Premier+ Series User Manual

Introduction

This manual may contain technical inaccuracies, operational inconsistencies, or typographical errors. We will update the content as product features are enhanced, and will periodically improve or revise the products and procedures described herein. Updates will be included in future versions of this manual without prior notice.

Environmental Declaration

Comply with local regulations regarding equipment packaging materials, depleted batteries, and disposal of used equipment, and support recycling initiatives.

About This Manual

This document is used to guide users. The screenshots and diagrams in this document are for explanation only. The actual situation may vary.

Agreement

Pattern	Agreement
	Note: Add necessary information to the description of the operation content

Symbol	Agreement
黑体	Interface menu, such as click Zoom

Precautions for Installation and Use

- Do not install devices in flammable and explosive environments.
- The temperature and humidity at the installation site must be within the normal operating range.
- Keep the device near vents to prevent heat accumulation.
- Ensure sufficient space around the device for proper heat dissipation.
- Do not remove device parts or connect cables while the power is on
- Implement Electrostatic Discharge (ESD) protection measures during installation and maintenance. Before handling the product, wear an ESD, wrist strap or ESD gloves that are grounded. All tools must be strictly grounded during assembly.
- The shell, cabinet, and screen of the switching power supply must be strictly grounded with a grounding resistance of no more than 10 ohms. Perform spot checks every six months.
- Do not knock, scratch, bump, or scratch the display surface with hard objects.
- Do not flood or soak the device.
- Do not turn the air outlet of the air conditioner directly against the display or make the temperature difference between the inside and outside of the display too large.
- Do not place or use the display in an environment where volatile, corrosive, or combustible chemicals are present.
- When cleaning the surface of the LED module, do not use unknown chemical liquids to avoid damage or corrosion of the LED.
- When cleaning the LED tube, gently wipe it with a clean soft rag dipped in alcohol, and wait until dry before use.
- When cleaning the kit, wipe the kit gently with clean soft cloth dipped in water. Do not leave any trace of water after wiping, and dry the kit before using.
- It is strictly prohibited to install and debug the large screen during the interior decoration.
- If any abnormal situation occurs on the display, such as odor, smoke, leakage, abnormal temperature, wading in the screen, etc., please cut off the power supply immediately, and then contact our technical personnel.
- Under normal circumstances, ensure that the display is on at least twice a week and the startup time is not less than 2 hours; It should be lit for no less than 2 hours a day during the return of tide.
- In order to ensure the display effect of the LED, it is necessary to regularly clean the dust with a soft anti-static brush.
- When servicing LED modules, it is recommended to use a thermostatic electric soldering iron, the temperature of the electric soldering iron is adjusted according to the composition of the tin wire.
- When repairing LED welding, the electric soldering iron temperature is generally set at about 315°C, the welding time is not more than 5s (preferably 3s), and the welding number is not more than three times.
- When repairing CMOS devices, the soldering iron temperature must be kept below 315°C, the welding time should not exceed 3s, and the welding times should not exceed three times.

- To ensure LED stability and service life, the module working surface temperature should not exceed 60°C, storage temperature should not exceed 60°C, otherwise necessary cooling measures must be taken.
- Use only the dedicated LED display switching power supply provided. The module adopts DC 4.6 input. Do not directly connect to 220V, otherwise the whole module will be burned.
- When installing the LED module, ensure that the power port is correctly connected, and the positive and negative terminals must correspond to each other; If the positive and negative terminals are reversed, power off in time to avoid damage to components.
- The module's operating voltage must not exceed 5.5V (maximum allowable).
- Avoid dropping, pushing, squeezing, or applying pressure to the module during use or transportation.

Special statement

- The figures in this document are for reference only. The actual product shall prevail.
- We do our best to ensure that the information in this manual is correct. Information is subject to change without prior notice due to upgrades or other reasons.
- This manual can be used as a guide for the use of multiple models of products. However, the usage information of each product is not listed. Please check it according to the actual product.
- Access to the Internet is at your own risk, including but not limited to the product may be subjected to network attacks, hacker attacks, virus infection, etc. The Company will not be responsible for the resulting product abnormal work, information leakage and other problems, the company will provide you with product related technical support in a timely manner.

Contents

Contents

Chapter 1: Product Introduction

This Series offers ultra-high color consistency, featuring a mirror-like black screen when idle and delivering vibrant brightness. Utilizing advanced fully flip-flop co-patterned Micro LED chips, this series achieves over 50% energy savings while maintaining the same brightness. The screen body temperature rise is minimal, ensuring high stability and reliability. The product is designed to withstand high-level pressure and collisions, with waterproof and dustproof capabilities. This Series supports infinite splicing combinations with no visible seams, delivering a stunning visual experience. Its hot-swappable modules ensure worry-free operation.

1.1 Features

(1) Efficient Heat Dissipation: High-precision seamless splicing, silent and fanless design, and a die-cast aluminum body;

(2) Low Power Consumption: Common cathode circuit design ensures energy efficiency and low power consumption. It features a high refresh rate, HDR (High Dynamic Range) for dynamic image display, and 16-bit high grayscale with low brightness;

(3) High Protection:TOPCOB technology provides surface waterproofing, anti-collision, and moisture-proof capabilities;

(4) Dual Redundancy: Dual backup for both power and signal ensures uninterrupted operation;

(5) Easy Maintenance: Full front maintenance with hot-swappable modules and an overall rigid connection design.

1.2.1 Cabinet Appearance

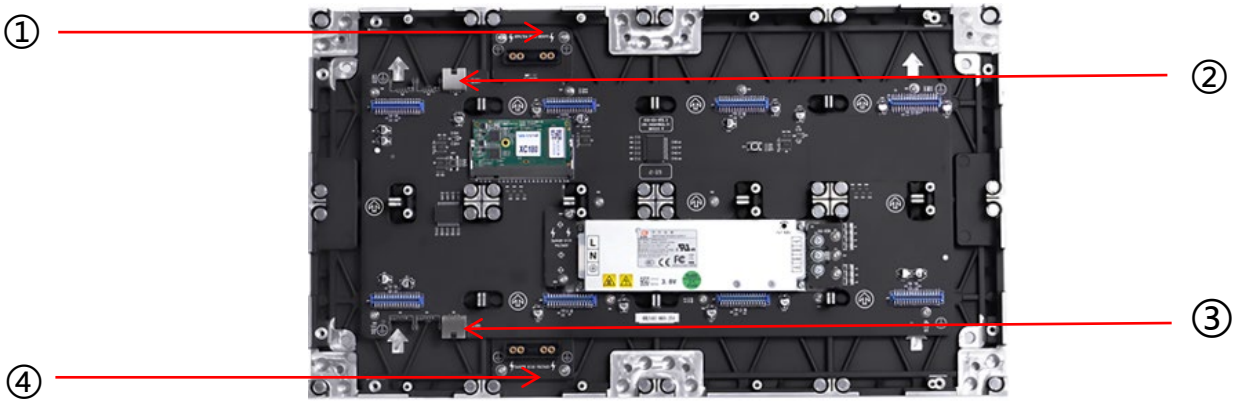


Fig 1-1

No	Descriptions
①	Power Output Terminals
②	Output Holefor Network Cable
③	Input Holefor Network Cable
④	Power Input Terminals

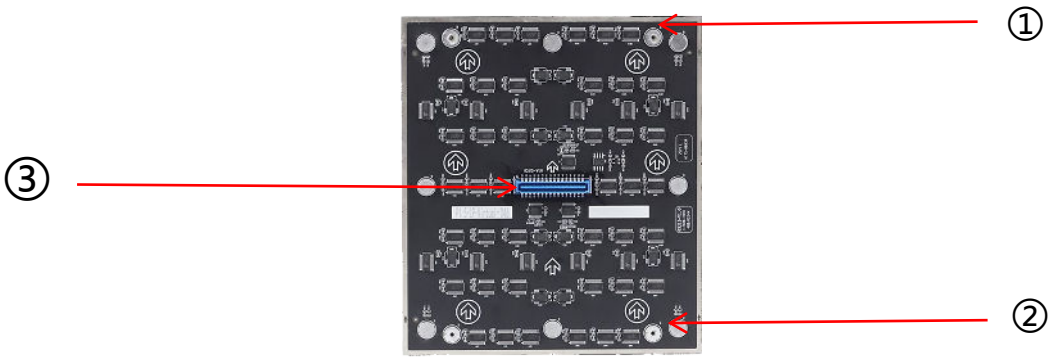


Fig 1-2

No	Descriptions
①	Sheet Ironof Light Plate
②	Positioning Copper Column
③	Power Supply, Signal Interface

1.2.2 Detail Product Drawing

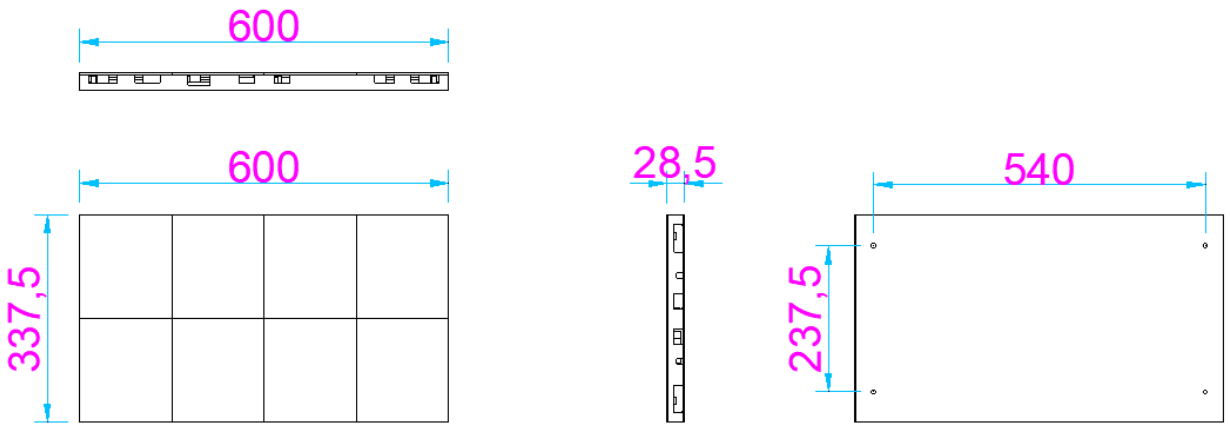


Fig 1-7

Fig 1-8

1.3 Internal Components of the Cabinet:

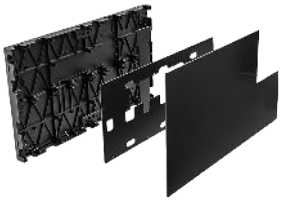
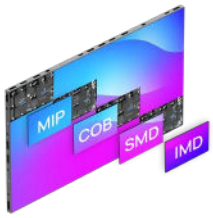


Fig 1-13



■ The internal structure of the fine-pitch LED is shown as follows:

Version 1	Version 2
LED Module *8	LED Module *4
Power Signal Converter Board *1	Power Signal Converter Board *1
Power Supply *1	Power Supply *1
Power Connector*2	Power Connector*2
Signal Port (RJ45 Network Port) *2	Signal Port (RJ45 Network Port) *2

■ The interface of the receiving card is shown as follows:

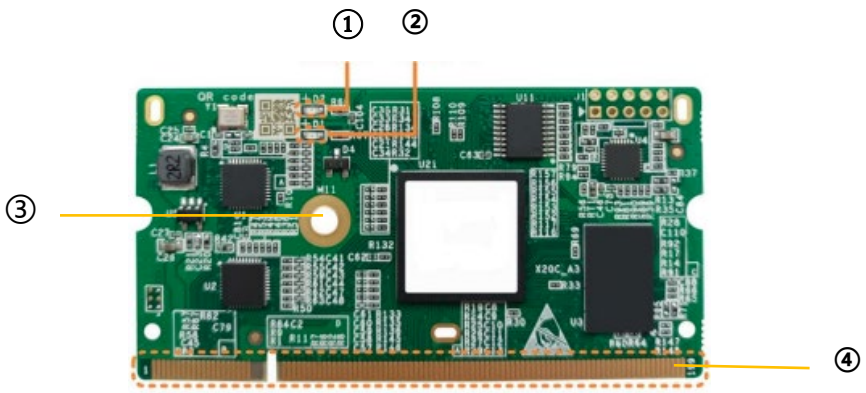


Fig 1-14

No	Description
①	The power indicator shows a steady red light when the power supply is functioning normally
②	The signal light blinks green rapidly (5 to 10 times per second), indicating normal data signal transmission
③	The hole positions are used to reinforce the receiving card and enhance its anti-vibration capability
④	The Goldfinger interface is used to connect to the screen adapter or unit board. The front left guide is the first pin in the figure above

Chapter 2: Installation and Wiring

2.1 Out-of-cabinet Inspection

Inspect the packages for damage. If intact, verify the main components against the shipping list.

The main components include cabinets, signal cable, power cable, USB cable, DVI cable, and sending cabinet. For

details about the components, refer to the shipping list.

Common cables include:

Power Cables

HDMI cables

signal input cables

USB cables

DisplayPort (DP) cables

DVI cables

Fig 2-1

2.2 Common tools

Common tools for LED installation preparation (the actual delivery may vary; the picture is for reference only):

Hexagon socket head cap screws

Allen key

Rubber Hammer

Connector (or Coupling Piece)

Grinder (or Sander)

Gloves (or Mittens)

Fig 2-2

2.3. Cabinet layout:

1. Open the packing cabinet to check the number of each cabinet, and find the packing cabinet of accessories (installation tools, screws, connecting pieces, etc.).
2. Unpack the cabinets and arrange them according to their numbered sequence, ensuring proper alignment based on cabinet size(Figure 2-4）.

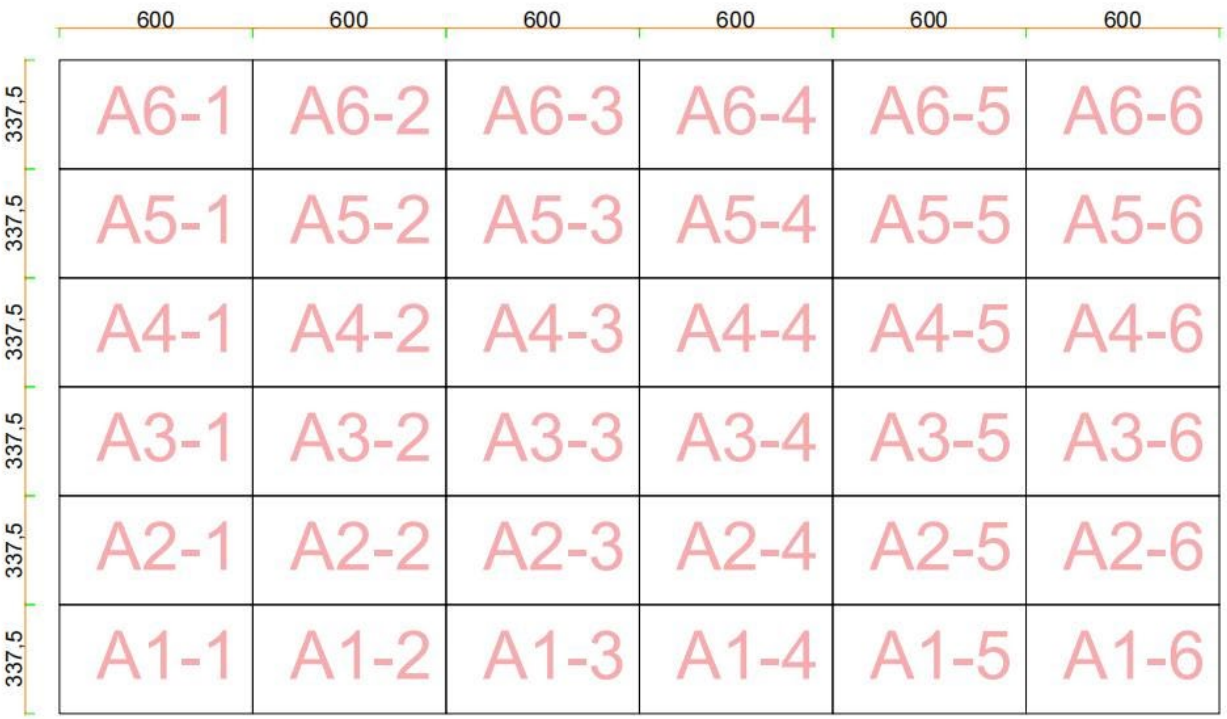


Fig 2-4

2.4 Ground installation process:

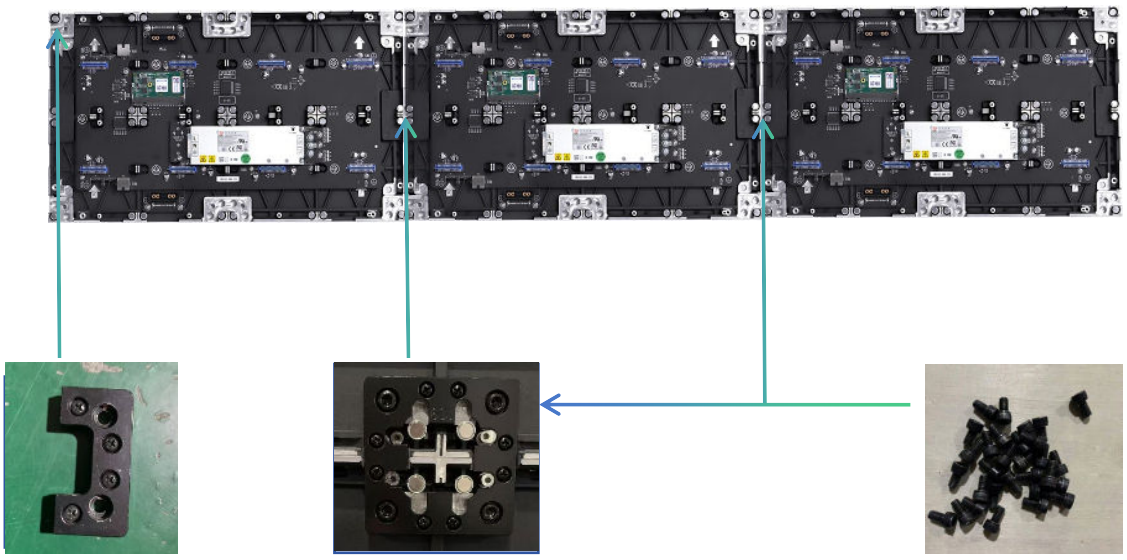
warning： The flatness tolerance for the black elf series cabinet splicing display screen must be within +/- 0.1mm and should remain vertical to the reference plane.

Installation process:

1.First, assemble the cabinets in the first row and adjust them to ensure they are level. The first row foundation is crucial.

2.After leveling, tighten the locks inside the left and right cabinets.

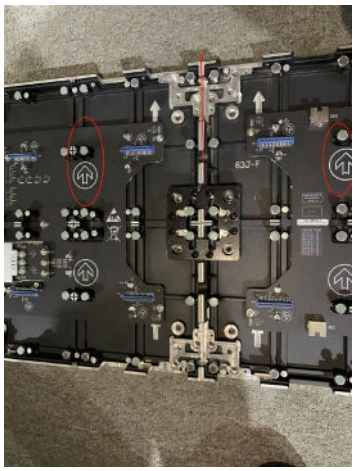
3.Secure the connection between the back of the cabinet and the cabinet connector with screws.



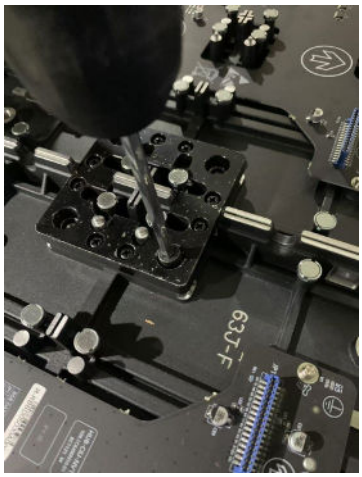
M5 screw

Front view

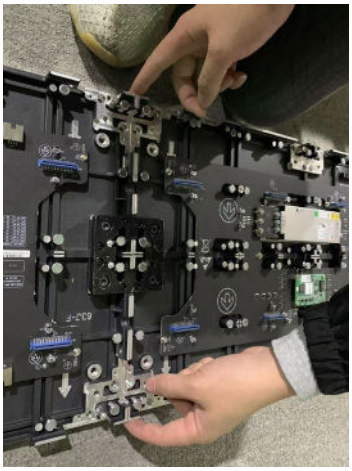
Back view



1. Pay attention to the direction of the arrow on the cabinet. Ensure that the cabinets are level and install the connecting piece accordingly

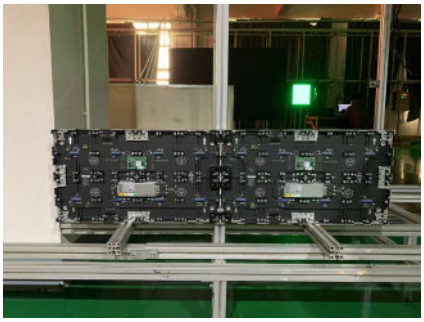


2. Use a hexagon socket wrench to tighten the screws.

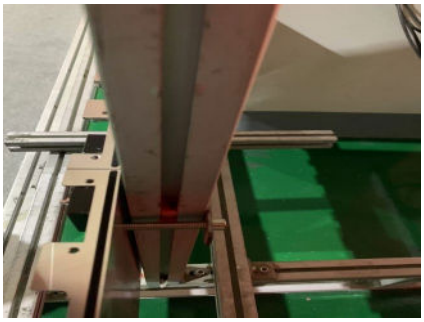


3. Ensure that the top and bottom are level, with a tolerance of no more than +/- 0.1mm.

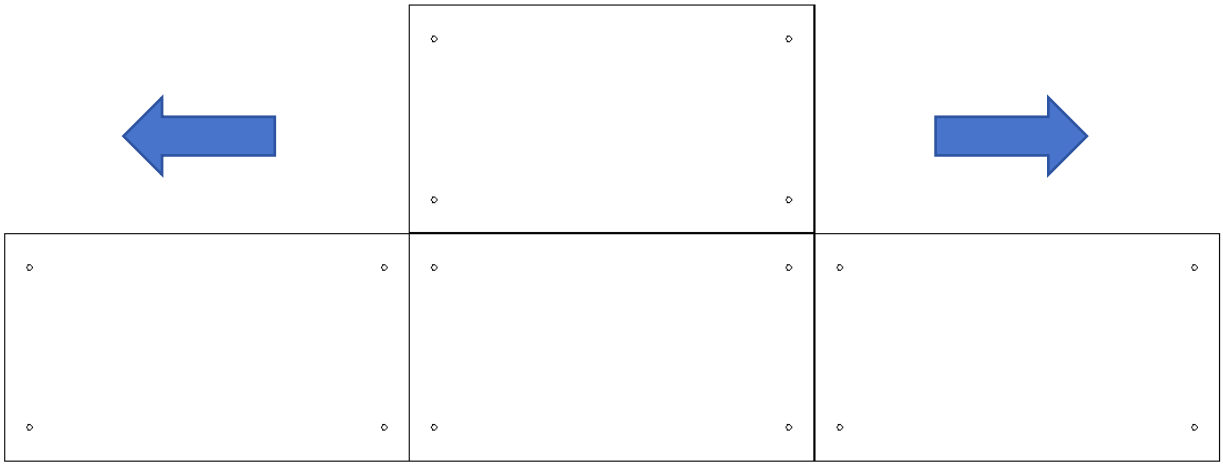
4. Proceed to connect the lower piece and secure it in place.



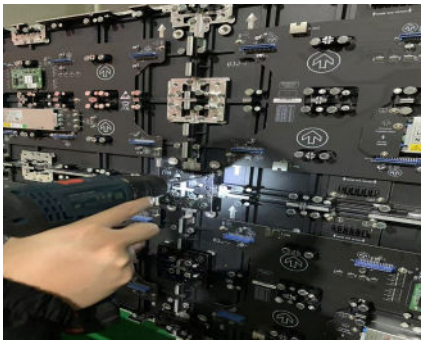
5. Place the cabinets on the ground, ensuring that their centers are level with the square tube.



6. Use the long connecting pieces and hexagon screws to secure the cabinet to the square tube.

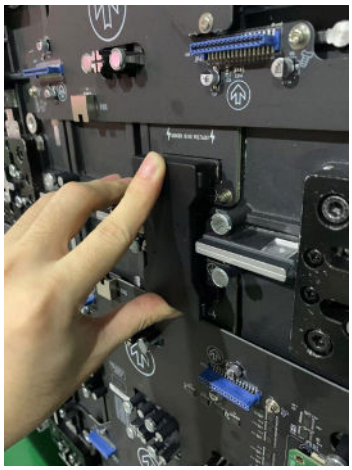


7.For multiple cabinets, secure them from the center first, then install the left and right sides.



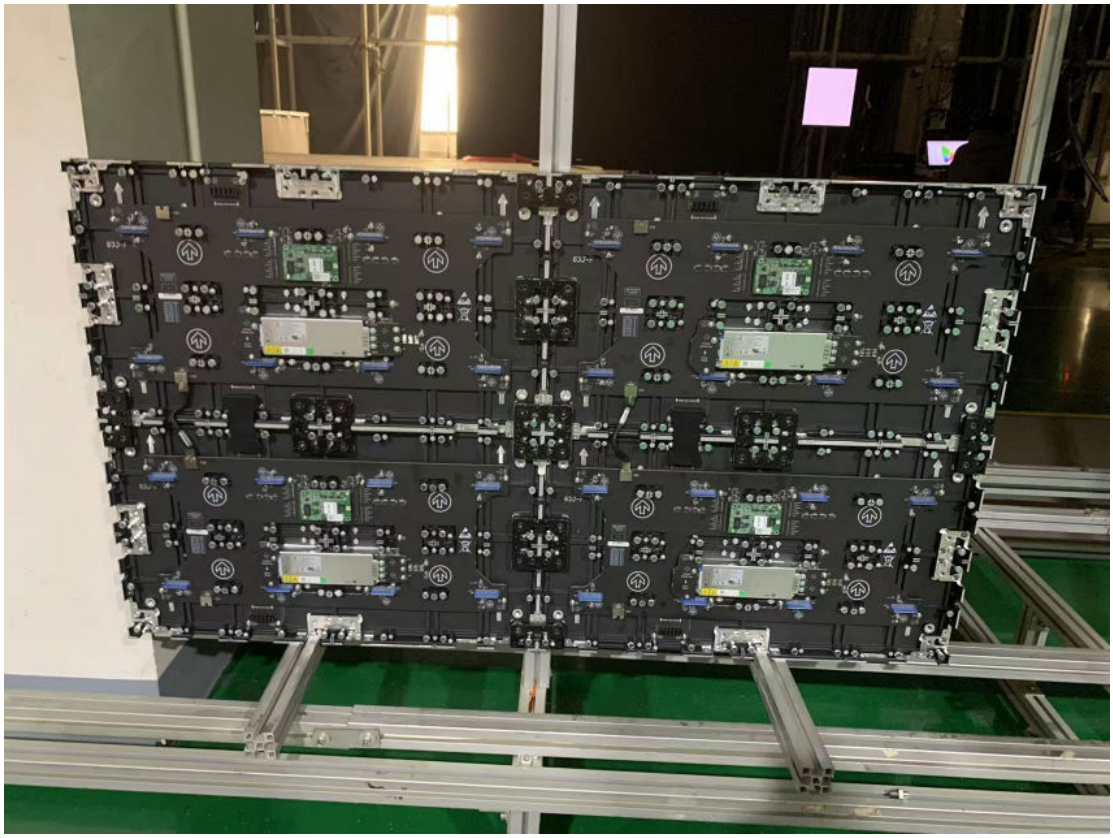
8. Proceed to secure the front connection piece.

9.Proceed to secure the rear connector



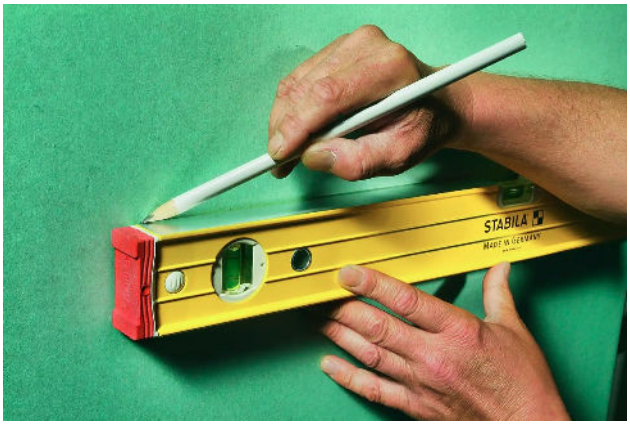
10.Install the power connector between the cabinets.

11. Install the short network cables between the cabinets.

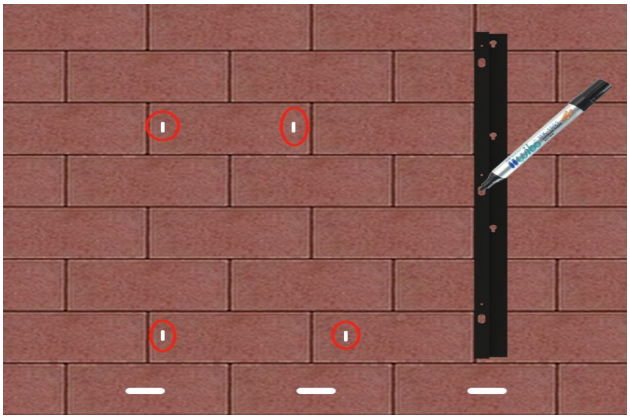


11. After installing the connector, verify the flatness of the connection and ensure the signal cable is properly connected. Once confirmed, connect the long signal cable and the long power cable according to the installation diagram.

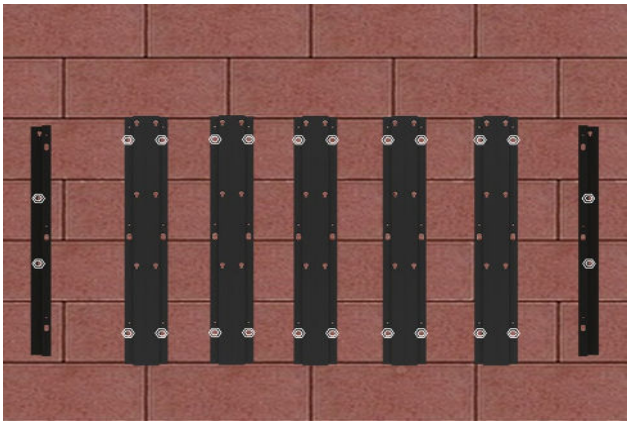
2.5 Back Frame Installation: (For details, refer to the steel structure design and installation diagram.)



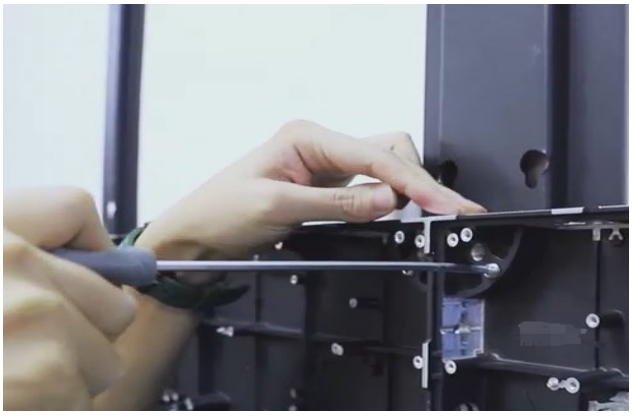
1. Use a level or laser to check the alignment and mark the distance



2. Position the wall mount according to the horizontal mark, ensuring the screws are properly aligned and marked.

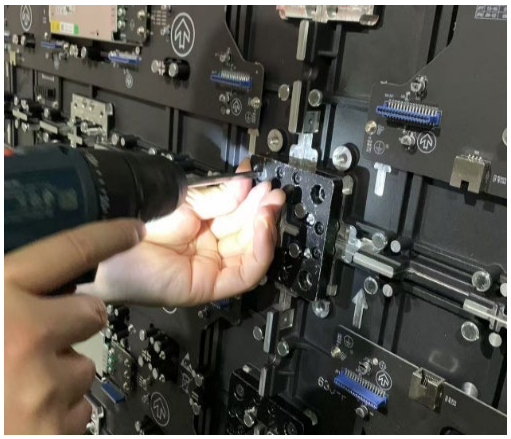


3. Use expansion screws to secure the marked points.

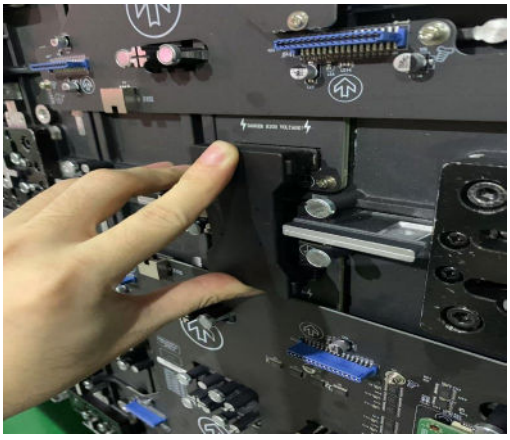


4. Secure the cabinet in the larger hole with set screws, then use a hex socket wrench to tighten the screws and mount it onto the bracket

5. Install the front connecting piece between the cabinets.



6. Use M5 screws to secure the connection, ensuring that the top and bottom are level. The tolerance must be within +/- 0.1mm.



7. Install the power connector between the cabinets

8. Install short network cables between cabinets

9.After installing the connector, please confirm the flatness of the connection and whether the signal cable is connected normally. After confirmation, connect the long signal line and long cable according to the installation drawing.

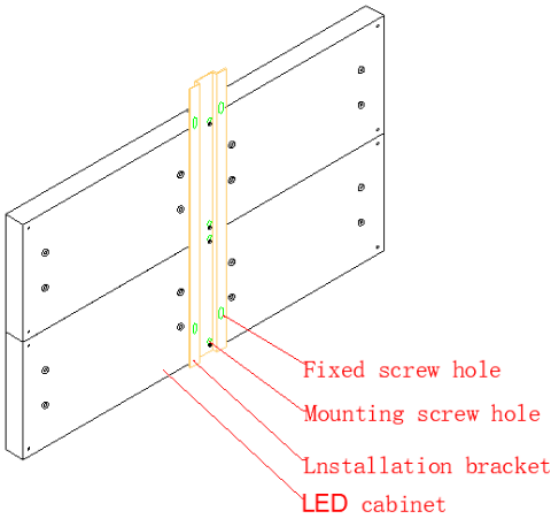


Fig 2-13

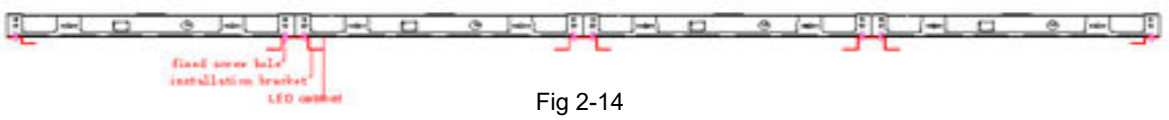


Fig 2-14

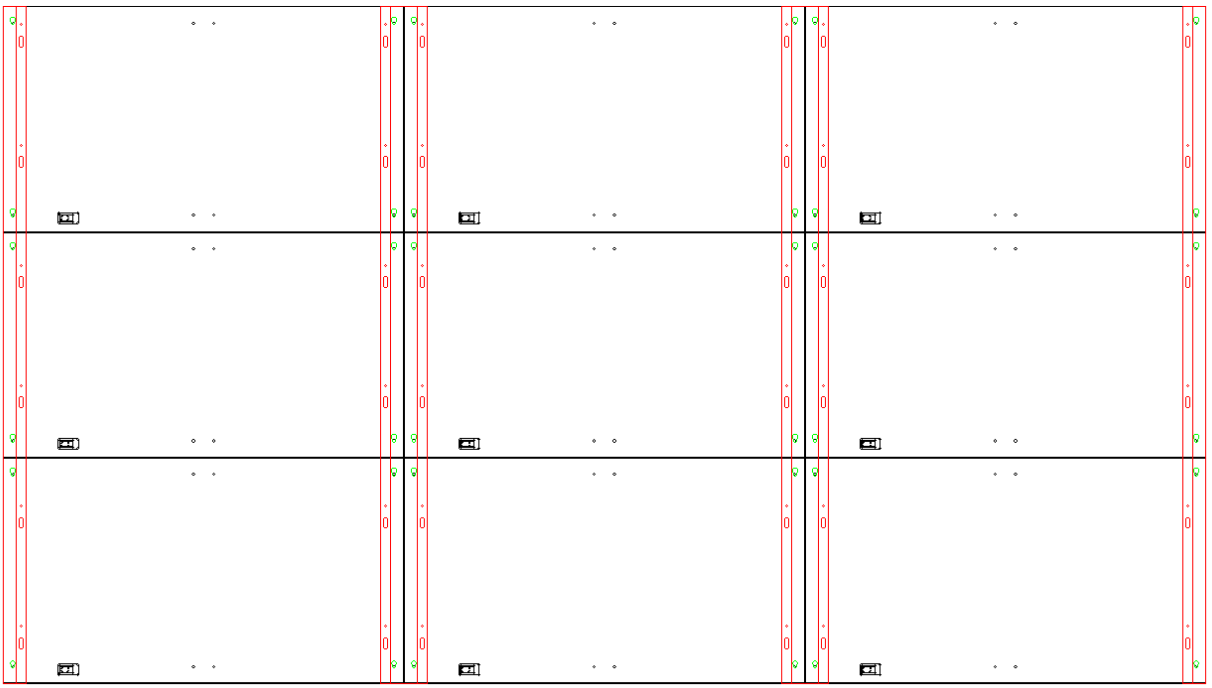


Fig 2-15

2.6.1 Signal Cable Connection

Signal cables shall be connected based on the wiring diagram of the delivered products for the project.

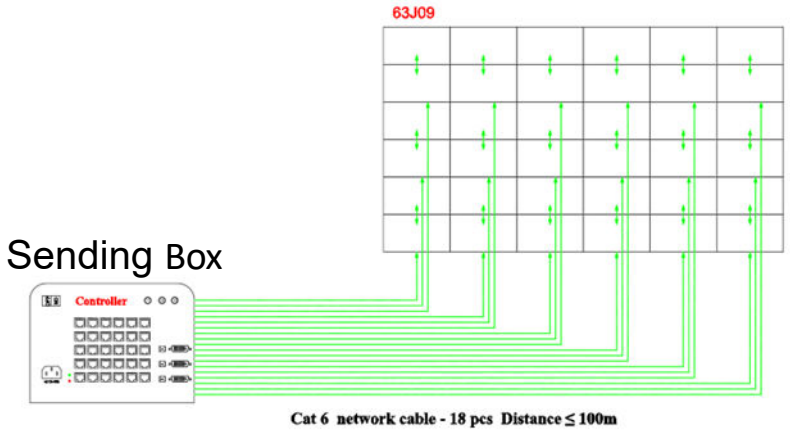


Fig 2-21 Signal Cable Connection Diagram of P0.9

2.6.2 Power Cable Connection

Power cables shall be connected based on the wiring diagram of the delivered products for the project.

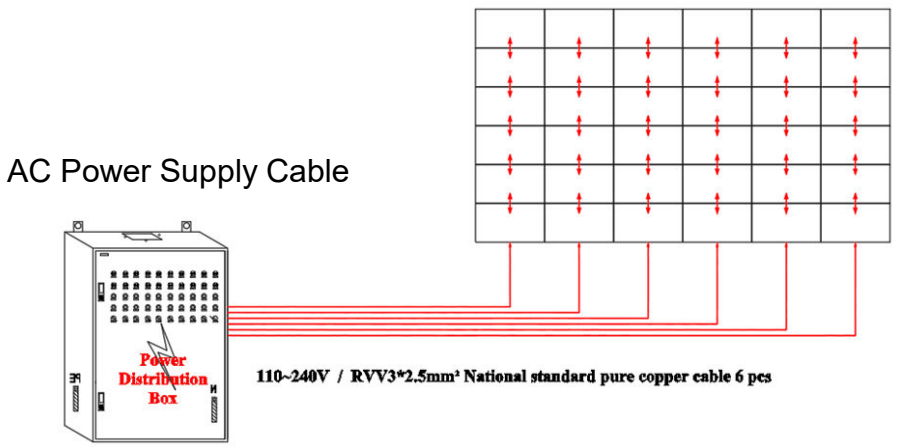
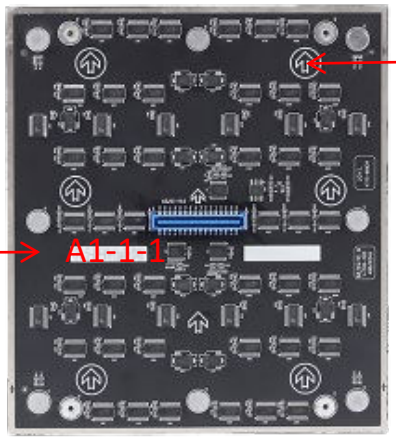


Fig 2-22 Power Cable Connection Diagram of P0.9

2.7.1 Module Layout

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



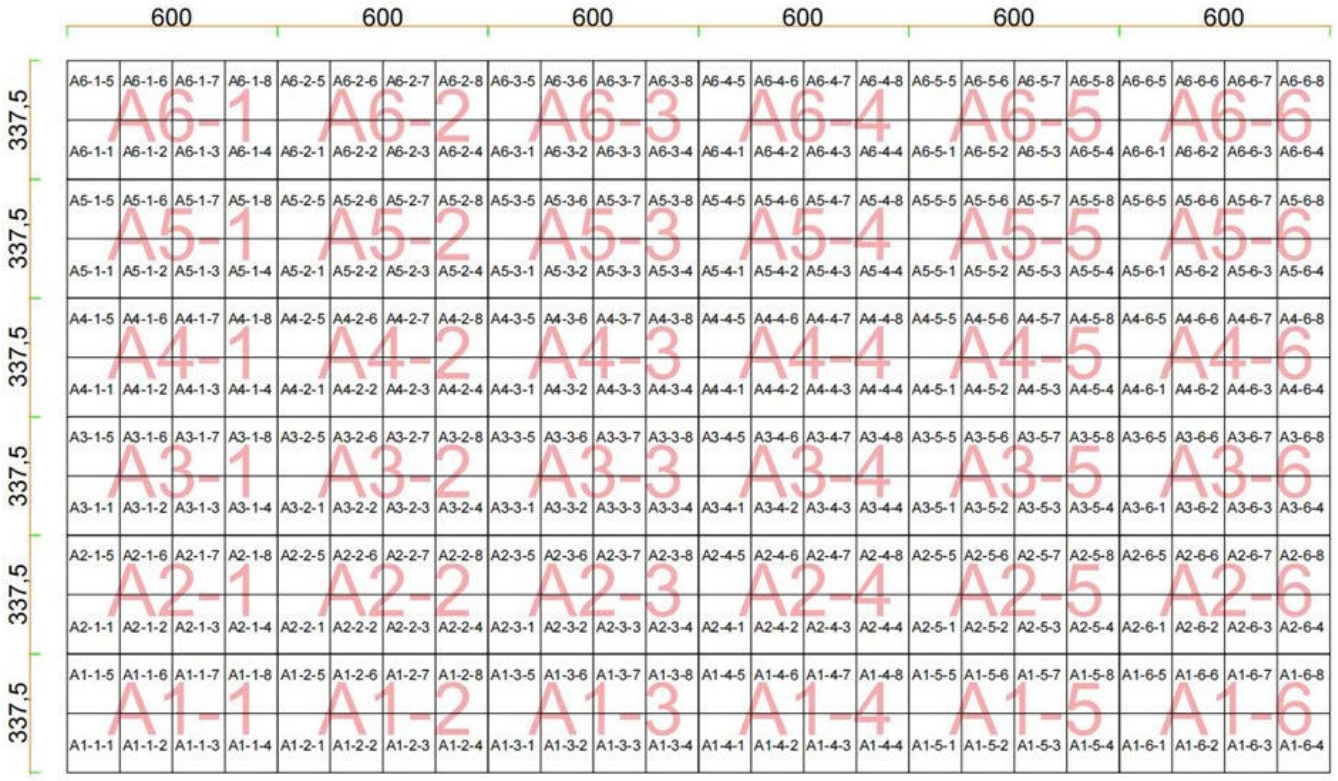
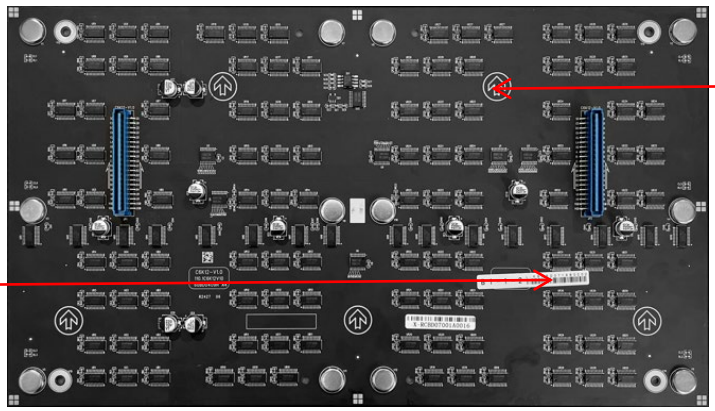


Fig 2-17 Front View of the Display

Module Layout

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



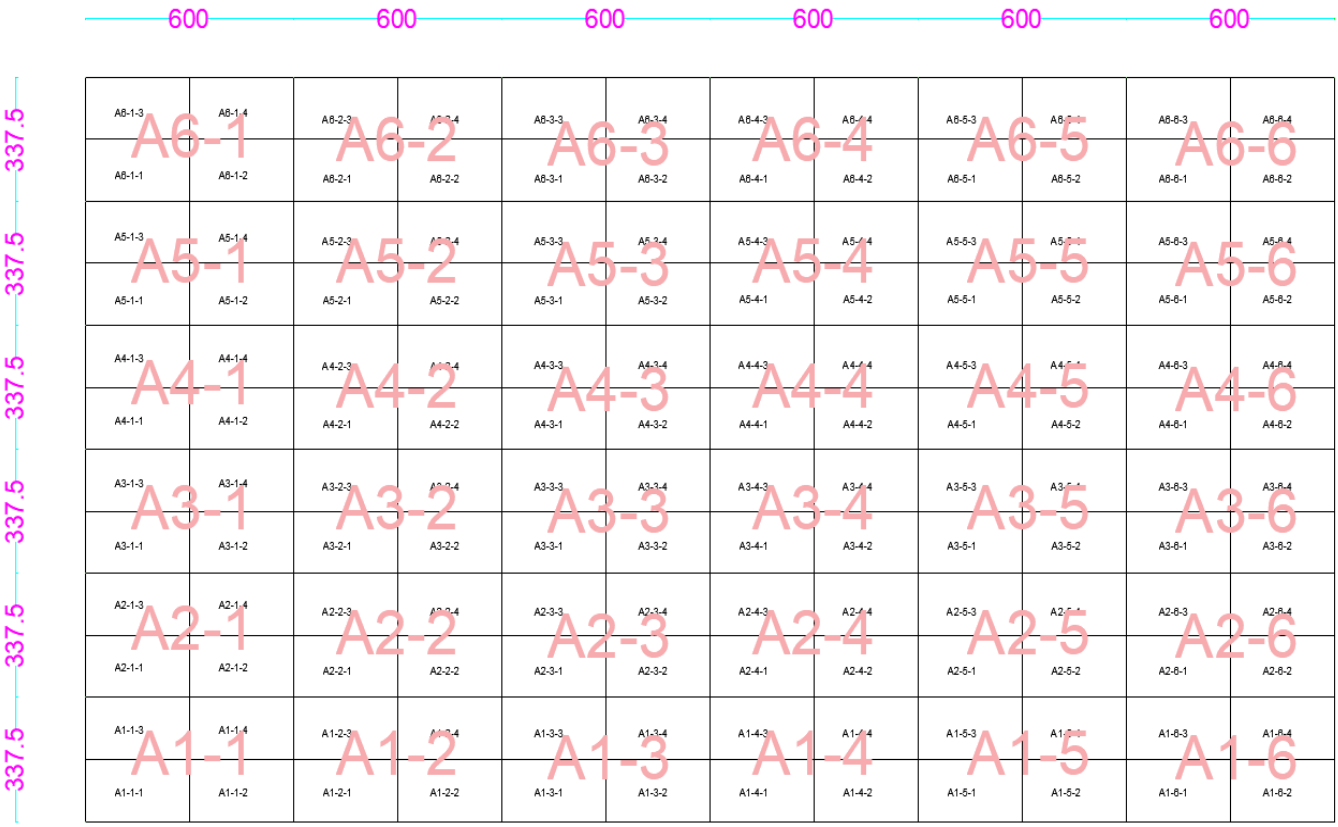


Fig 2-17 Front View of the Display

2.8 Intelligent 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

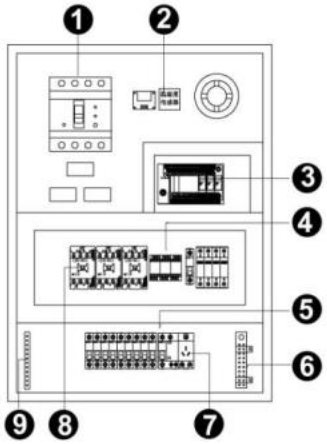


Fig 2-25 Internal Structure of Distribution Box

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

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.

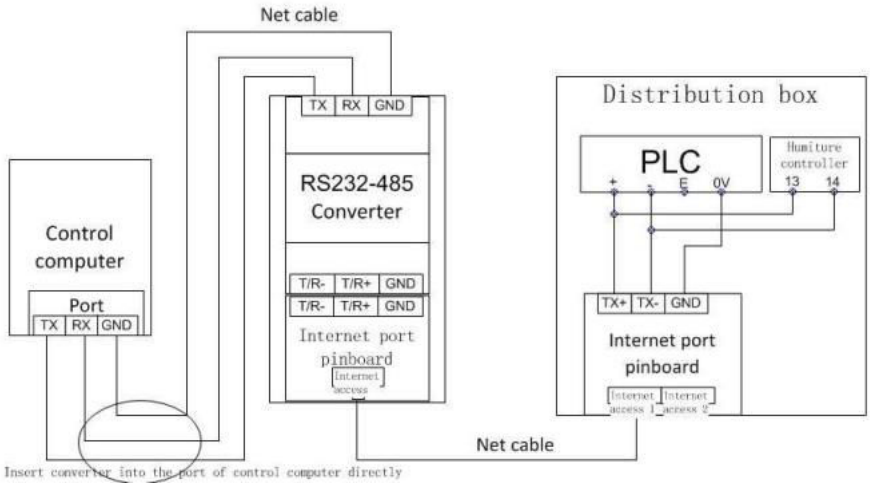


Fig 2-26 Distribution Box PLC Connection Diagram

2.9Load Calculation

2.9.1 Total Display Power

Total display power = total cabinet power + peripheral device power + cooling device rate

■ Switching Power Supply

Single supply power (W) = output voltage (V) * Output current (A)

■ Total Cabinet Power

- Total Number of Cabinets * Cabinet Power
- Total cabinet area * Maximum power per square *120% (reserved for switching power supply)

Note: For details about the maximum power per square box, see the device parameters of the corresponding cabinet model. For details, see 1.3 Device Parameters

■ Total Power of Peripheral Device

The processor and lighting equipment behind the screen are about 2KW.

■ Total Power of the Heat Dissipation Device

Air conditioning power ≈10m2/P≈800W. For example, a 30m² cabinet screen requires a 3P cooling air conditioner, then the total cooling power is 800w*3 = 2.4kw.

2.9.2 PDC Cable Model Selection

Table 2-1 Mapping to PDC Cable Models

PDC Model	Incoming Cable Model	Maximum Currency(A)	Minimum Tube (mm)
10KW PDC	RVV5×6mm²	25	25
20KW PDC	YJV5×10mm²	55	50
30KW PDC	YJV5×10mm²	70	50
40KW PDC	YJV4×25+1×16mm²	100	50
60KW PDC	YJV4×35+1×16mm²	125	65
80KW PDC	YJV4×50+1×25mm²	150	80
100KW PDC	YJV4×70+1×35mm²	190	80
120KW PDC	YJV4×95+1×50mm²	235	80
120KW PDC	YJV4×120+1×70mm²	265	100
150KW PDC	YJV4×150+1×70mm²	300	120
180KW PDC	YJV4×180+1×95mm²	360	150

Chapter 3: System Solution Overview

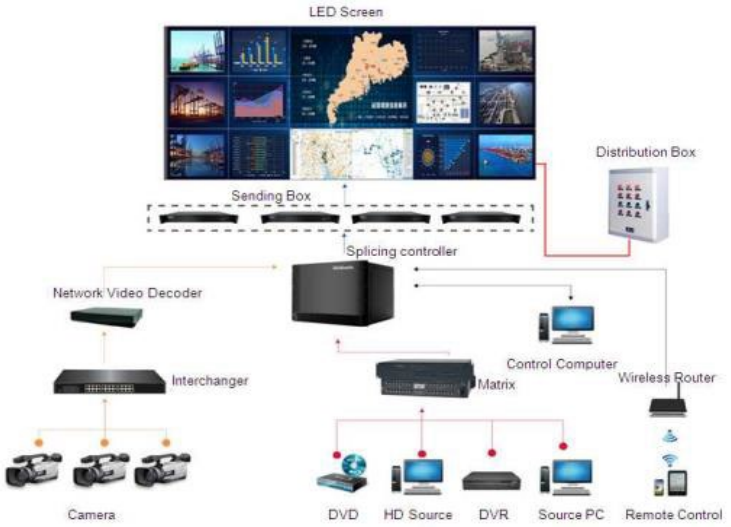


Fig 3-1

3.1 Scope of Application

This series supports seamless screen assembly of any size, making it ideal for permanently installed LED displays in public spaces such as conference rooms, command centers, and control rooms.

Control room

Monitoring room

Fig 3-2

Meeting room

Training room

3.2.1 Specification

■ The equipment parameters of the fine-pitch LED series unit cabinet are listed in Table 3-2-2

Name		P0.7	P0.9	P1.2	P1.5
Module Composition	Pixel Structure	Flip Chip COB	Flip Chip COB	Flip Chip COB	Flip Chip COB
	Pixel Pitch(mm)	0.78125	0.9375	1.25	1.5625
	Module Resolution(W×H)	192*216	320*180	240*135	192*108
	Module Size(mm)	150*168.75	300*168.75		
Unit Cabinet Composition	Unit Module Composition(W×H)	4*2	2*2		
	Module Resolution(W×H)	768*432	640*360	480*270	384*216
	Unit Size (mm)	600*337.5*28			
	Unit Area(m^2)	0.2025			
	Unit Weight(kg/unit)	4.7			
	Pixel Density (pixels/㎡)	1638400	1137777	640000	409600
Optical Parameters	Point Brightness Correction	Support			
	Single Point Color Correction	Support			
	White Balance Brightness (nits)	1000			
	Color Temperature(K)	2000-12000(adjustable)			
	Horizontal View Angle(˚)	170			
	Vertical Viewing Angle(˚)	170			
	Distance Deviationof Light Point Center	＜3%			
	Luminance Uniformity	≧98%			
	Chroma Uniformity	±0.003Within Cx,Cy			
	Contrast Ratio	10000:1			

Name		P0.7	P0.9	P1.2	P1.5
Electrical Parameter	Peak Power Consumption (W/㎡)	600	500	450	450
	Average Power Consumption (W/㎡)	200	170	150	15-
	Power Supply Input	AC100~240V（50-60Hz）			
	Frame Frequency (Hz)	50&60			
	Refresh Rate(Hz)	≥3840			
	Operating Temperature (℃)	−10 ~ +45			
	Storage Temperature (℃)	**-30~60**			
	Operating Humidity (%)	10 ~ 80 anti-fog			
	Storage Humidity (%)	Storage：10~70%			
Maintenance	Maintenance Type	Front Maintenance			

Chapter 4: LED Display Control Settings

4.1 Power-on Testing

① Ensure all devices are properly connected before configuring the LED display.

② Before powering on the LED display, use a multimeter to test the live, neutral, and ground wires of the AC power supply to ensure they are properly connected.

③ Ensure the ground wire maintains reliable contact with the ground and is properly insulated from the live wire.

④ The connected power supply should be kept away from high-power equipment.

⑤ For 3-phase, 5-wire systems, distribute the load evenly across phases to maintain three-phase balance.

⑥ The input voltage must match the voltage requirements indicated on the cabinet's rating tag.

⑦ Connect the provided USB cable from the sending box to the control PC's USB port.

⑧ Ensure cables for the LED display are connected according to the provided power and signal cable connection diagrams.

4.2 Preparation for Debugging

4.2.1 Starting the System

① Start the control PC and load the Windows system.
② Activate the graphics card driver and set the control PC's graphics card to replication mode. Confirm that the green indicator on the sending box blinks once per second.

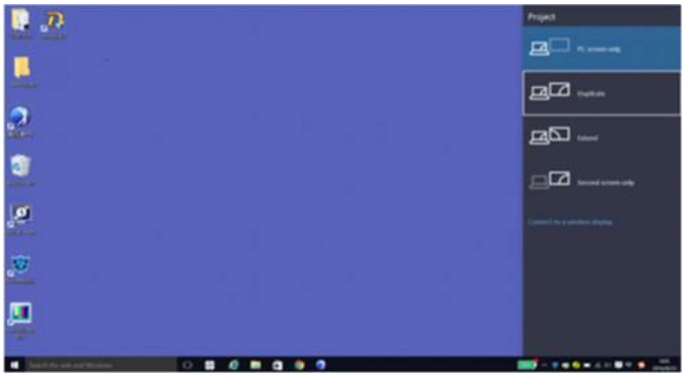


Fig 4-1 Replication Mode

4.2.2Installing the Software

Open the optical disk provided for the delivered products. Install the LED control software LCT stored in the optical disk to the control PC. Then install LCT

Fig 4-2 Software Installation

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

4.3 Display Configuration

Run LCT. Make sure that Control System on the main window is 1. Click the User option and select Advanced Login, as shown in Figure 4-3.

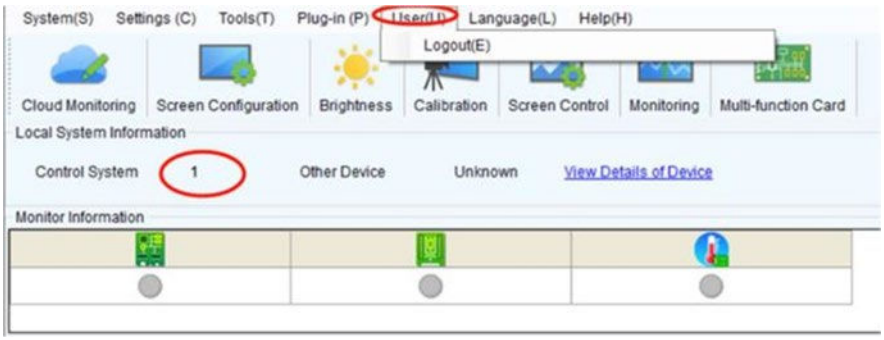


Fig 4-3 Main Window of LCT

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

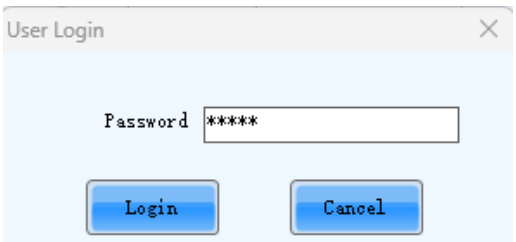


Fig 4-4 User Login

After login, click Screen Config on the main window, as shown in Figure 4-5

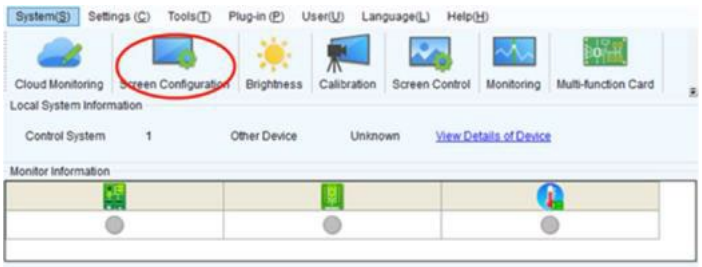


Fig 4-5 Main Window for Advanced User

Click Next, as shown in Figure 4-6:

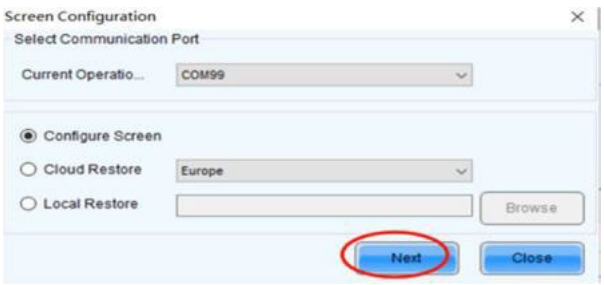


Fig 4-6 Screen Configuration

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.

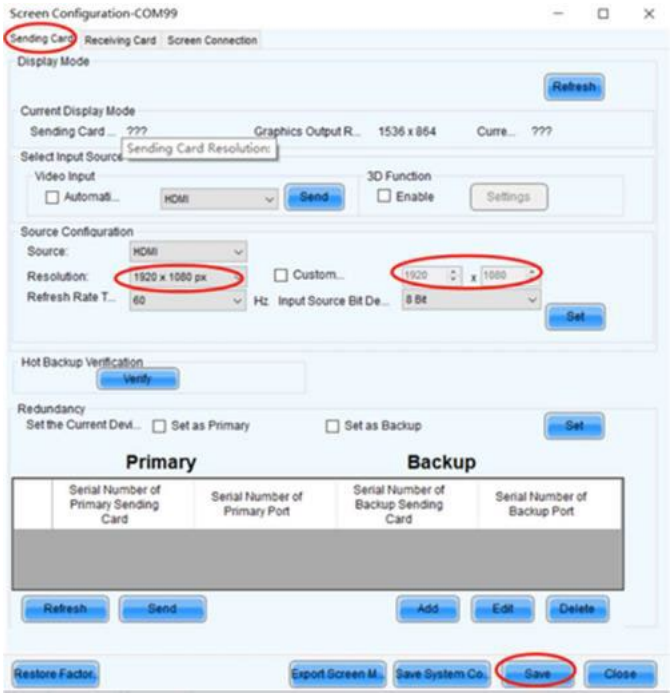


Fig 4-7 Sending Board Configuration

After configuring the parameters on the Sending Board page, click Recaiving Card to display the following window:

1) Click Load From File to load the file xxxx.rcfg stored in the optical disk.

2) Click Send to Receiving Card.

3) After sending, confirm that the loaded picture received by scan board is normal on the screen. Then click Save.

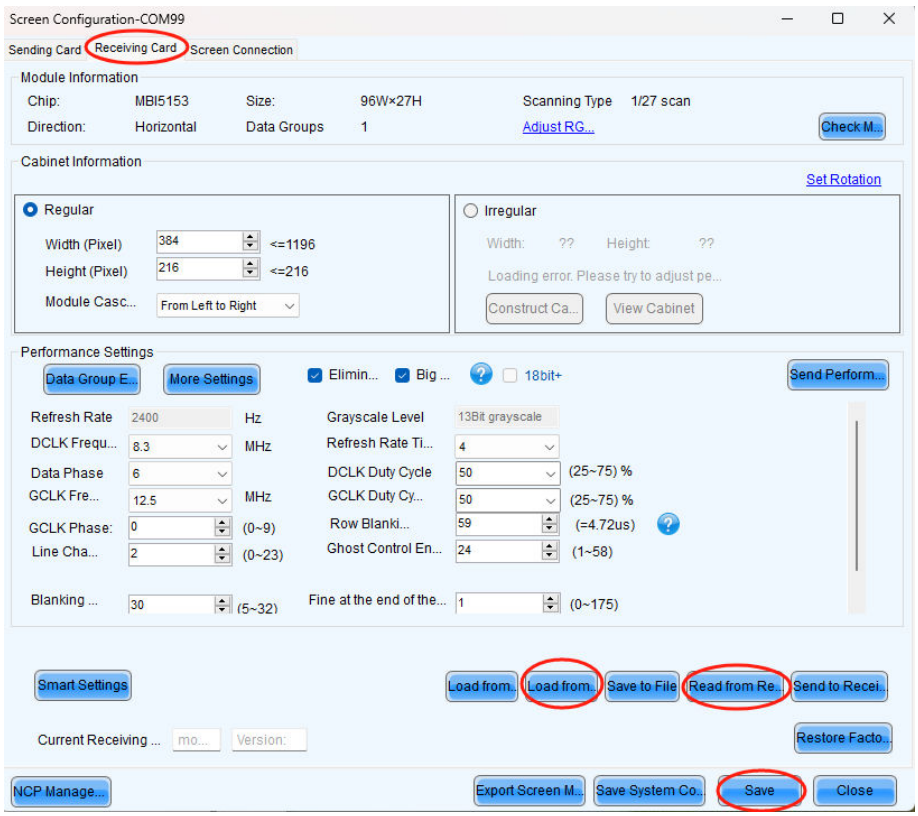


Fig 4-8 Scan Board Configuration

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

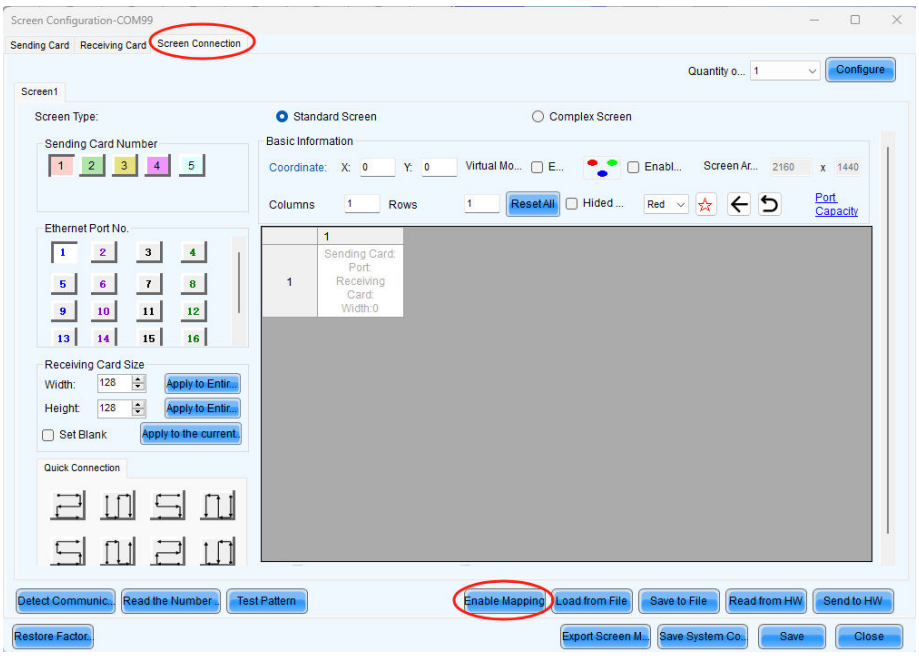


Fig 4-9 Screen Connection

1) Click Read File to load the file xxxx.scr stored in the optical disk, as shown in Figure 3-10.

2) Click Send to HW.

3) After sending, confirm that the screen is complete. Then click Save.

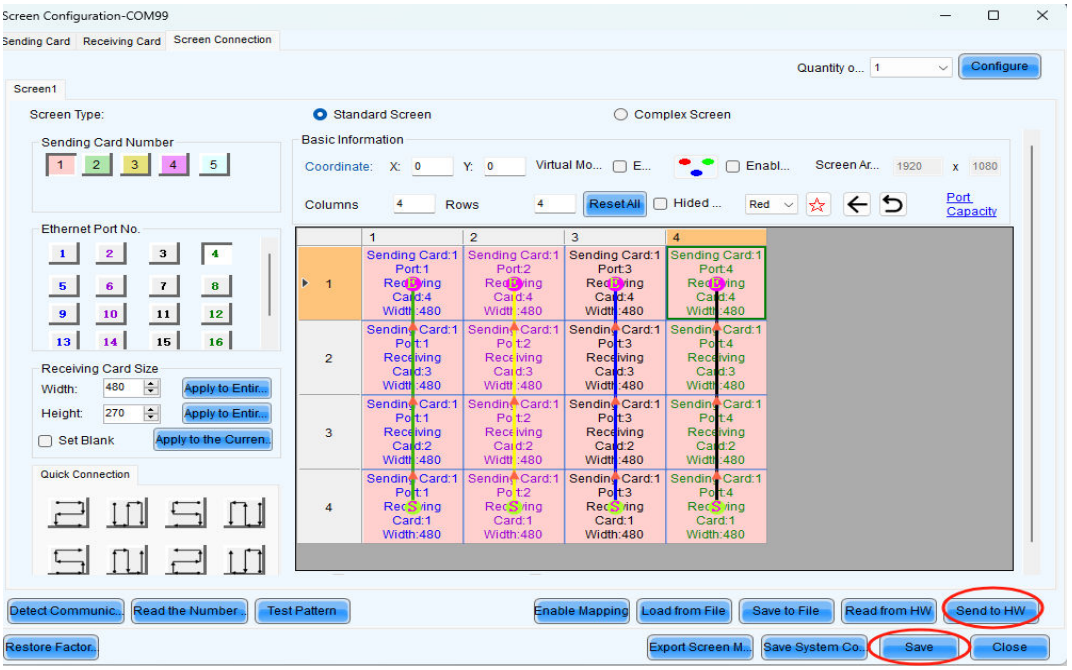


Fig 4-10 Screen Connection with Loaded File

4.4 Brightness Adjustment

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

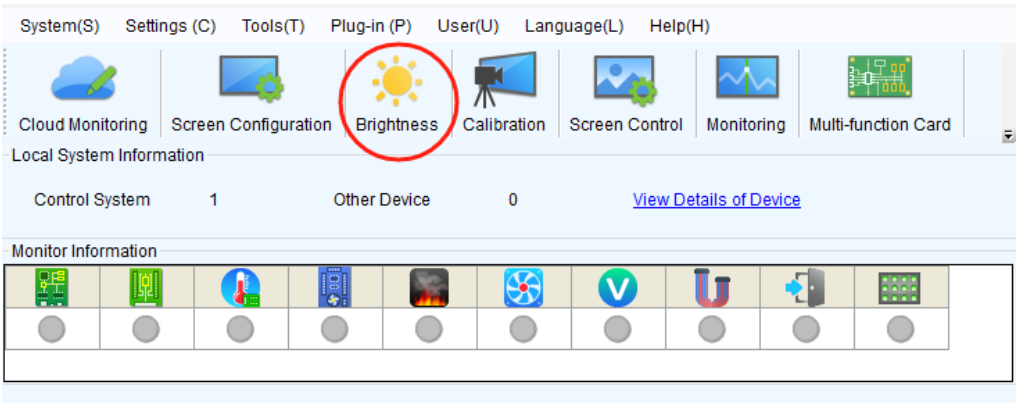


Fig 4-11 Main Window for Advanced User

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.

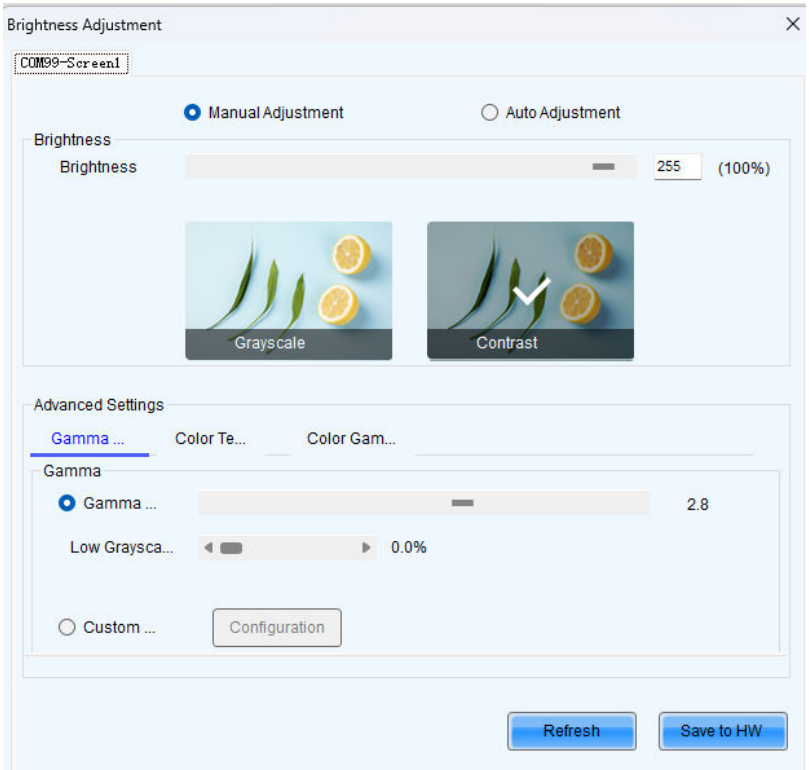


Fig4-12 Manual Adjustment

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.

4.5 Firmware Program Update

In the Screen Configuration interface, click Program Update. In the popup window, you can either click Cloud Update to match and install the firmware package automatically, or select and load a package manually. Alternatively, you can click Local Update to load and install the firmware package from your computer.

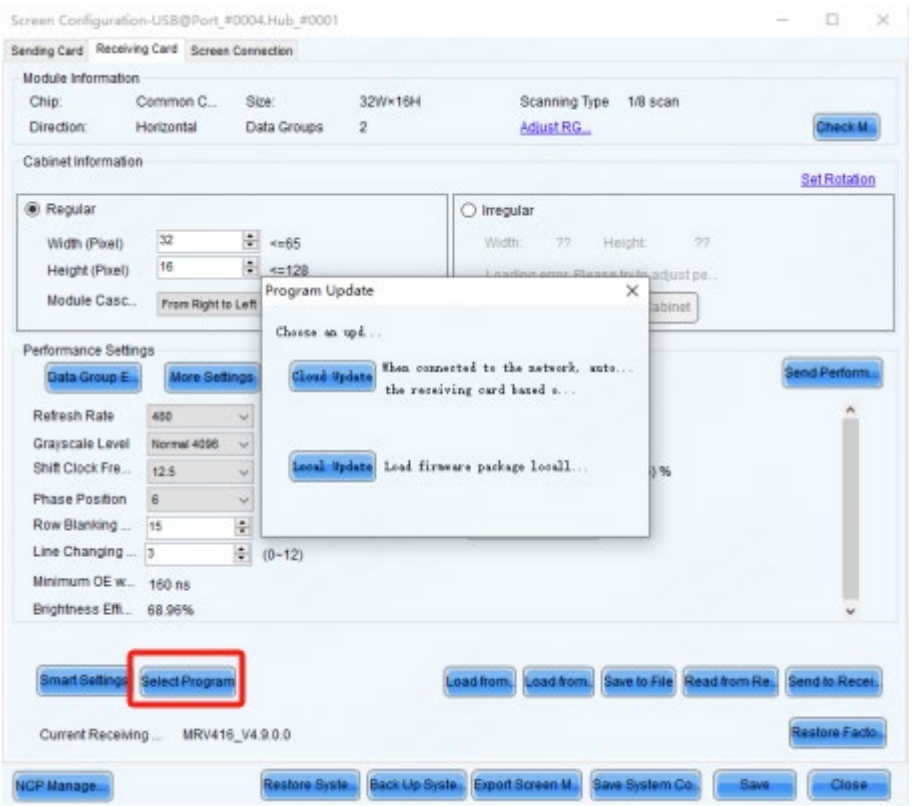


Fig4-13

Operating Procedure

Step 1： On the menu bar, choose User > Advanced Synchronous System User Login. Enter the password and click Login.
The default password is “admin

Step 2： Type “admin” to open the program loading window as shown in

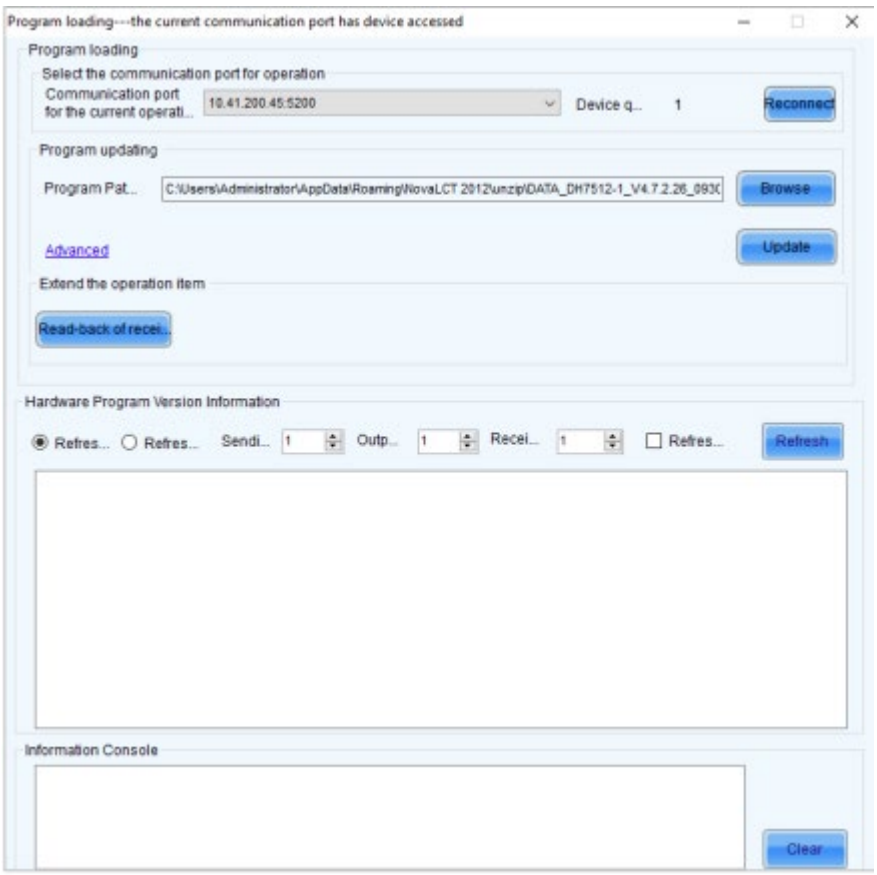


Fig4-14

Step 3： Choose a communication port.
If you need to reconnect the sending card, click Reconnect.

Step 4： Specify the viewing range and click Refresh to view the current program version of the hardware.
□ **Refresh All:** View the program versions of all the sending cards and receiving cards.
□ **Refresh Specified:** View the program versions of the specified sending cards and receiving cards.
If the module has an MCU, select Refresh Module MCU to view the MCU version.

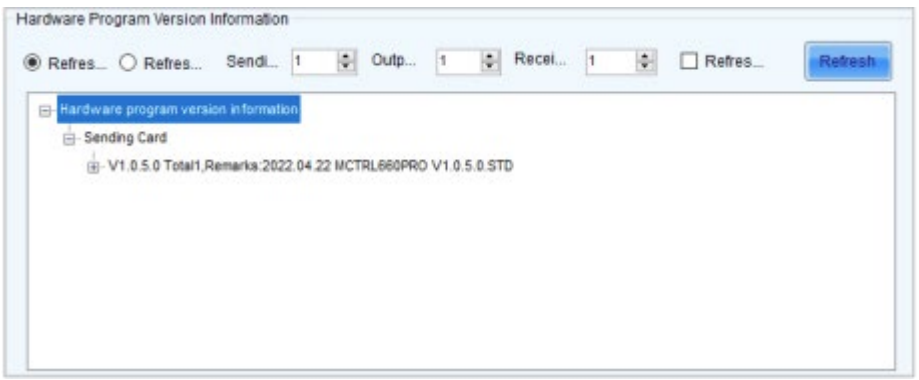


Fig4-15

Step 5: Click Browse, select a program package, and click OK. If you select an integrated firmware package for the receiving card (which includes firmware for multiple receiving cards), follow these steps:

In the Update Program interface, select the appropriate driver IC and decoding method based on your actual requirements, then either match the package file automatically or choose it manually, and click Update.

- Auto match: Select Auto Match, and the software will automatically select the appropriate package file based on the receiving card model, and the specified driver IC and decoding method.
- Manual selection: Unselect the Auto Match, and manually choose the required package file from the list

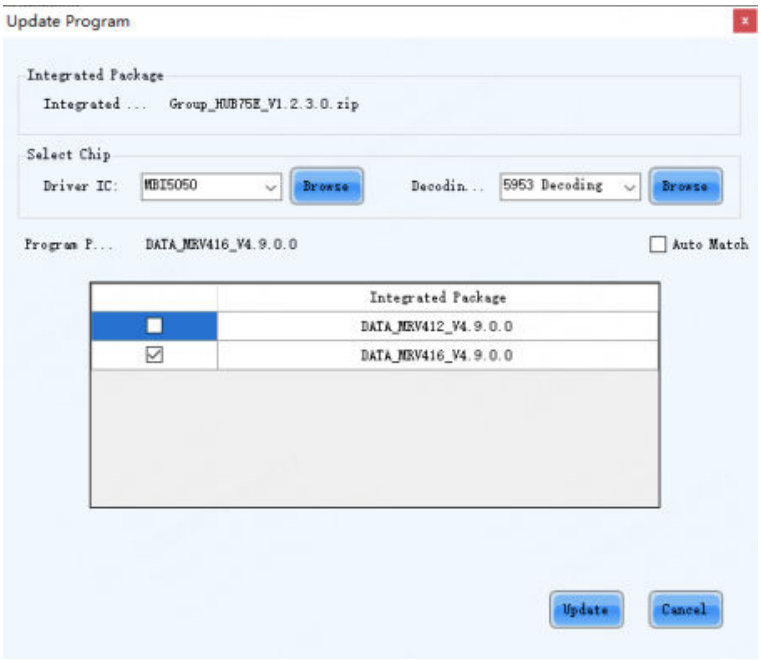


Fig4-16

Step 6: Click Advanced, select the items to be updated, and click OK.

Step 7 : Click Update.

Step 8: Set to update the programs of all receiving cards or the specified receiving card, and then click OK.

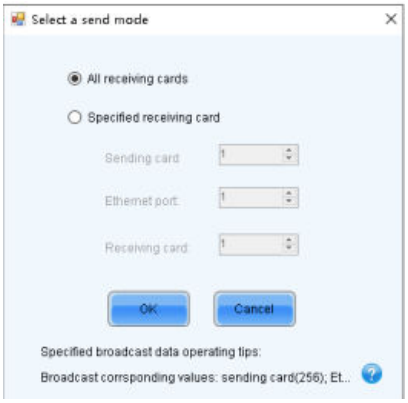


Fig4-17

Step 9: After the programs are updated successfully, click OK.

4.6 Send calibration data to the receiver card

Step 1: Click or choose Tools > Calibration from the menu bar.

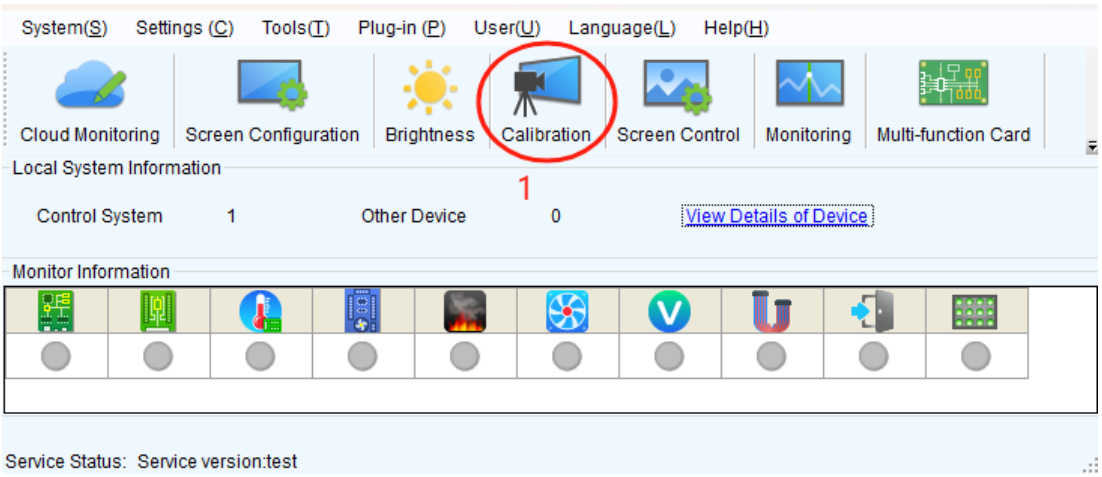


Fig4-18

Step 2: Select the Single-Screen Mode tab.

Step 3: Select the Manage Coefficients tab

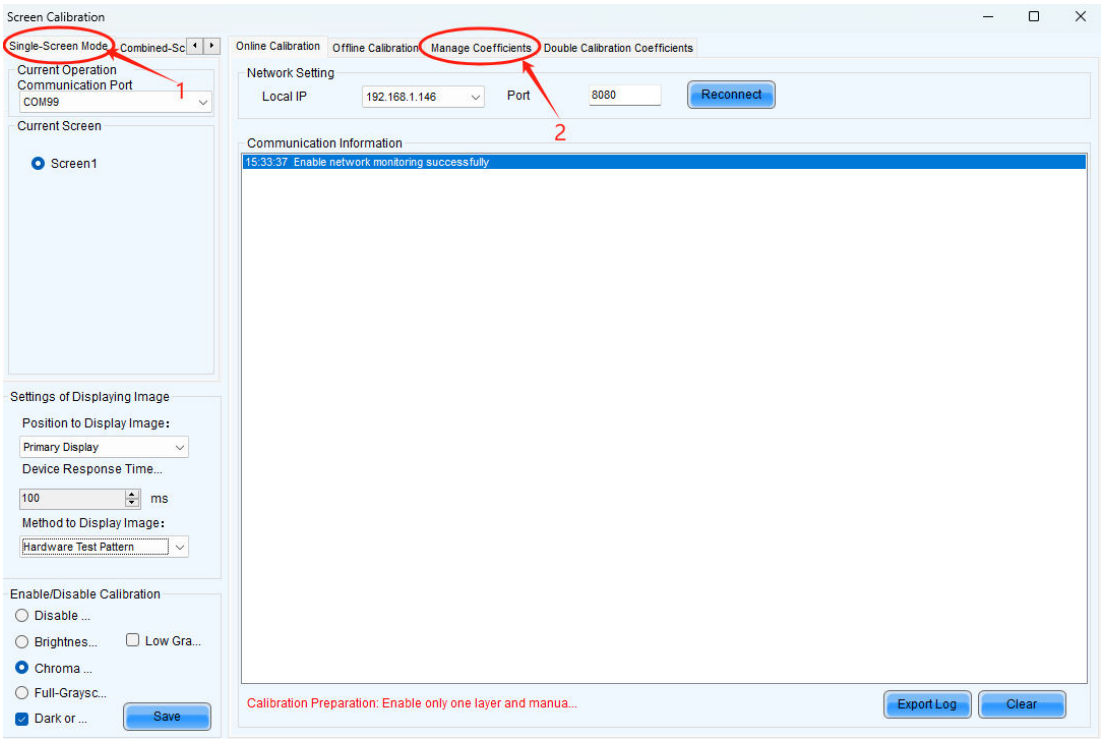


Fig4-19

Step 4： Click on the light board flash as shown

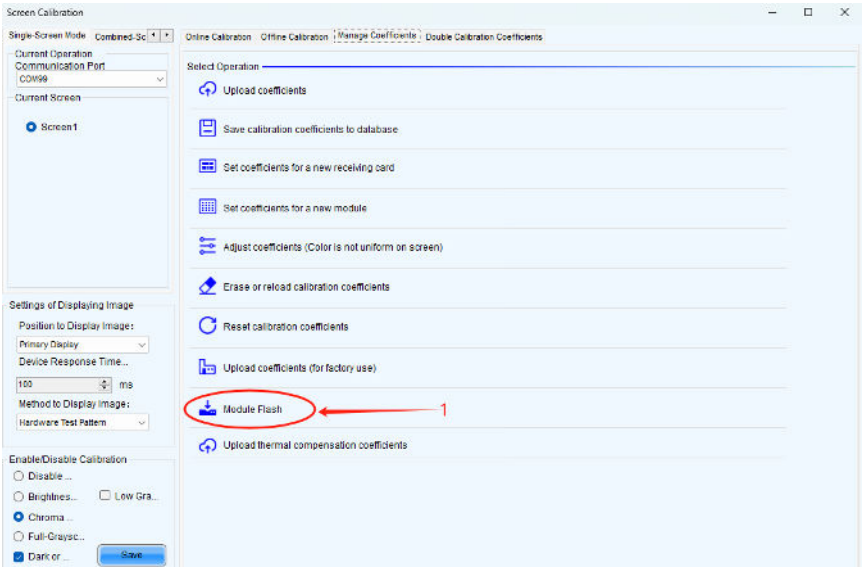


Fig4-20

Step 5： Click Flash Calibration, click View Lamp Board Calibration Factors, click Save Calibration Factors to Receiver Card, and click Cure.

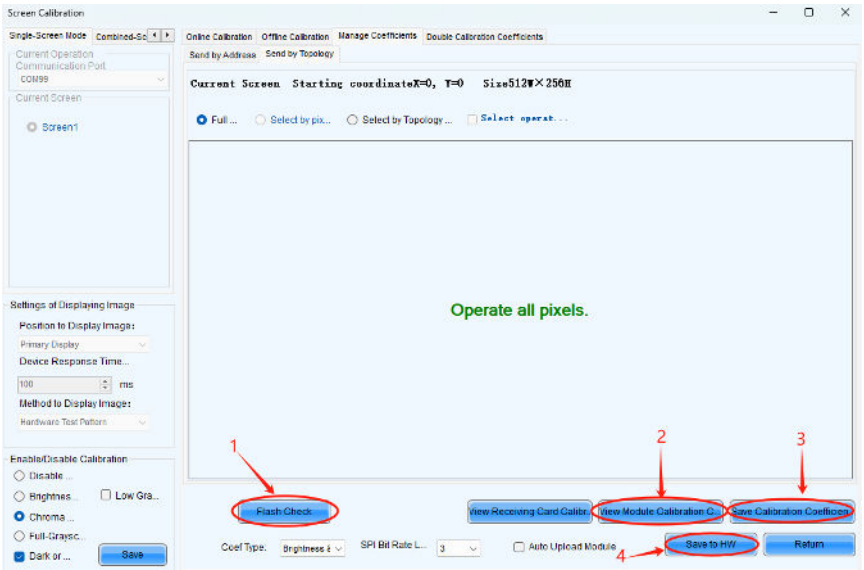


Fig4-21

4.7Image Booster Engine

Step 1： Open as shown Image Booster Engine

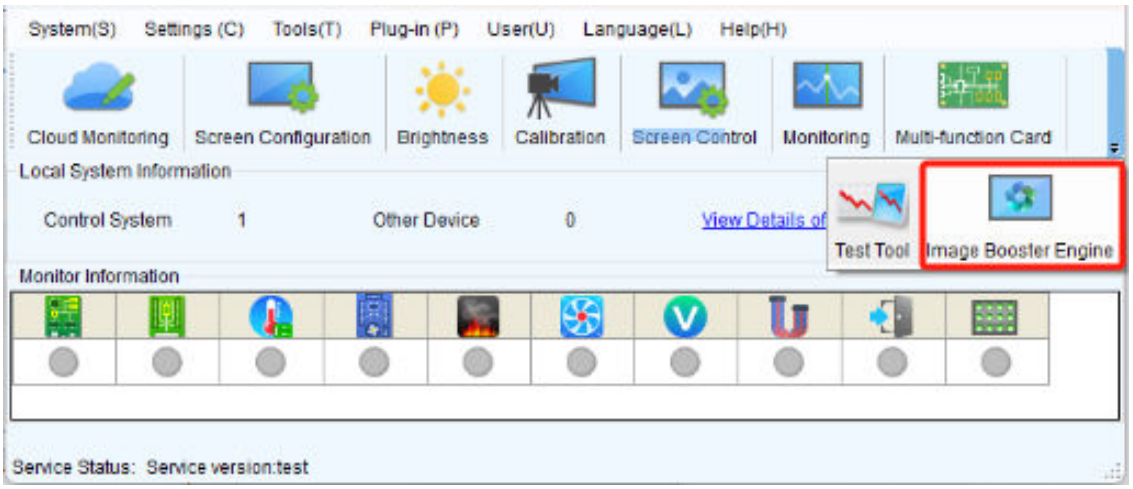


Fig4-22

Step 2： Colorimeter Connect

Step 3： Check the Hz value

Step 4： Automatic acquisition settings

Step 5： Start

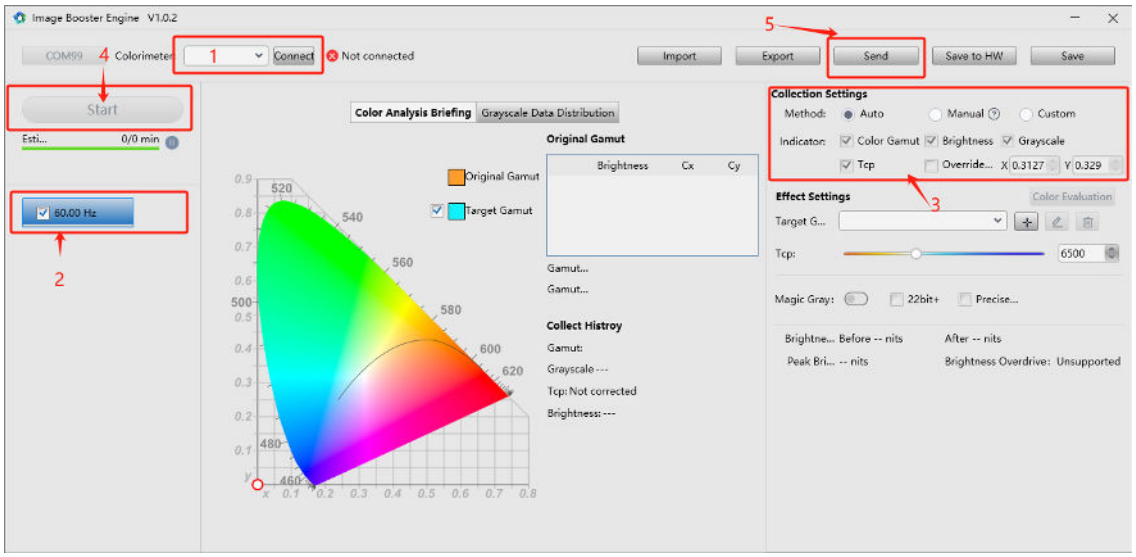


Fig4-23

4.8 Screen Play

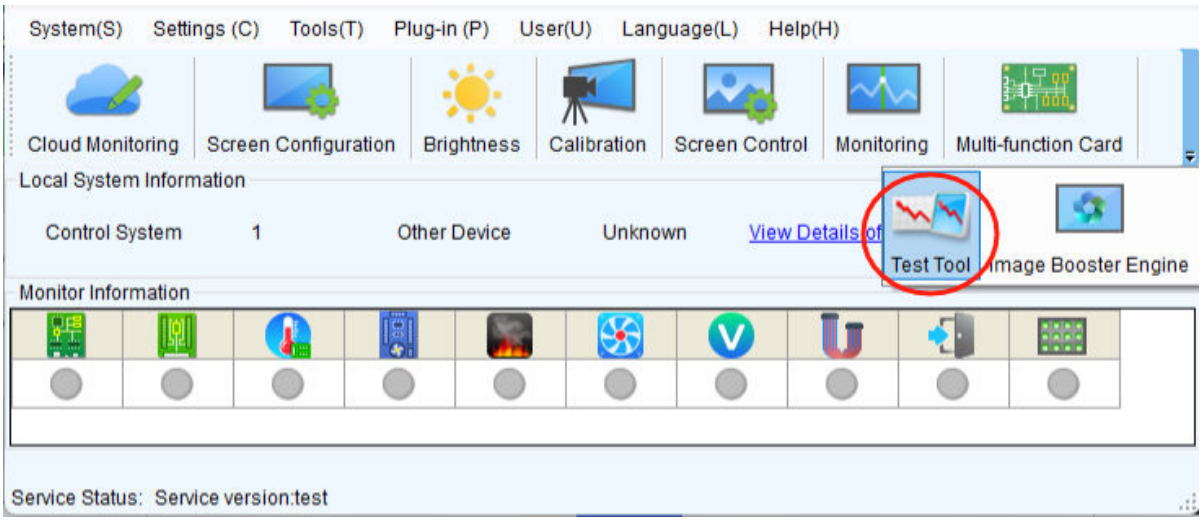


Fig 4-24 Test Tool

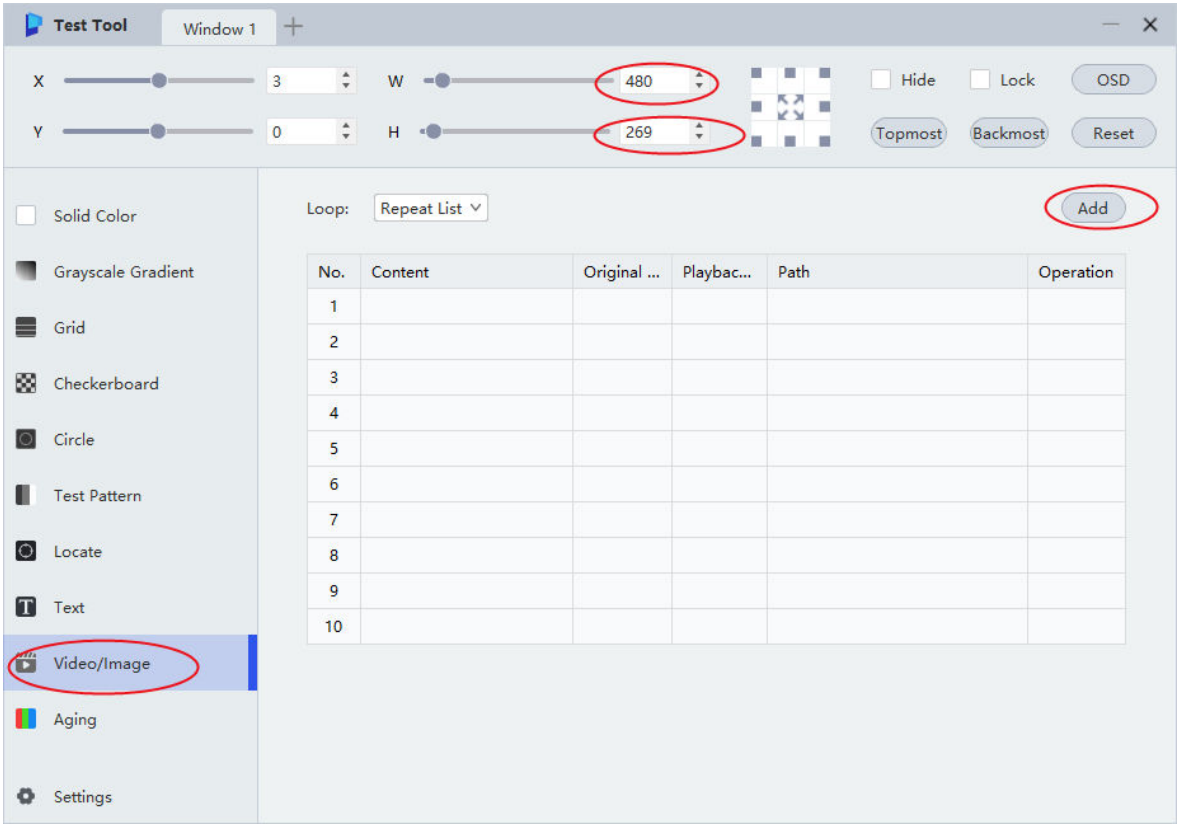
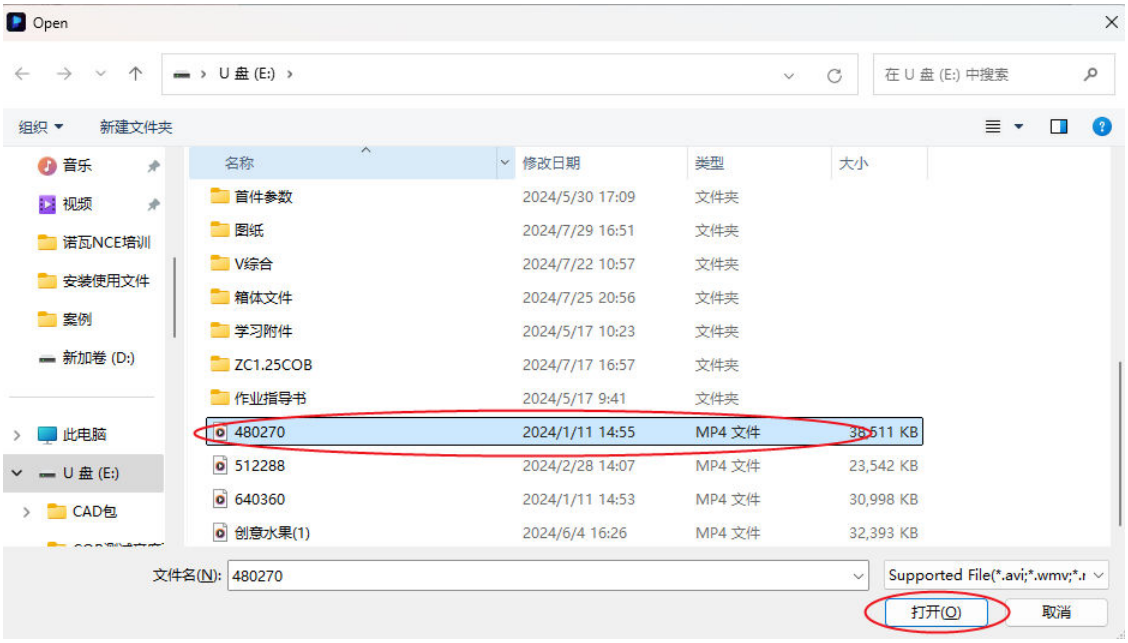


Fig 4-25Video/Image Settings W/H Add

Step 3：　Add video source



Step 4： as shown

Fig 4-26

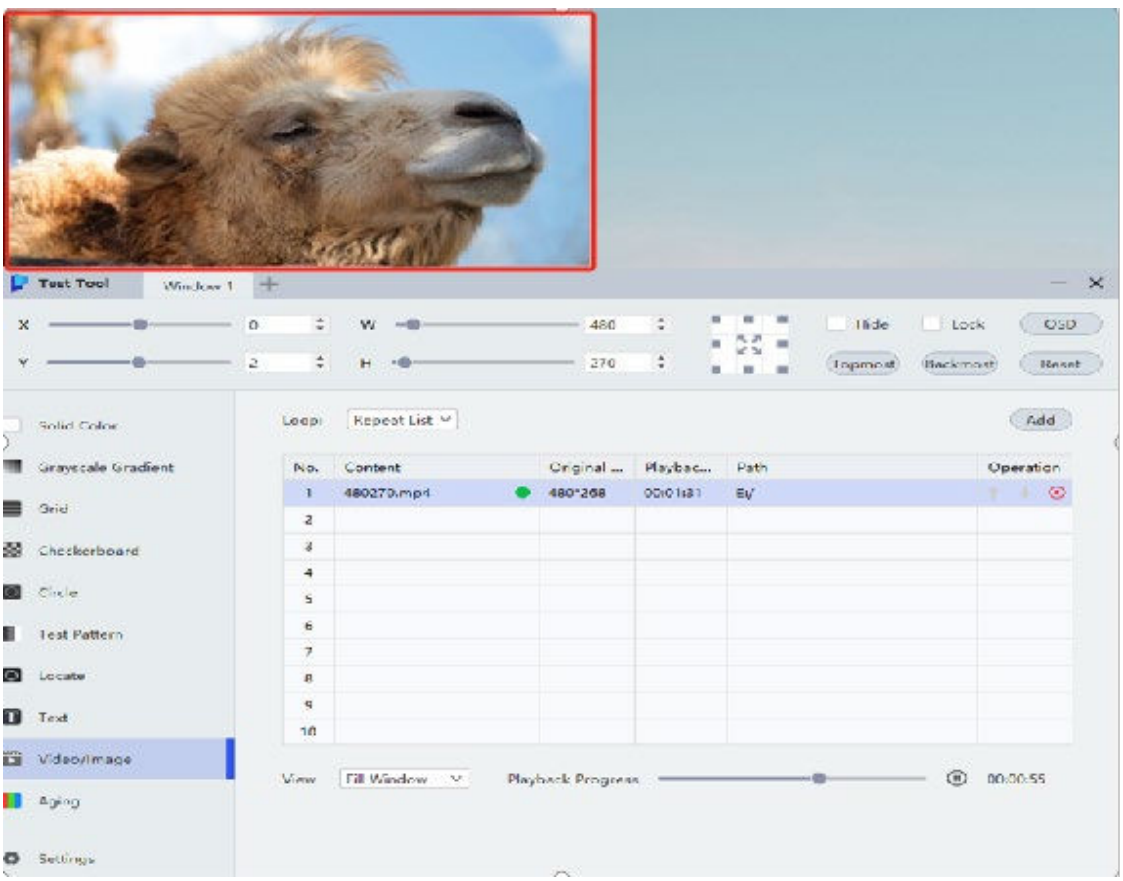


Fig 4-27

Chapter 5: Hardware Troubleshooting Analysis

5.1 Module Failure:

Fault type	fault description	Symptoms and Solutions	Cause
LED light	Dead Lamp	Replacement of Modules	Dead or Bad Soldering
LED Pixel Block	Pixel Block Black or Missing Color	Replacing an IC or Module	Driver IC/Resistor Poorly Soldered or Not Working
LED Modules	One or More LED Modules in a Row are Black or Faulty	Check the Connection of the Module to the Adapter Board	Not Connected or Poorly Connected

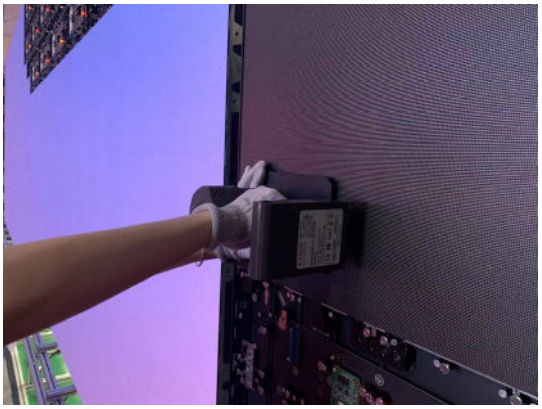


Fig 5-1

If the above defects occur, prioritize replacing the spare module. If the module still fails after replacement, check and replace the connecting board and the firmware of the receiver card.

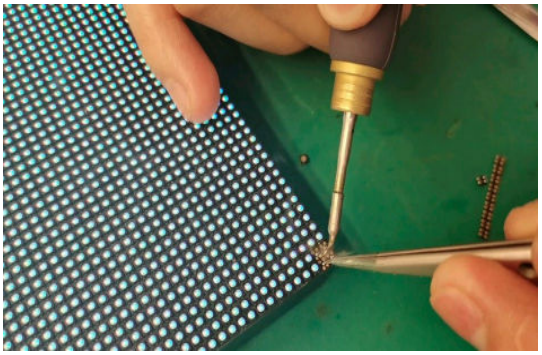


Fig 5-2

Replace the problematic module and check for poor contact, dead lights, black or color blocks. If the driver IC is not functioning due to false welding, welding, or replacement issues, contact our technicians for further assistance.

5.2 Power Failure:

Fault Type	Fault Description	Symptoms and Solutions	Cause
Power Supply Module	The entire module is black	Check the power connection of the module	Poor power-to-module connection
Power Supply	The entire module is black	Replacing a faulty power supply	There's a problem with the power supply that powers the receiver card.
Power Supply	Several neighboring module areas are black	Replacing a faulty power supply	There's a problem with the power supply that powers the receiver card.

Fig 5-3

Prioritise checking the power cord for poor contact

Fig 5-4

If multiple adjacent module areas are black:
1.Check if the receiver card signal light is functioning.
2.Use a test pen to verify power supply output.
3.Replace the power supply if no voltage is detected.

5.3 Data Transmission Faults:

Fault Type	Fault Description	Symptoms and Solutions	Cause
Fiber Optics	Black screen	Check fiber optic connections and data I/O sequence	Fiber optic cable damage or data I/O errors
CAT5e	Black screen of the whole column of the display	Check the network cable between the sending box and the first scan card	Bad connection or faulty RJ45
CAT5e	Black screen of one of the modules in a column	Check RJ45 cables between modules	Bad connection or faulty RJ45
CAT5e	All modules are lit, but the order of each column is not correct	Check and correct the RJ45 cable connection order	Incorrect connection sequence

Fig 5-5

Fig 5-5

Check the signal lamp to determine if it is functioning. If the display is abnormal, investigate the faults described above one by one.

5.4 Regular Maintenance and Precautions

- Ensure that the LED display is well ventilated, dry and operating at the right temperature.
- Regularly check the internal components of the LED display to ensure that the cables are connected correctly, the power supply is working properly, the ground wire connection is not damaged, and the lightning arrester is operating properly.
- Regularly clean the LED module surface with an anti-static soft brush to maintain display cleanliness and prevent brightness inconsistencies.
- Precautions for use.
- Power on the LED display first, followed by the remote display.
- Before shutting down the display system, turn off the power of the LED display first, then turn off the computer.
- It is best to turn off the LED display when editing a video playlist.
- In case of a fault, turn off the power of the LED display first, and then contact our technical service department for technical support.

■ EASY FRONT SERVICE DESIGN

The cabinet and the module are packed separately, the cabinet is installed first and then the module, and the cabinet and the module are connected through pin headers. Intelligent adjustment: The unique 6-axis alignment function ensures that the video wall is perfectly aligned and seamless, and the screen flatness tolerance is less than 0.1mm

The final installation of the product requires steel structure bracket fixation, and professional front maintenance tools are used to disassemble the LED module.

①

②

③

④