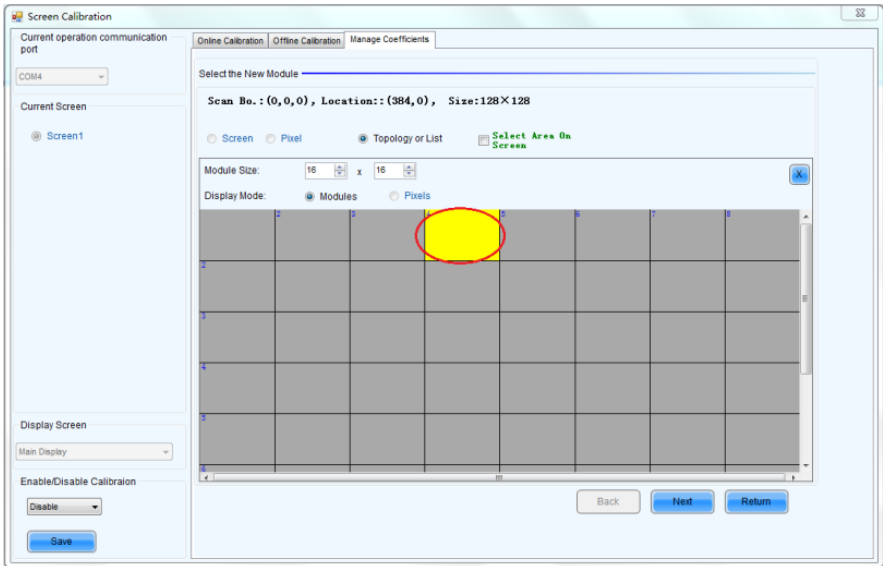


Figure 3-22 Selecting Position of New Module

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).

Chapter 3 LED Display Control Setting

- 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.

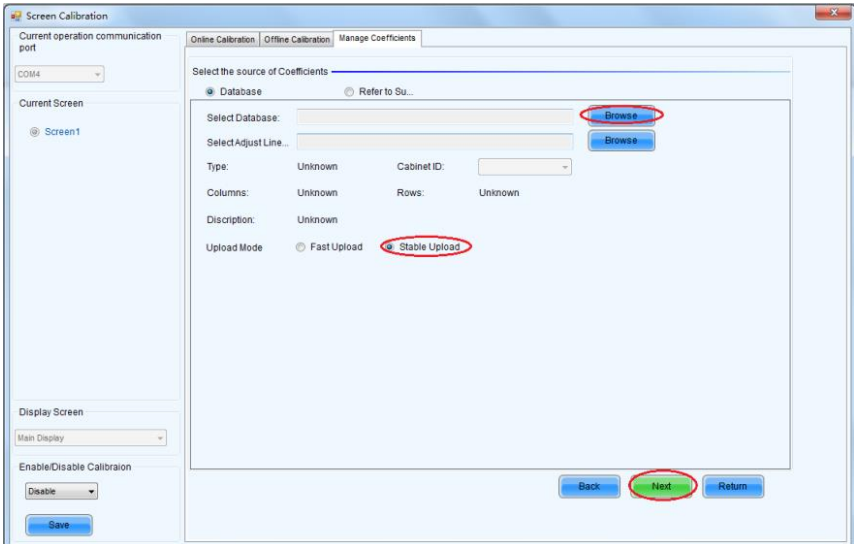


Figure 3-23 Obtaining Correction Coefficients for a New Module

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.

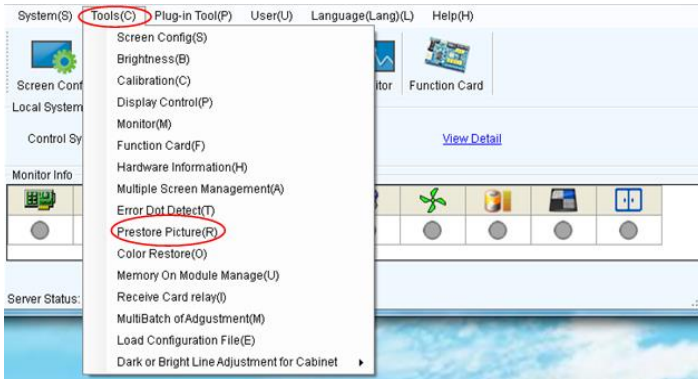


Figure 3-24 Prestore Picture

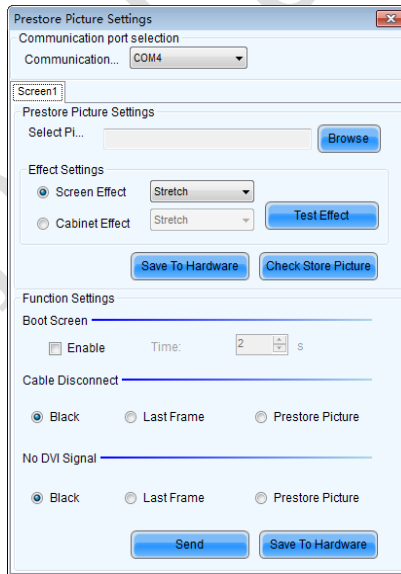


Figure 3-25 Prestore Picture Settings

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

3.7 Dehumidification Mode

In the main window, click "Tools" - "SD600E Dehumidification" to enter the dehumidification interface.

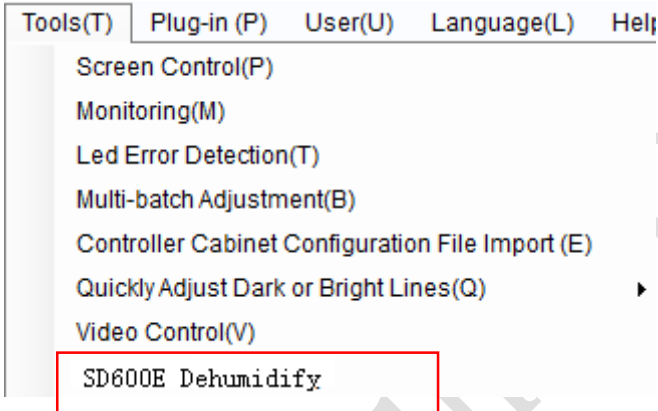


Figure 3-25 Dehumidification Setting

Select the corresponding dehumidification module and click "Settings" to enter the corresponding dehumidification mode.

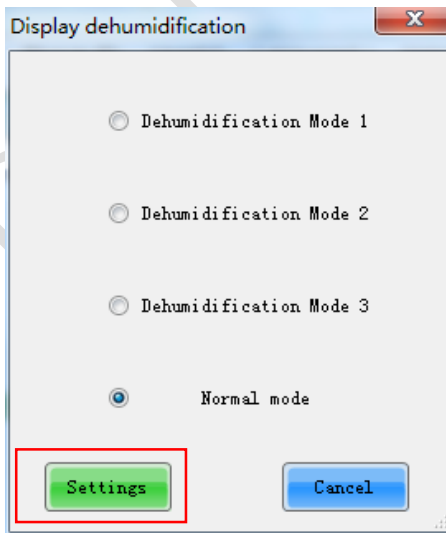


Figure 3-26 Dehumidification Interface

There are three dehumidification mode levels, and the dehumidification time corresponding to different dehumidification levels is different. Exit the dehumidification mode and select the normal mode. The default brightness value is 60% after exiting the dehumidification mode.

- 1) Dehumidification Mode 1 (low gear): The brightness gradually changes to 100% within 1 hour, and the change process is 0-18 minutes, brightness is 10%, 18-36 minutes brightness is 20%, and 36-50 minutes brightness is 50%, 50-60 minutes 100%.
- 2) Dehumidification Mode 2 (mid-range): The brightness gradually changes to 100% within 2 hours, and the change process is 0-36 minutes, brightness is 10%, 36-72 minutes brightness is 20%, and 72-96 minutes brightness is 50%. %, 96-108 minutes brightness is 80%, 108-120 minutes 100%.
- 3) Dehumidification Mode 3 (high grade): The brightness gradually becomes 100% within 4 hours, the change process is 0% for 0-72 minutes, the brightness for 20-72 minutes is 20%, and the brightness for 144-192 minutes is 50%, 192- The brightness is 75% in 216 minutes and 100% in 216-240 minutes.

3.8 MDC Function

MDC function can design different brightness and color temperature scene modes for different application occasions such as monitoring room, meeting room, radio and television, etc. it is widely used in various fields with special requirements for color temperature and brightness of display screen.

3.8.1 MDC mode loading ways

In the main window, click "Tools" - "Controller Cabinet Configuration File Import" to enter the configuration file import controller interface.

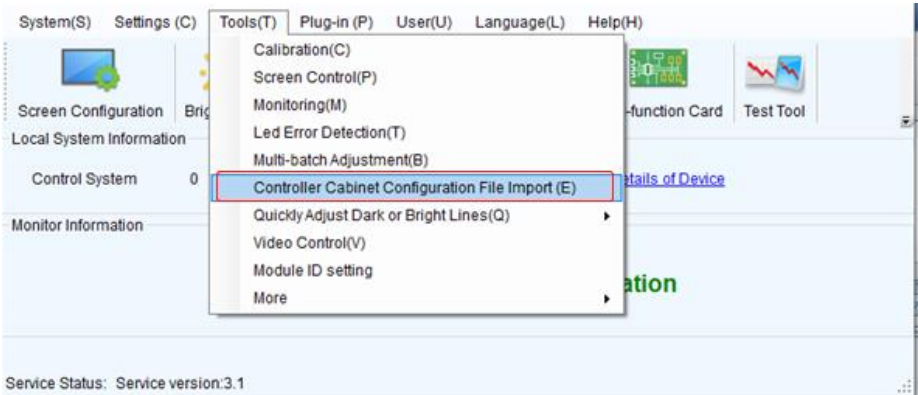


Figure 3-27 Controller Cabinet Configuration File Import

Select the configuration file to be imported to the controller, click "Add Configuration File" to add.

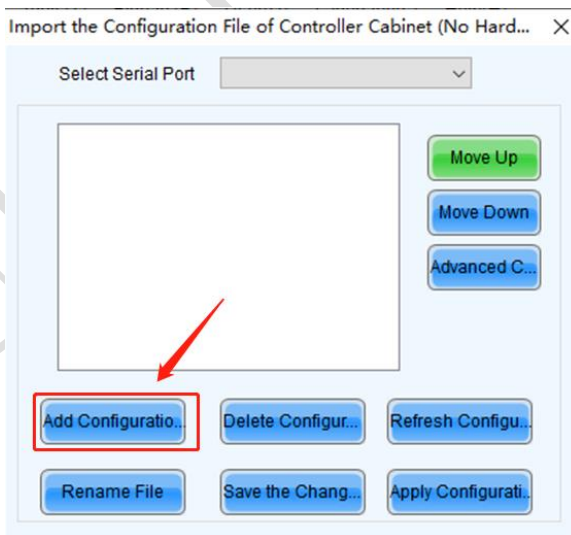


Figure 3-28 Add Configuration File

Through "Refresh Configuration File", you can see whether the configuration file is saved to the device successfully in real time.

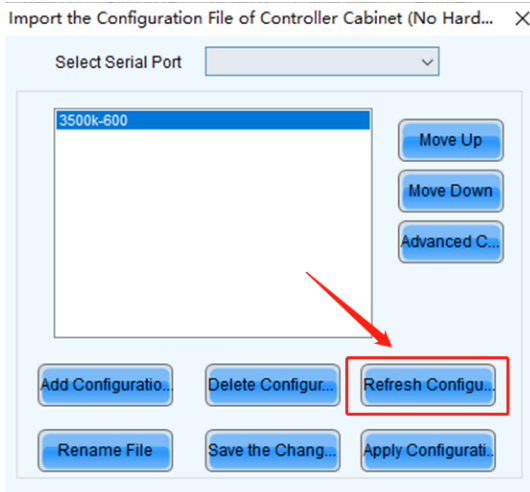


Figure 3-29 Refresh Configuration File

After the configuration file is stored in the controller, click "Apply Configuration File" to send it through the software.

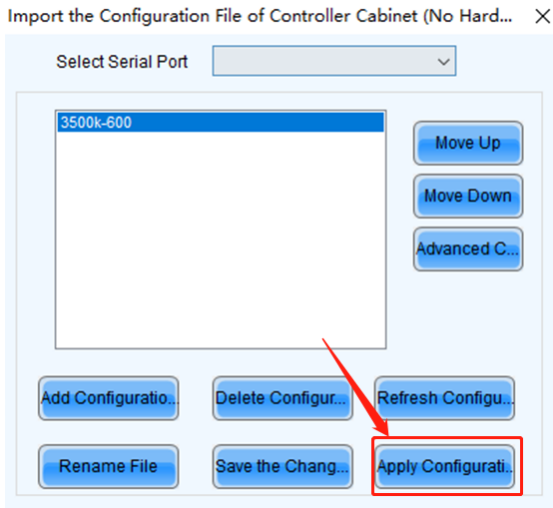


Figure 3-30 Apply Configuration File

Wait for the software to prompt that the application is successful, that is, the configuration file is sent successfully, and complete the different MDC mode switching.

3.8.2 MDC mode switching ways

1) Quickly software switching

In the main window, click "Tools" - "Controller Cabinet Configuration File Import" to enter the configuration file import controller interface.

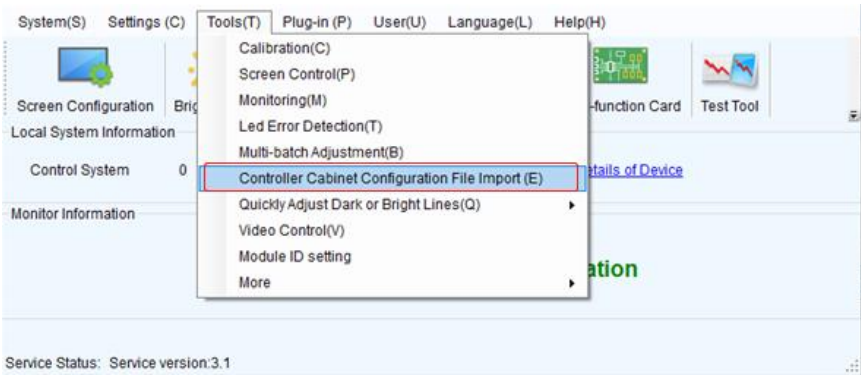


Figure 3-31 Controller Cabinet Configuration File Import

Select the required application mode profile, click " Apply Configuration File " and the software prompts "Apply Succeeded" to complete the effect switching.

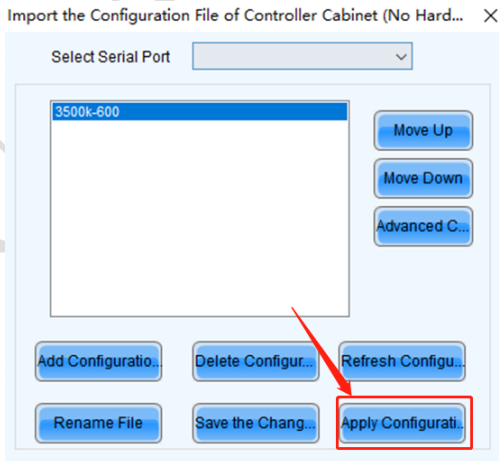


Figure 3-32 Select Apply Configuration File

2) Quickly hardware switching

Operate through the front panel of the sending box, " Press knob " - " Advanced Settings " - " Load RCFG Files " - " Select mode switch " - " Save to RV Card ". Enter the following screen.

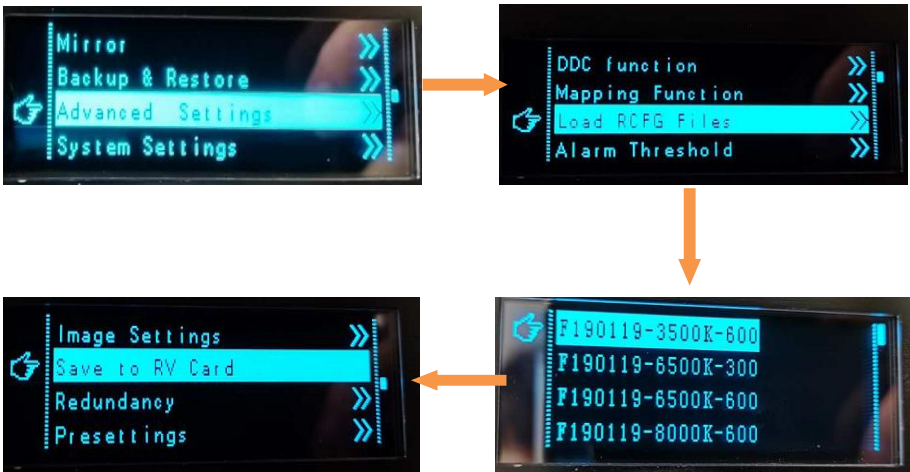


Figure 3-32 MDC mode switch on front panel of sender

Chapter 4 LED Display Playing Setting

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.

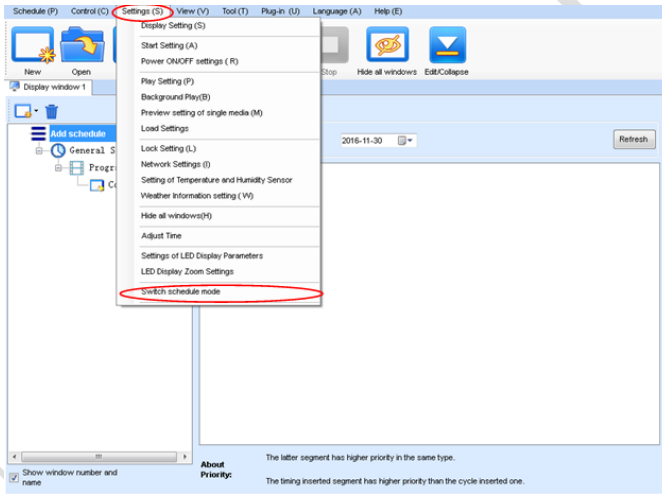


Figure 4-1 Switching Schedule Mode

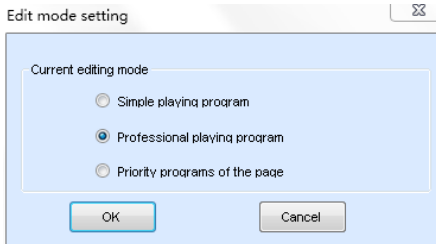


Figure 4-2 Edit Mode Setting

4.2 Playing Setting

4.2.1 Display Window Setting

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

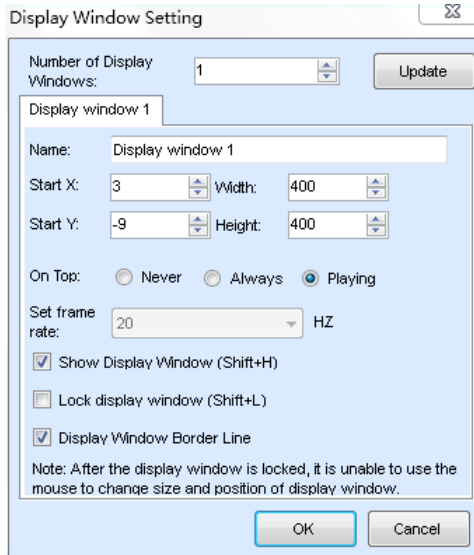


Figure 4-3 Display Window Setting

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:

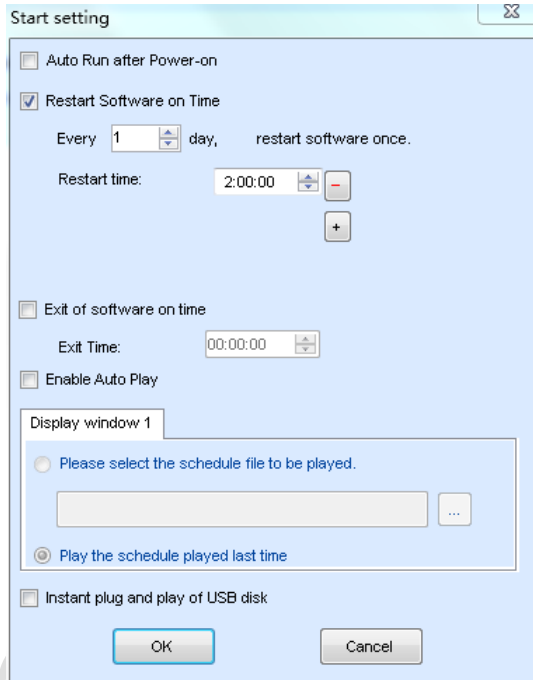


Figure 4-4 Startup Setting

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:

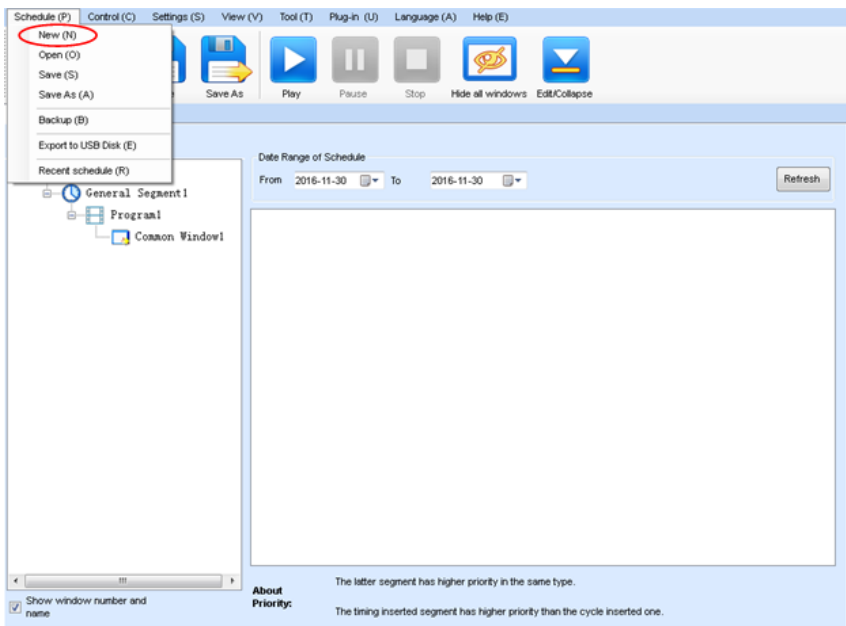


Figure 4-5 Creating a Playing Solution

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:

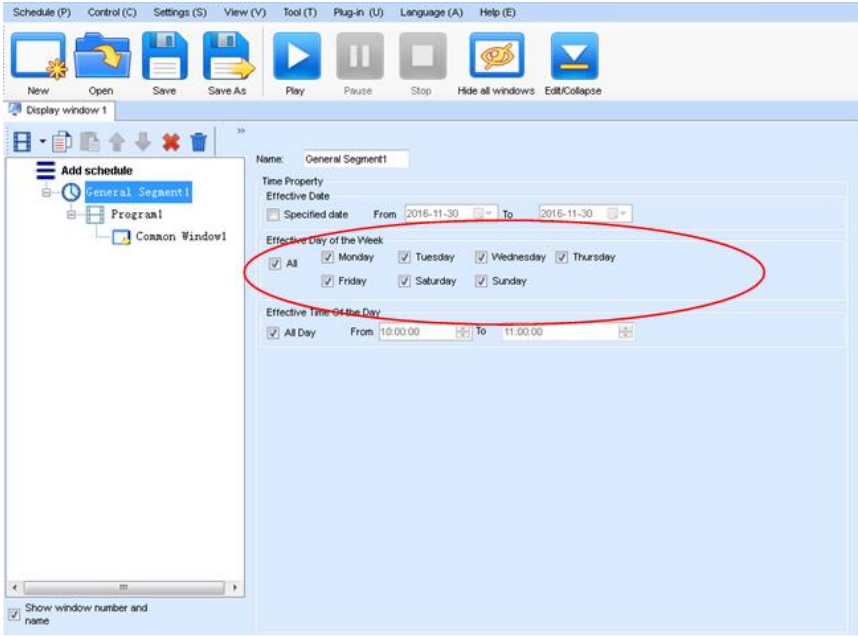


Figure 4-6 Properties of General Time Segment

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** button in the toolbar to create a program page:

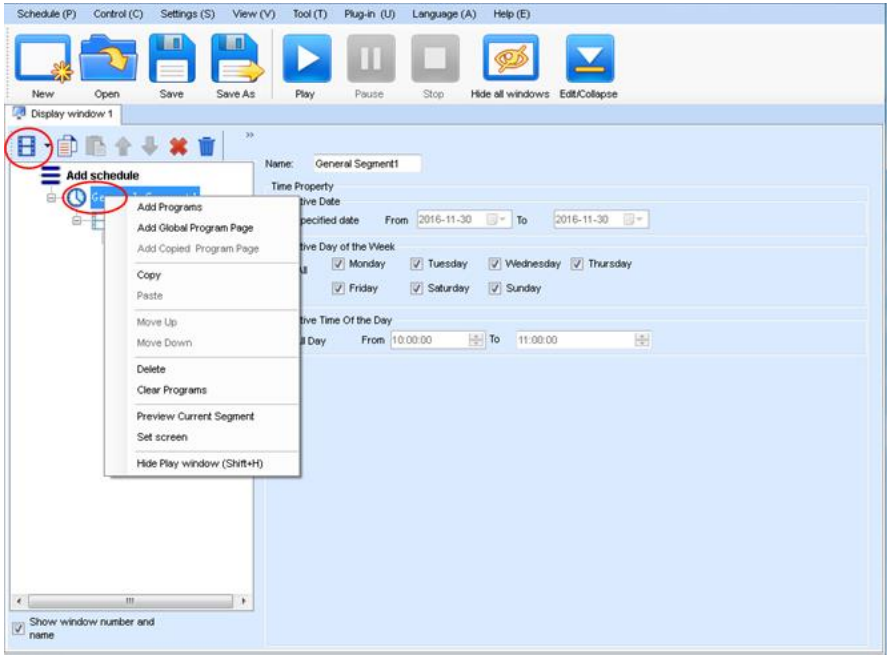


Figure 4-7 Creating a Program Page

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:

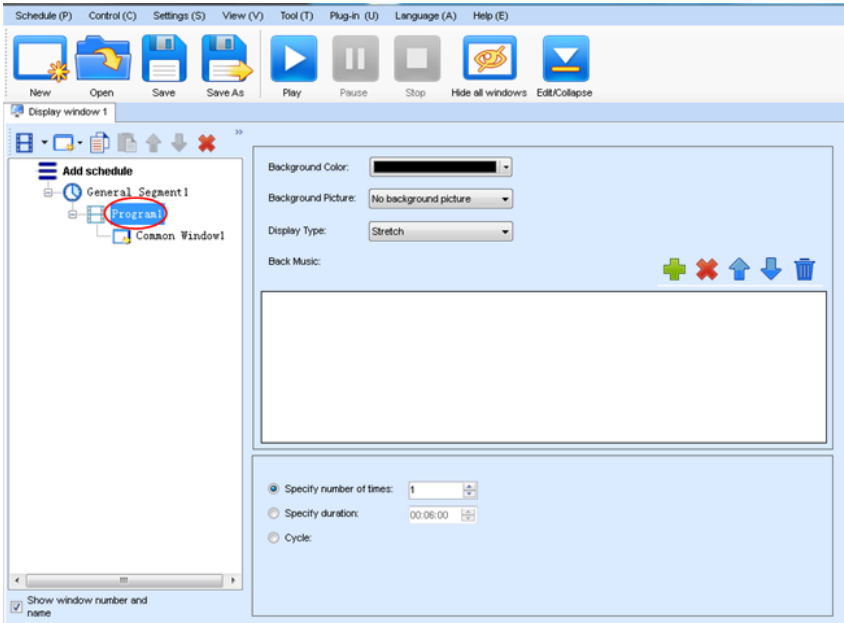


Figure 4-8 Properties of Program Page

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.

Chapter 4 LED Display Playing Setting

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.

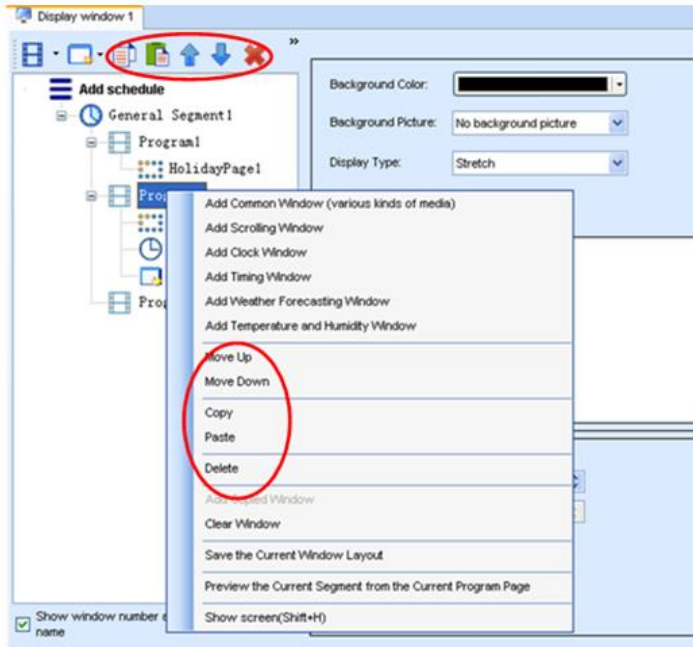


Figure 4-10 Program Page Operation Menu

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:

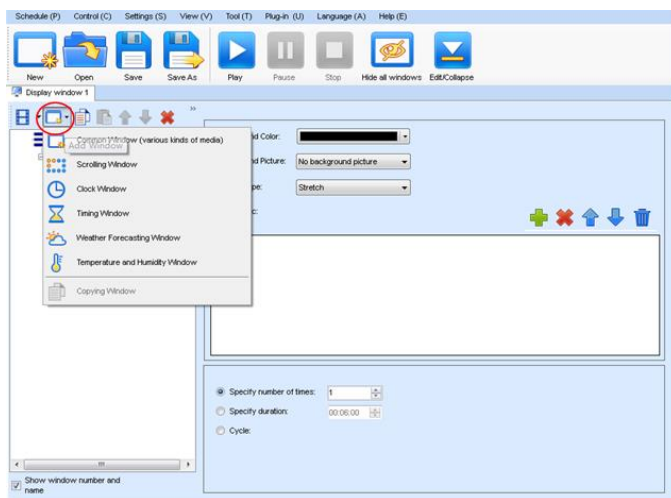


Figure 4-11 Adding a Window to Program Page

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

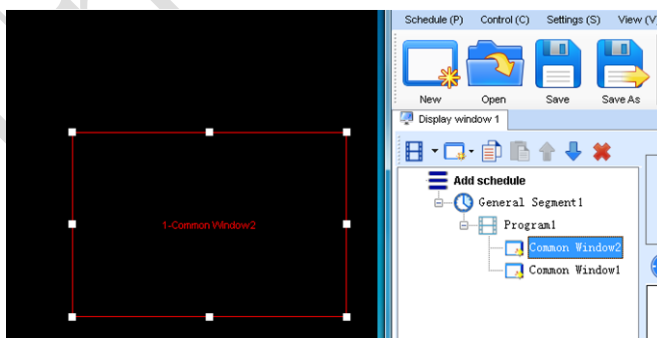


Figure 4-12 Added Window

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:

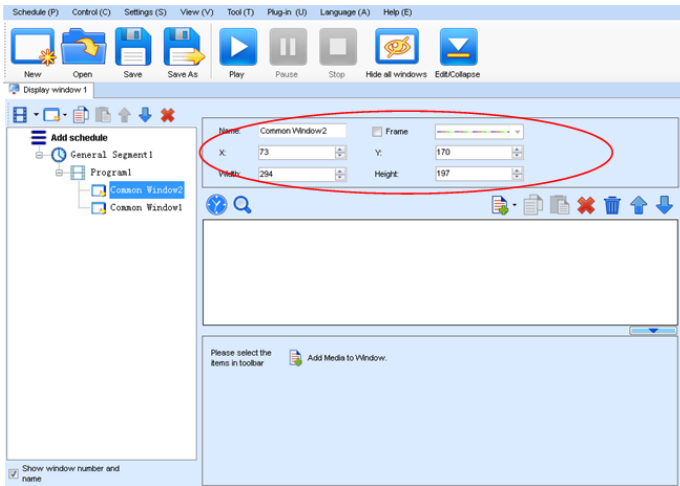


Figure 4-13 Setting the Window Size

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

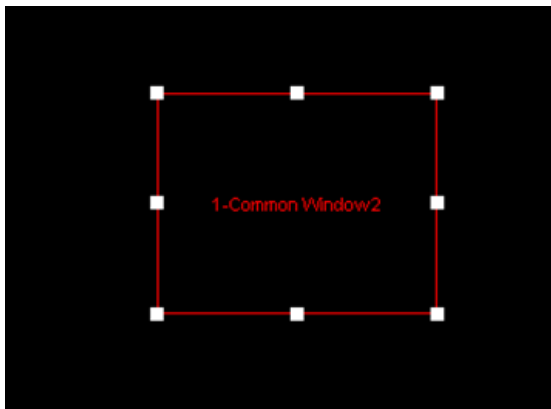


Figure 4-14 Adjusting the Window Size Using the Mouse

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:

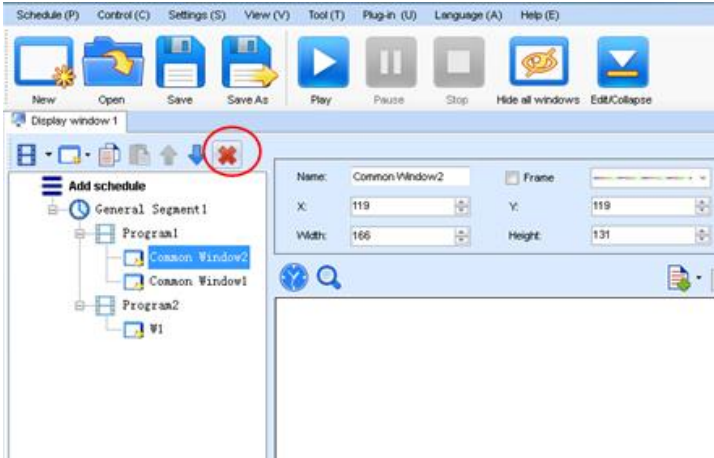


Figure 4-15 Deleting the Display Window

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:

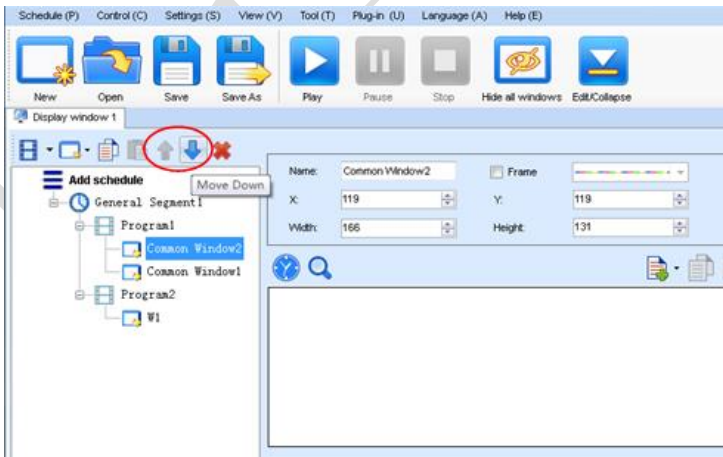


Figure 4-16 Moving a Display Window

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:

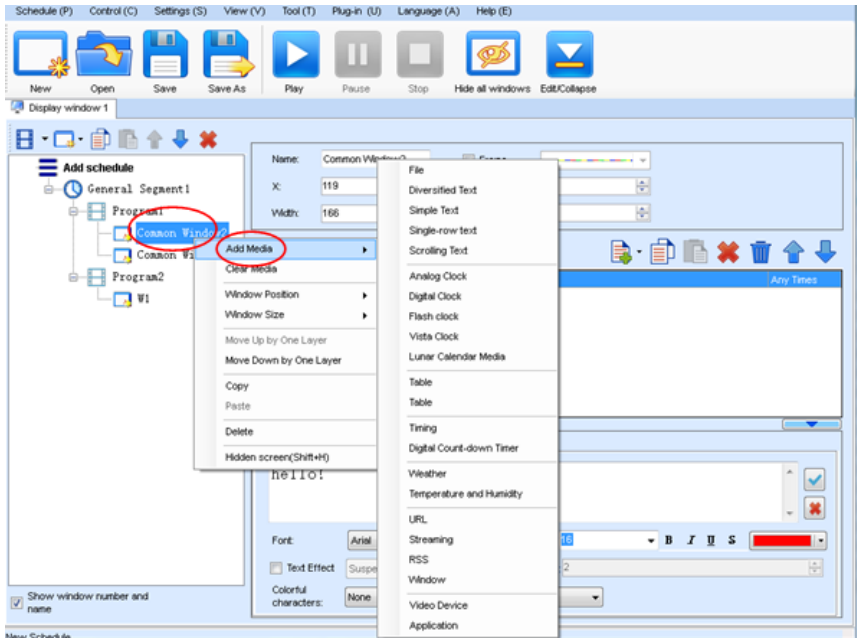


Figure 4-17 Adding the Media

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

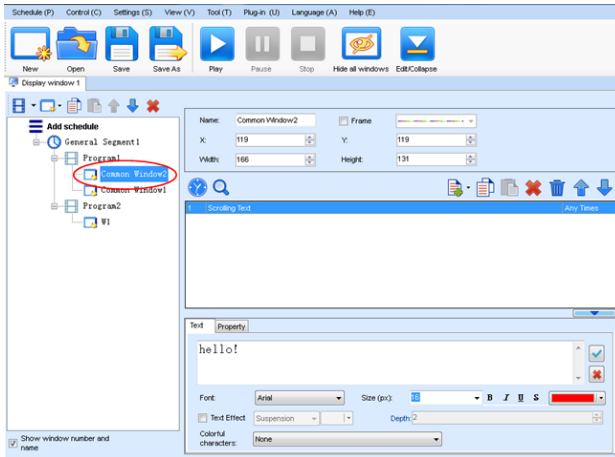


Figure 4-18 Media Setting Window

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:

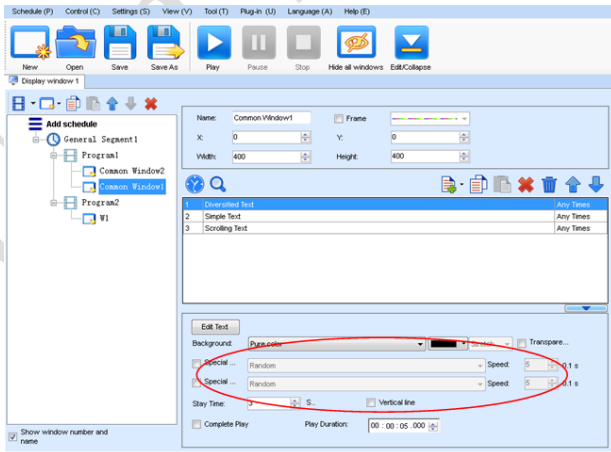


Figure 4-19 Properties of Medium

3) Editing the media in the common window

Chapter 4 LED Display Playing Setting

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:

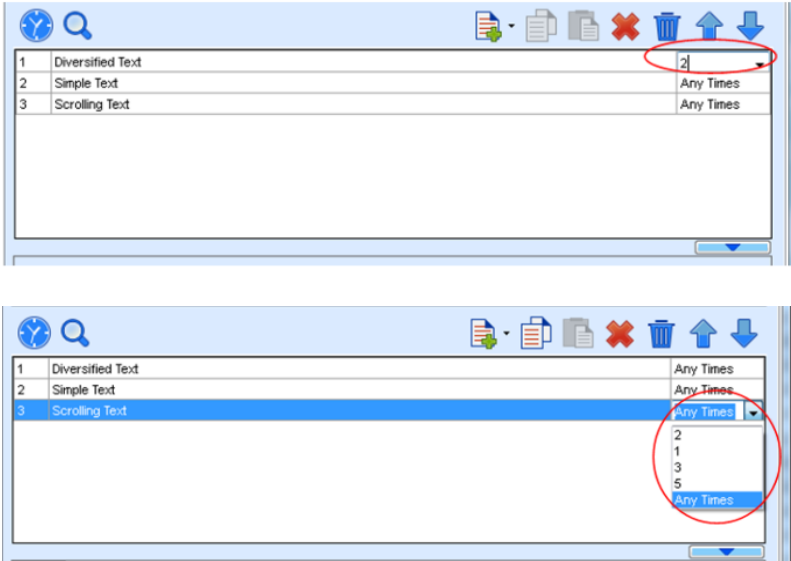


Figure 4-20 Changing the Media Playing Times

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

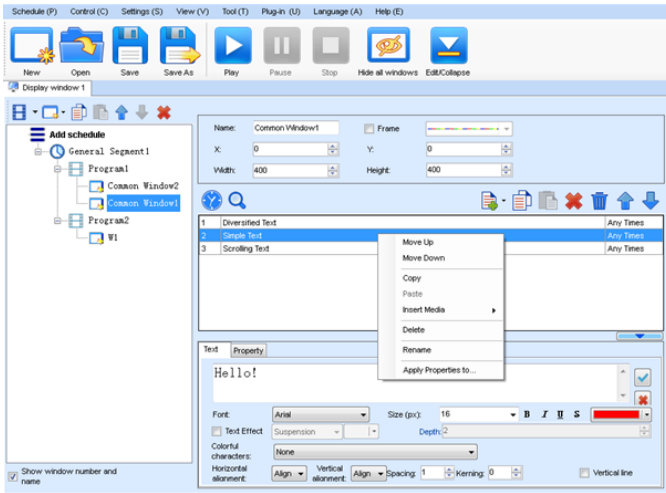


Figure 4-21 Media Operation Menu

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

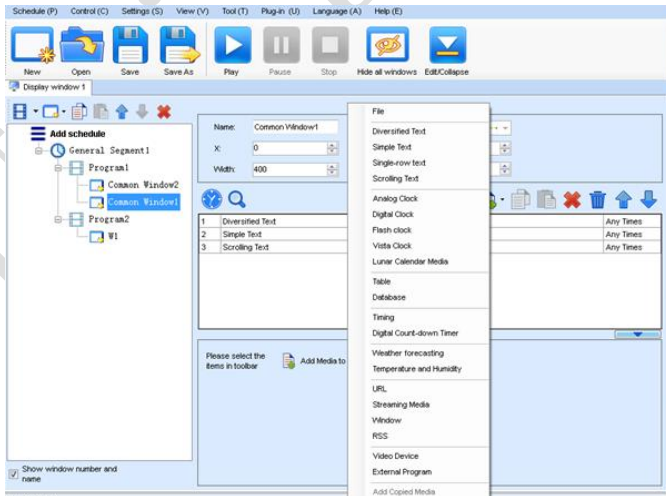


Figure 4-22 Media Playing Menu

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:

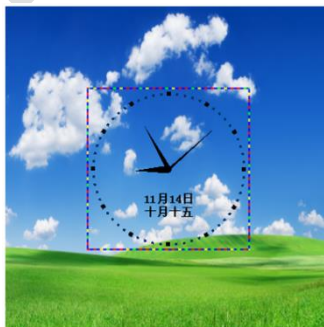


Figure 4-26 Transparent Displaying Effect of the Clock

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:

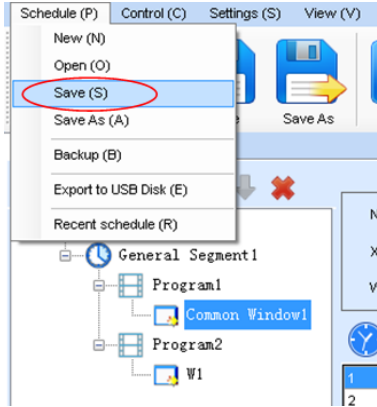


Figure 4-27 Saving a Playing Solution File

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:

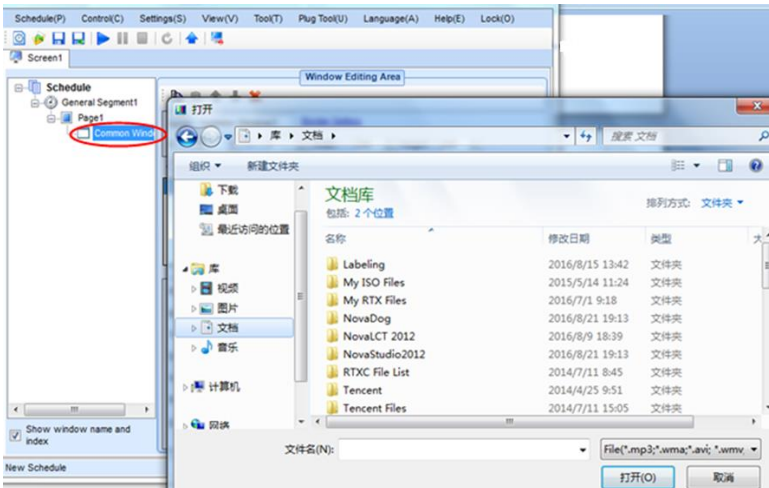


Figure 4-28 Opening a Playing Solution File

Chapter 5 Startup, Shutdown, and Maintenance

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 temperaure 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 Daily Maintenance

- 1) Check whether ambient temperature and humidity meet the operating conditions for the LED display on a daily basis.
- 2) Use the LED display and its auxiliary devices at least twice a week and two hours each time. Before using the LED display, perform warm-up operations if it has been idle for 14 days (for details about warm-up operations, see Section 5.4).
- 3) 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.
- 4) 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.
- 5) Check whether the steel structure is secure on a yearly basis.

5.4 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.

5.4.1 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.

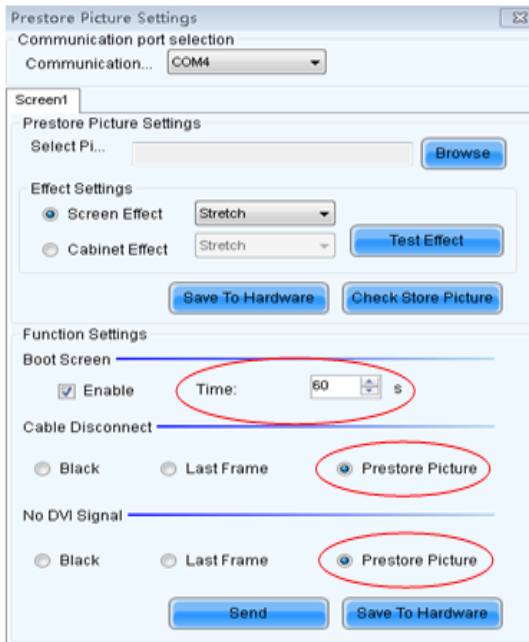


Figure 5-1 Prestore Picture Setting

5.4.2 Ageing

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

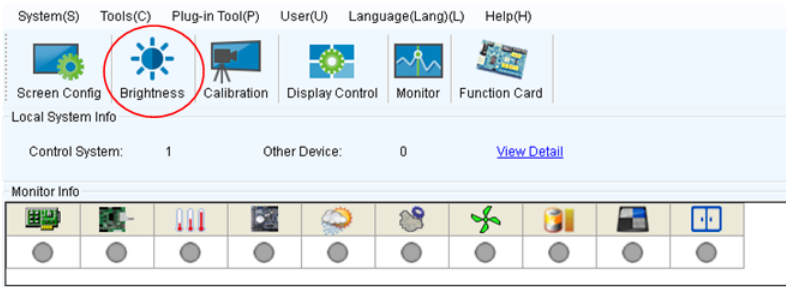


Figure 5-2 Main Window for Advanced User

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:

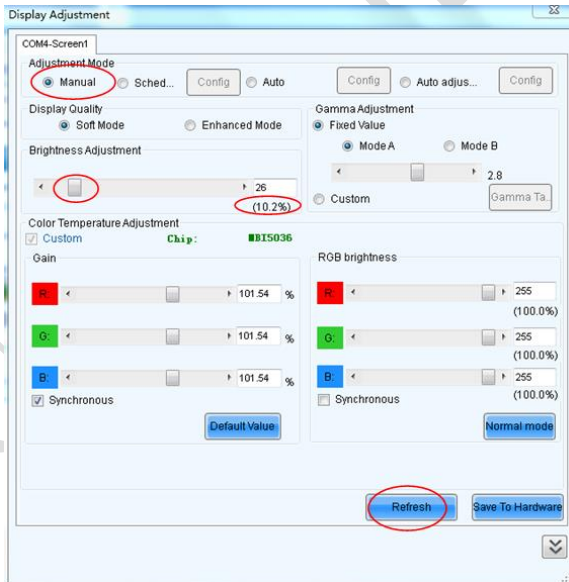


Figure 5-3 Manual Adjustment

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.

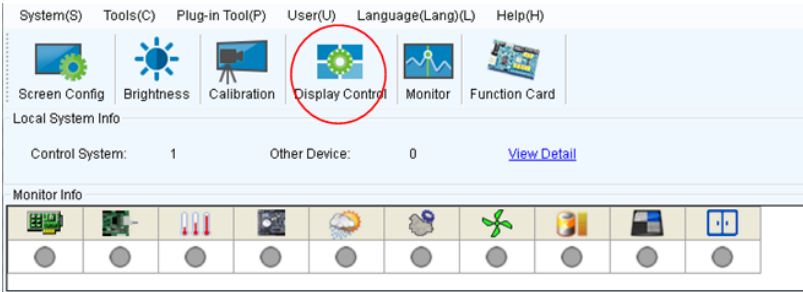


Figure 5-4 Display Control

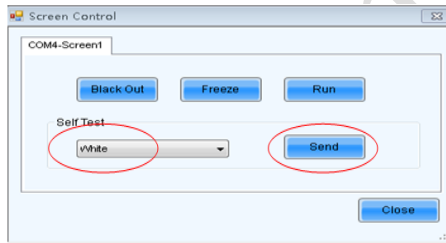


Fig 5-5 Display Control

5.4.3 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, cut off the power supply to ensure your personal safety and equipment safety.





6.2.1 Replacement of Module

Replace a module of the LED display based on the following steps:

Step	Picture	Description
1		<p>Locate the faulty cabinet, cut off the power supply</p>
2		<p>Take out the faulty module and replace it with a new one.</p>





6.2.2 Replacement of Power Supply

Replace a power supply of the LED display based on the following steps:

Step	Picture	Description
1		<p>Locate the faulty cabinet, cut off the power supply</p>
2		<p>Remove the module of the faulty cabinet and remove the HUB card.</p>
3		<p>Locate the faulty power supply, remove the fixed screws of the power cable and the fixed screws of the power supply</p>
4		<p>Take out the power supply .Replace the power supply with a new one.</p>





6.2.3 Replacement of Receiving Card

Replace receiving card of the LED display based on the following steps:

Step	Picture Instruction	Operation
1		<p>Locate the faulty cabinet, cut off the power supply</p>
2		<p>Remove the module of the faulty cabinet</p>
3		<p>Remove the fixed screws of the receiving card.</p>
4		<p>Replace the receiving card with a new one</p>

6.2.4 Replacement of HUB Card

Replace receiving card of the LED display based on the following steps:

Step	Picture Instruction	Operation
1		<p>Locate the faulty cabinet, cut off the power supply</p>
2		<p>Remove the module of the faulty cabinet</p>
3		<p>Remove the fixed screws of the HUB card.</p>
4		<p>Replace the HUB card with a new one</p>

Chapter 7 Packaging Transportation and Storage

7.1 Packaging

The UpanelIII series products would be packed in carton, and the carton is vacuum-packed in an anti-static bag, and finally packed in heavy-duty carton, as shown below:



Figure 7-1 Package in Carton



Figure 7-2 Package in Heavy-Duty Carton

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 three layers for plywood cases.

7.3 Storage

The cabinets shall be stored in an environment with an ambient temperature ranging from -20°C to $+55^{\circ}\text{C}$ and a relative humidity ranging from 10% to 85% RH. Do not store the cabinets in an environment with volatile, corrosive, or flammable chemical products.

Chapter 8 After-Sales and Warranty

8.1 Warranty Scope

This Warranty Policy applies to LED display products (hereinafter referred to as “Products”) purchased directly from Unilumin Group Co., Ltd. (hereinafter referred to as “Unilumin”) and within Warranty Period. Any products not purchased directly from Unilumin does not apply to this Warranty Policy.

8.2 Warranty Period

The warranty period shall be in accordance with the specific sales contract. Please make sure warranty card or other valid warranty documents are in safekeeping.

8.3 Warranty Service

Products shall be installed and used strictly aligned with the Installment Instructions and Cautions for Use stated in the product manual. If Products have defects of quality, materials, and manufacturing during normal use, Unilumin provides warranty service for Products under this Warranty Policy.

8.3.1 Warranty Service Types

1) Online Remote Free Technical Service:

The remote technical guidance provided through instant messaging tools such as telephone, mail, and other means to help solve simple and common technical problems. This service is applicable for technical problems including but not limited to the connection issue of signal cable and power cable, system software issue of software use and parameter settings, and replacement issue of the module, power supply, system card, etc.

2) Return to Factory Repair Service:

For problems of Products that cannot be solved by online remote service, Unilumin will confirm with the customers whether to provide returning to the factory repair service. If factory repair service is needed, customer shall bear the freight, insurance, tariff and customs clearance for return delivery of the returned products or parts to Unilumin’s service station. And Unilumin will send back the repaired products or parts to customer

and only bear one-way freight. Unilumin will reject unauthorized return delivery via pay upon arrival and will not be liable for any tariffs and custom clearance fees. Unilumin shall not be held liable for any defects, damages or losses of the repaired products or parts due to transportation or improper package.

3) Provide On-site Engineer Service for Quality Issues:

If there is a quality issue as stipulated in Article 5 of this Warranty Policy, and Unilumin believes the condition is necessary, on-site engineer service free of charge will be provided. In this case, customer shall provide a fault report to Unilumin for on-site service application. The content of the fault report shall include but not limited to photos, videos, number of faults, etc., to enable Unilumin to conduct preliminary fault judgment. If the quality problems is not covered by this Warranty Policy after the on-site investigation of Unilumin's engineer, customer shall pay travel expenses and technical service fees as per Article 7.4. Defective parts replaced by Unilumin's on-site engineers shall be the property of Unilumin.

8.4 Disclaimer

No warranty liability shall be assumed by Unilumin for defects or damages due to the following conditions:

- 1) Unless written agreed otherwise, this Warranty Policy does not apply to consumables, including but not limited to connectors, networks, fiber optic cables, cables, power cables, signal cables, aviation connectors, and other wire and connections.
- 2) Defects, malfunctions or damages caused by improper use, improper handling, improper operation, improper installation/disassembly of the display or any other customer misconduct. Defects, malfunctions or damages caused during transportation.
- 3) Unauthorized disassembly and repair without permission of Unilumin.
- 4) Improper use or improper maintenance not in accordance with the product manual.
- 5) Man-made damages, physical damages, accident damages and product misuse, such as component defect damage, PCB board defect, etc.
- 6) Product damage or malfunction caused by Force Majeure Events, including but not limited to war, terrorist activities, floods, fires, earthquakes, lightning, etc.

- 7) The product shall be stored in a dry, ventilated environment. Any product defects, malfunctions or damages caused by storage in an external environment that does not comply with the product manual, including but not limited to extreme weather, humidity, salt haze, pressure, lightning, sealed environment, compressed space storage etc.
- 8) Products used in conditions not meeting product parameters including, but not limited to lower or higher voltage, extreme or excessive power surges, improper power conditions.
- 9) Defects, malfunctions, or damages caused by non-compliance with technical guidelines, instructions, or precautions during the installation.
- 10) Natural loss of brightness and color under normal conditions. Normal degradation in the performance of the Product, normal wear and tear.
- 11) Lack of necessary maintenance.
- 12) Other repairs not caused by product quality, design, and manufacturing.
- 13) Valid warranty documents cannot be provided. Product serial number is torn or damaged. Product shell or other external parts are damaged.
- 14) Repairs after Warranty Period.
- 15) Products which have too significant damages caused by mishandling, accidents, improper maintenance, and failure to comply with product manual to be prepared.
- 16) Products malfunctions caused by unmatched play or control devices that are not provided by Unilumin. If Products are damaged arising out of the aforementioned unmatched devices and require Unilumin's repair, charging rate shall be as per Article 7.4.

8.5 Warranty Service Process

1) Remote Service Process:

Submit service requirements through website, email, telephone and other service channels of Unilumin with warranty card or contract number. Specific content of the service and contact information shall be provided.

2) Product Return to Repair Process:

Submit service requirements through the website, email, telephone and other service channels of Unilumin with warranty card or contract number. Packing list of the

returned product and postal information to receive the repaired product shall be provided.

Unilumin's postal information is stipulated in Article 11.

Customer instructions:

- a) Shall provide a brief fault report (can be attached to the surface of the repaired item)
 - b) Shall provide packing list (including contract number, model and quantity of the repaired item)
 - c) Shall provide receipt postal information (company name, address, consignee, contact information, etc.)
 - d) To avoid damages of the returned products during transportation, please be cautious about the package and protection of the products. Unilumin is not responsible for any damages to the returned products or parts during delivery.
- 3) On-site Engineer Service Process:

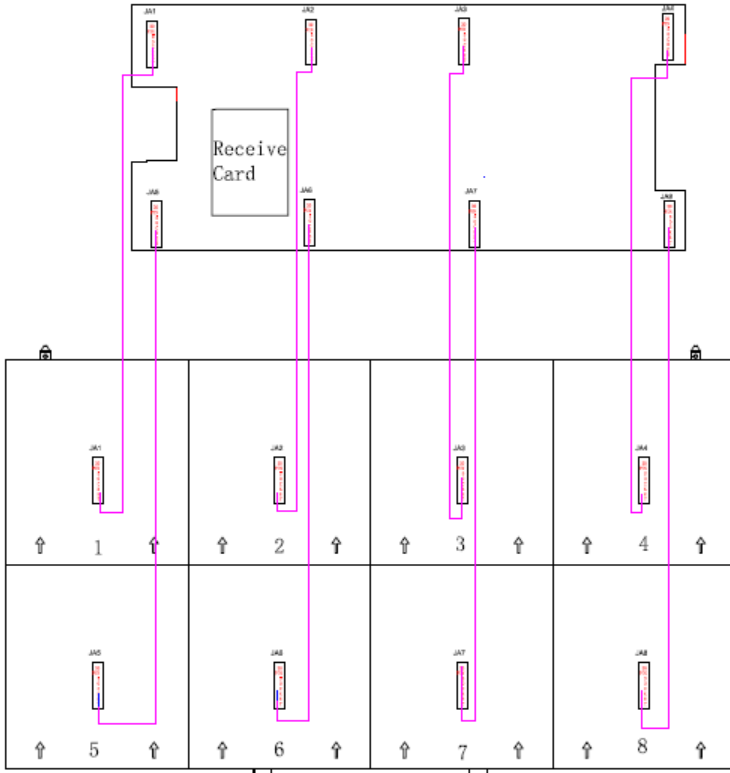
Submit service requirements through the website, email, telephone and other service channels of Unilumin with warranty card or contract number. Service content, site address, contact information, and visa application information shall be provided.

8.6 Other

This Warranty Policy is a standard application of Unilumin. No other third party (including any agent, distributor or sales representative) is authorized to make any representations or warranties that are different from this Warranty Policy. Unless otherwise confirmed by Unilumin in written forms of contract or other documents, any warranty clauses that conflict with this Warranty Policy shall be deemed to be automatically invalid. Final power of interpretation of this Warranty Policy shall be vested in Unilumin.

Attachment 1 - Path of Signal Cable inside the Cabinet

Receiving card Signal Cable Connection Diagram (Front View) of UpanelIII Series





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