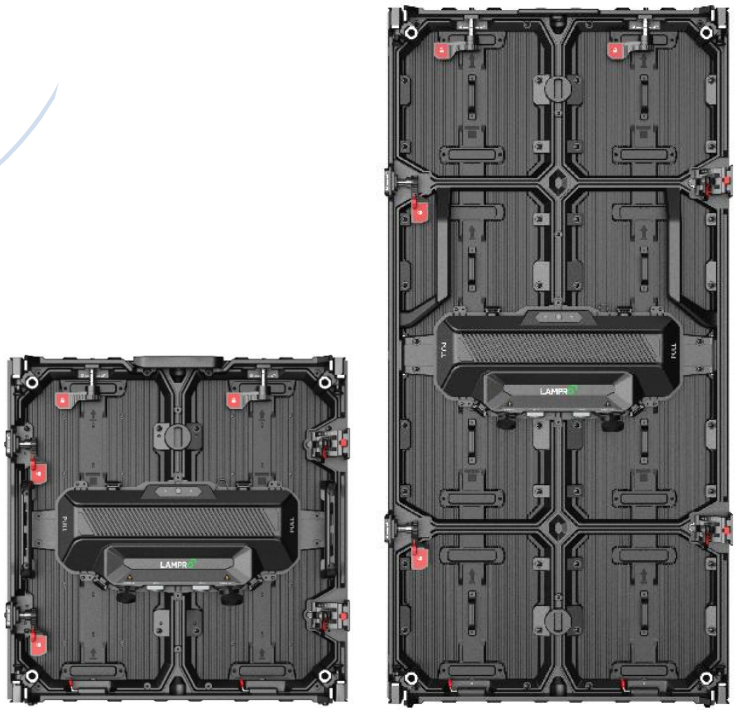
LRS Series User Manual

LRS2.6/2.9/3.9

LRSO3.9/4.8/7.8



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09/2023

DISPLAY A BETTER WORLD

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Foreword

LAMPRO Tech provides this Manual in accordance with the actual product and disclaims any express or implied liability, including but not limited to implied liability or merchantability and fitness for a particular purpose. LAMPRO Tech may make improvements or changes to the products or programs described in this Manual at any time without notice.

This Manual may contain technical inaccuracies or typing errors. The information in this Manual will be changed periodically and will be included in the new version of the Manual.

Version & Copyright ©

English Version - Warranty and Compensation

As part of the legally enforceable terms of warranty, LAMPRO Tech provides the relevant warranty. When receiving a product, the purchaser must immediately check for damage to all delivered items during transport and whether material and manufacturing failures have occurred. If any, you must notify LAMPRO Tech of the relevant issues immediately in writing. Upon approval of the notice of the issue, LAMPRO Tech will resolve the failure or provide a replacement plan on a case-by-case basis during the appropriate period. If the purchaser or third party modifies or repairs the items delivered by LAMPRO Tech, or if the items are not handled properly, especially if the system is not operated properly during the test run, or the item is affected by other factors in the contract that are not agreed upon after the risk transfer, all purchaser's warranty claims will be considered null and void. System failures due to procedures or special circuit system failures provided by the purchaser are not covered by the warranty, such as the interface. Aging and normal cleaning maintenance are not covered by the warranty provided by LAMPRO Tech. Customers must follow the operating environment conditions as well as service and repair specifications specified in this Manual.

English Version - Trademark

The brands and product names mentioned in this Manual are the trademarks, registered trademarks or copyrights of their respective holders. All brand and product names referred to in this Manual are used as notes or examples and shall not be regarded as advertisements of the corresponding products or other manufacturers.

Scope of application of the User Manual.

This user manual is applicable for the full-color display LRS series produced by LAMPRO, which can be applied for indoor . includes LRS2.6/2.9/3.9/4.8/5.9/7.8

1. Safety

1.1 Safety Guidelines

Warning: It is important to understand and follow all safety guidelines, safety instructions, warnings, and precautions in this Manual.

Warning: Be careful when the load is heavy.

Warning: Please operate carefully when the load is heavy to avoid finger injury.

Warning: Wear a safety helmet to avoid personal injury.

Warning: Please read the following text carefully and follow the installation instructions strictly!

Installation Technician

This installation must only be performed by qualified technicians qualified or authorized by LAMPRO Tech. This type of display is extremely demanding on safety. Qualified installations must ensure the safety of the system in terms of site, structure, assembly, connection, use, disassembly, and transportation.

Caution

You can only begin the installation if you are fully familiar with all applicable safety checks and installation instructions. Failure to do so will increase the risk and risk of personal injury to the user. Assembly components are only suitable for assembling LED displays produced by LAMPRO Tech.

Do not modify or copy any components. LAMPRO Tech uses special materials and manufacturing processes to achieve the required part strength. For help with custom apps, please consult LAMPRO Tech. Be

sure to follow the installation instructions provided by LAMPRO Tech. If you have any questions about the safety of an app, please contact LAMPRO Tech. LAMPRO Tech is not responsible for incorrect, inappropriate, irresponsible or unsafe display assembly.

Product Maintenance

Construction and assembly components should be kept dry, clean, lubricated or otherwise maintained in a manner consistent with the design features of the components. LAMPRO Tech products must be used in a manner that meets the design characteristics of the product. The product must be regularly inspected for safety and reliability, and for wear, deformation, corrosion, and other conditions that may affect the load handling capacity of the parts.

Safety

LAMPRO Tech recommends regular inspection of all installed units. For more important installations, the frequency of inspections should be increased. If the parts are damaged, the load handling capacity may be reduced and the damaged parts must be immediately removed for repair or replacement. To repair parts, please contact LAMPRO Tech. Under no circumstances should any other individual or entity repair the parts of the LED display produced by LAMPRO Tech.

1.2 Important Safety Instructions

Instructions:

• Read these instructions.

• Keep these instructions in a safe place.

• Pay attention to all warning messages.

• Follow all operating instructions.

• Before powering up the LED display, check whether all AC power supplies are properly connected.

• Before performing any maintenance on the LED display, turn off all power supplies, including the internal power supply of the screen, computer terminals, system boxes, etc. to ensure the safety of you and the equipment.

• Do not press objects on cables such as power cords, signal cables, and communication cables. Cables should be prevented from being stepped on or pinched to prevent the risk of electric leakage or short circuit.

• When replacing the module of the LED display, please hook a secure rope on the module and the corresponding panel.

• Working humidity: When working under the highest temperature, the humidity for indoor displays

should be lower than 60%, while for outdoor should be lower than 90%.

• Working temperature：indoor displays 0℃≤ T ≤40℃;

outdoor displays -30℃≤ T ≤50℃.

• Storage temperature：-40℃≤ T ≤60℃（when unsealed）.

① LED display's power supply voltage: 110V ~ 220V ± 10%; Frequency: 50HZ ~ 60HZ ± 5%

② When the total power of the LED display is less than 5KW, it can be powered by a single-phase voltage; when it is greater than 5KW, in order to distribute the current evenly, it is necessary to be powered by a three-phase five-wire voltage.

③ The ground wire must be in reliable contact with the earth and properly separated from the N wire. The power supply to be connected should be kept away from high-power electrical equipment.

• When there is dust on the mask of the module, please clean it in time to avoid local color cast of the display.

• When maintaining the display, all the removed screws should be installed back to avoid water leakage of the display cabinet.

• Meaning of the logo: The equipment with this logo is designed and evaluated only at an altitude of 2000m. Therefore, it is only suitable for safe use at an altitude of less than 2000m, and may have potential safety hazards when used at an altitude of more than 2000m.

• Meaning of the logo: The equipment with this logo is designed and evaluated for safety only in non-tropical climates. Therefore, it is only suitable for safe use in non-tropical climates. When used in tropical climates, there may be safety hazards.

• If the steel structure of the screen body is relatively closed, it is necessary to consider the ventilation and heat dissipation of the screen body and increase the ventilation equipment. Do not exhaust the indoor warm air into the screen body.

• Use only materials or chemicals that are inert, non-abrasive, non-corrosive and leave no traces for cleaning. If you have any questions about the cleaning process, please consult the manufacturer for more advice.

• Do not block the vents, follow the manufacturer's instructions for installation.

• Do not install this equipment near heat sources such as radiators, heaters, stoves, or other devices that generate heat, including amplifiers.

• Do not neglect the safety protection of the poles or the grounding of plugs and sockets. If the supplied sockets or plugs are damaged, you must immediately take appropriate measures to replace the damaged parts.

• Do not step on the power supply, data cable, especially the plug, power outlet, and power/data cable from the device. The damaged power supply or data cable should be replaced immediately.

• Use only accessories specified by the manufacturer.

• When there is lightning, disconnect the power supply of this equipment or provide other applicable lightning protection. If you do not use the equipment for a long time, unplug the power plug.

• Repairs should be performed by qualified technicians. When this equipment is damaged for various reasons (such as damage to the power cord or plug, equipment is not working properly, or the equipment is dropped), contact the LAMPRO Tech's maintenance personnel for repair.

• This equipment may only be used in conjunction with systems or peripherals specified by the manufacturer or included with the equipment. Be careful when lifting, moving, or transporting the equipment to prevent it from being damaged by tipping over.

1.3 Important Warnings

1.3.1 Important warnings

Danger of electric shock: Do not open. In order to reduce the risk of electric shock, do not remove the back cover of the cabinet. Please have qualified maintenance personnel to perform repairs.

1.3.2 Highest and lowest ambient temperatures

The maximum ambient temperature of the LED display is 40°C and the minimum ambient temperature is 0°C.

1.3.3 Large current leakage may occur

The combination of multiple unit cabinets in the installed equipment results in increased leakage current. In order to avoid the risk of electric shock caused by a large amount of leakage current, the equipment plug must be properly grounded during installation.

1.3.4 Flammable materials

Keep flammable materials away from equipment. A large amount of electrical energy is converted into heat. Ensure that the ventilation is smooth during installation so that the equipment can operate safely. Appropriate ventilation must be provided.

1.3.5 ESD & LED

The LED components used in the display are susceptible to ESD (electrostatic discharge) damage. In order to prevent damage to the LED components, wear antistatic gloves when operating (installation, disassembly, etc.). Do not touch while the equipment is running or when it is turned off.

1.3.6 Electric shock hazard / fire hazard

In order to avoid the fire caused by overload of power cable, please pay attention to the rated voltage and assembly quantity.

1.3.7 Circuit breaker equipment

When you are unable to access the power outlets of each cabinet, install a power outlet near the equipment for operation, or install accessible universal circuit breaker equipment into a fixed circuit. This equipment must be grounded. In order to prevent electric shock, the equipment should be properly grounded during installation. Do not ignore the role of the grounding plug, otherwise there is a risk of electric shock.

1.3.8 Power system

It is recommended to use a TN-S power distribution system (a power distribution system with a separate N wire and ground conductor) to avoid large ground current loops due to voltage differences in the neutral conductors. The entire electrical installation process should be protected using a power-off switch, circuit breaker, over-voltage protector, and ground-fault current interrupter with appropriate power ratings. Installation should be performed in accordance with local electrical installation specifications. If in Europe, special attention should be paid to EN 60364, it is the electrical installation standard for buildings. If in Germany, the VDE0100 specification should be followed. If in the United States, special attention should be paid to the National Electrical Code ANSI/NFPA70.

1.3.9 Power cord

The power cord supplied with this system has special security features. Users cannot repair it. If the power cord is damaged, you can only replace it with a new one. Do not try to repair the power cord.

Special precautions

1. During the handling process, please pay attention to handling it gently, and there should be no dragging or cabinet stacking, so as to avoid bumps or cracks in the module or the cabinet.
2. When plugging in the power plug, please plug in the direction of rotation of the plug. Please do not use brute force to directly plug in, and do not operate with power.
3. When replacing the spare receiving card or HUB adapter plate, make sure that the Pin angle is not skewed, and do not operate with power.
4. Please keep the inside of the flight case dry and clean. Prevent the LED lamp beads from getting damp or the cabinet from rusting due to the heavy moisture inside the flight case.

1.4 Proper Use

Proper use of the display

• Do not expose any part of the display to any moist substances.

• Do not expose any part of the display to any abrasive substances.

• Do not expose any part of the display to any dust.

• Do not expose any part of the display to any corrosive substances.

• The display should be used in an environment that complies with the operating specifications.

• The display should not be used in environments containing airborne contaminants [for example, contaminants produced by fog machines (cracked oil) or similar devices that deposit a thin layer of grease on the LED indicator optics to reduce performance].

• The display should not be exposed to extreme heat or extreme cold conditions that exceed temperature specifications.

• The display should not be exposed to any conditions or situations that would cause any part of the display to become hot and not function properly. Such conditions include, but are not limited to, lasers, ultrasonic vibrations, or any substances that prevent normal ventilation and heat dissipation of the display panel.

• The display should not be exposed to the environment where moisture may condense or collect on any component.

• The power supply connected to the display must comply with the specifications described in the installation manual.

• When installing or disassembling the display, avoid any accidental collision at each corner of the cabinet. Since the module's LED lamps are mounted near the edges of the LED boards, the corners of the cabinet are highly susceptible to mechanical damage. Therefore, the cabinet must be handled with care at all times.

• Do not place the cabinet or module on the surface of the LED lamp to prevent damage to the LED lamp.

• When disassembling or installing a module, always ensure that the LED side of the module is parallel to the LED side of the remaining adjacent modules, avoiding any mechanical stress on the corners of the module.

• Do not apply an external force to the LED. Damage to the LED lamp due to mechanical stress is not covered by the warranty.

• The security features and functional characteristics of the display cannot be compromised.

• It is not allowed to hang any other equipment on the back of the cabinet. It is not allowed to hang

anything on the cable of the cabinet.

• In the event of a malfunction, appropriate measures must be taken immediately (whether the equipment is returned). The failed equipment cannot be allowed to continue to run.

• The components can only be connected using the cable specified for this display. In addition, be careful to connect the signals only as described in the installation manual.

• The display should not be used near equipment that is not certified by 3C, CE, and UL/ETL.

• When reconnecting the components of the display, it must be wired in strict accordance with the installation manual to prevent damage to the cables or other parts of the cabinet.

• In order to disassemble the module, you need to gently push the module from the back to avoid forced unraveling.

• In addition to LAMPRO Tech's flight case or unit packaging box, other shipping tools should not be used to transport the cabinet. In addition, even if transported using LAMPRO Tech's flight case or packaging materials, there is no guarantee that the cabinet will not be damaged by excessive force. Packaging materials can be ordered from LAMPRO Tech. All warranty claims for damage to the cabinet due to incorrect packaging are null and void.

• The LED module mask can only be removed using the approved mask removal method described in the installation manual.

• Clean the cabinet only in accordance with the procedures specified in the instruction manual.

Precautions

1. When opening the screen, please turn on the computer before turning on the LED display. When the LED display is powered on, there will be a regional flashing, indicating that the screen is energized. When the screen is off, first turn off the power of the LED screen, then turn off the control software, and finally turn off the computer.

2. The newly installed LED display must be tested on the screen for the following operating procedures:

A. When starting up for the first time, the screen brightness is set to 10% and keep this brightness for 2 hours. Shut down for half an hour, then start up again and run according to this setting. Execute the program for 4 cycles.

B. After completing Step 1 above, set the screen brightness to 30% and keep 30% of the screen brightness for 8 hours. Shut down for 1 hour, then turn it on again and run according to this setting. Execute this program for 2 cycles.

C. After completing Step 2 above, set the screen brightness to 50% and keep 50% of the screen

brightness for 8 hours. Shut down for 1 hour, then turn it on again and run according to this setting. Execute this program for 2 cycles.

D. After completing Step 3 above, set the screen brightness to 70% and keep 70% of the screen brightness for 8 hours. Shut down for 1 hour, then turn it on again and run according to this setting. Execute this program for 2 cycles.

E. After the above test run is completed, set the screen brightness to 100%. Start running for 2 hours and monitor whether the screen functions normally. After everything is normal, set the items such as screen on/off time, time period brightness switching, screen power temperature monitoring, screen communication monitoring, etc. according to customer requirements.

3. The LED screen has been installed. If it is not turned on for a long time, the video will be aging. The aging process refers to the newly installed LED screen's trial operation procedure.

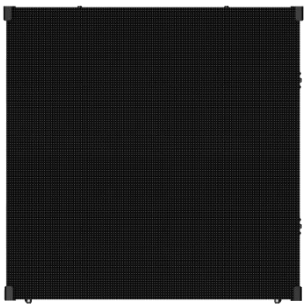
For the calibration effect maintenance of the corrected display, please refer to the calibration maintenance manual attached to our CD-ROM.

2. About LRS Series Products

2.1 Product Introduction

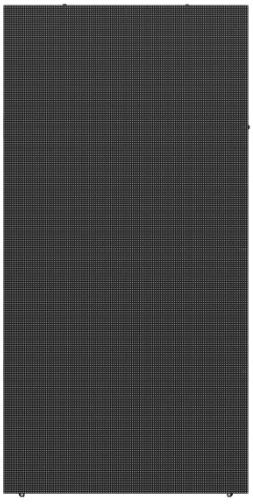
LRS series is suitable for indoor and outdoor applications: there are 6 pixel pitches options indoor 1.9/2.6/2.9/3.9, outdoor 2.9/4.8/5.9/7.8; it can meet most of the needs of the mainstream pixel pitch in the rental market.The cabinet size:500*500/1000mm。

The cabinet of this whole series is made by die-casting aluminum for higher precision and lighter weight. Plus, this product adopts magnetic modules, together with maintenance tool, to make the installation and maintenance easier and time-saving.LRS can also be fixed with optional screws for better security, which can only be maintained at the rear. For convenient transportation.both top and side handles are designed for the cabinet, Control box is fixed by 2 locks , easy for operation. Cabinets are with arc lock to realize -10°~+10° curve, and powerful magnet at the top can realize pre-hanging. Hanging beams, brackets and flight cases are optional. Signal indicator light and testing buttons are set external.



500× 500mm cabinet Front View

500× 500mm cabinet Rear View



500× 1000mm cabinet Front View

500× 1000mm cabinet Rear View

2.2 Product specifications

Specifications for LRS LED screens

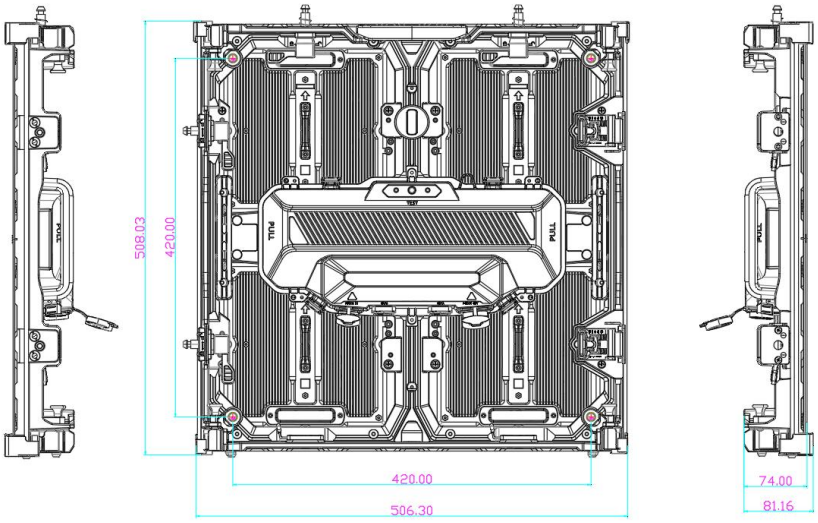
Parameter	Value				
Pixel Pitch	2.6	2.9mm	3.9mm	O3.9mm	O4.8mm
LED Type	3-in-1 SMD	3-in-1 SMD	3-in-1 SMD	3-in-1 SMD	3-in-1 SMD
Brightness(cd/㎡)	800-1000	800-1000	800-1000	4500-5000	4500-5000
Pixel Density(Pixels/㎡)	147456	112896	65536	65536	43,264
Pixels Per Panel(Pixels)	192 × 192/384	168 × 168/336	128 × 128/256	128 × 128/256	104X104/208
Module Size(W*H mm)	250 × 500、250 ×250(optional)			250 × 500	250 × 500
Panel Size(W*H*D mm)	500 × 500 /1000× 74.2(19.7”x 19.7”/39.4”x 2.95”)				
Weight(Kg/lbs/ panel)	7.5/11.5 kg (16.5/25.4lbs)				
Maintenance	Rear / Front			Rear / Front(Optional)	
Ingress Protection (Front/Rear)	IP40 / IP20	IP40 / IP20	IP40 / IP20	IP65/ IP54	IP65/ IP54
Curve	Convex 10° -Concave 10°				
Material	Die-cast Aluminium				
Color Temperature(K)	3,500-10,000 Adjustable	3,500-10,000 Adjustable	3,500-10,000 Adjustable	3,500-10,000 Adjustable	3,500-10,000 Adjustable
Viewing Angle（H/V °）	170/170	160/155	160/155	160/160	160/160
Contrast Ratio	7000:1	6300:1	5000:1	4000:1	4000:1
Input Power <Max>/<Typical>(W/m²)	465/155	460/153	450/150	600/200	545/180
Input Voltage	AC100~240 V	AC100~240 V	AC100~240 V	AC100~240 V	AC100~240 V
Processing Depth(Bit)	15/16(Optional)	15/16(Optional)	15/16(Optional)	15/16(Optional)	15/16(Optional)
Refresh Rate(Hz)	3840 Hz	3840 Hz	3840 Hz	3840 Hz	3840 Hz
LED Life Time(Hours)	100000	100000	100000	100000	100000
Operating Temperature/Humidity	-10℃~+45℃/10~80%RH			-20℃~+50℃/10~90%RH	
Storage Temperature/Humidity	-10℃~+50℃/10~80%RH			-20℃~+55℃/10~90%RH	
Standard Mounting Configuration	Hanging, Stacking	Hanging, Stacking	Hanging, Stacking	Hanging, Stacking	Hanging, Stacking
Max hanging(Panels)	20/10	20/10	20/10	20/10	20/10
Max stacking(Panels)	12/6	12/6	12/6	12/6	12/6
Certification	CE/CB/ETL /FCC/RoHS	CE/CB/ETL/ FCC/RoHS	CE/CB/ETL/ FCC/RoHS	CE/CB/ETL/ FCC/RoHS	CE/CB/ETL/ FCC/RoHS

Remark: 1. Power consumption tolerance: ±15%, according to the actual situation.

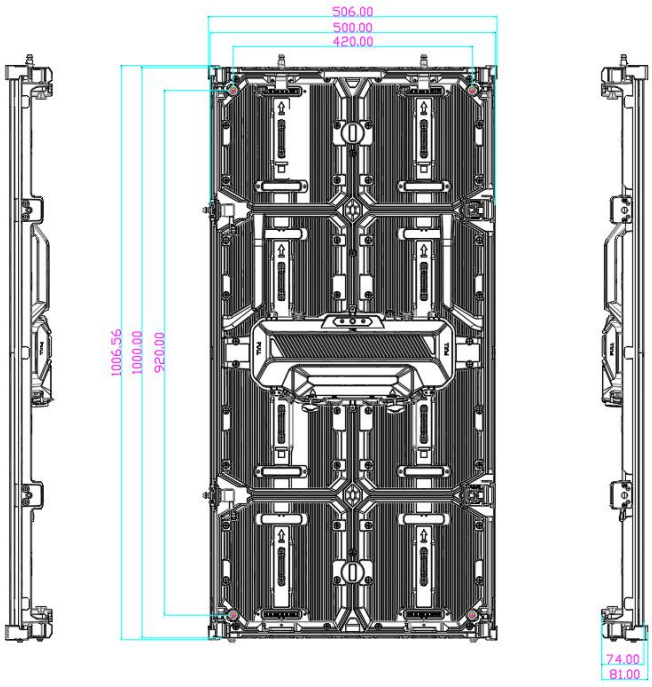
2. The ambient humidity for storage in the specification refers to the unopened.
3. The viewing angle here refers to the angle between sight line and normal line.
4. Shenzhen LAMP Technology Co.,Ltd. reserves the right to modify specifications and parameters without prior notice.

2.3 Product Components

Cabinet Section

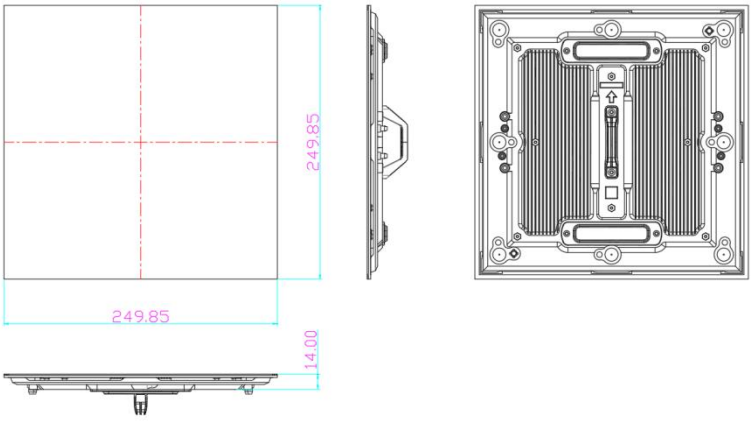


500×500mm Cabinet

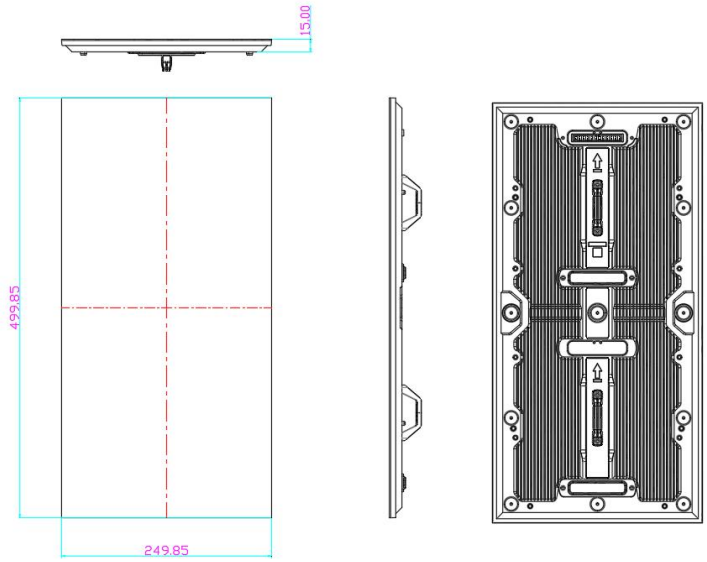


500×1000mm Cabinet

Module Section



250×250mm module

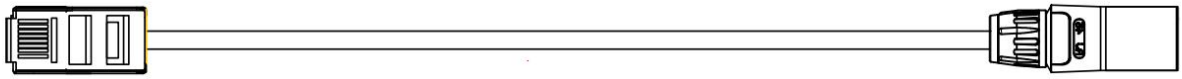


500×250mm module

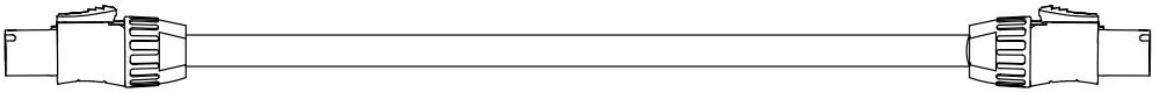
Cable Section

Cascading signal cables between cabinets

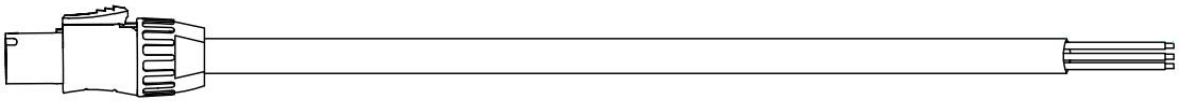
Main signal cord



Cascading power cables between cabinets



Main power cord

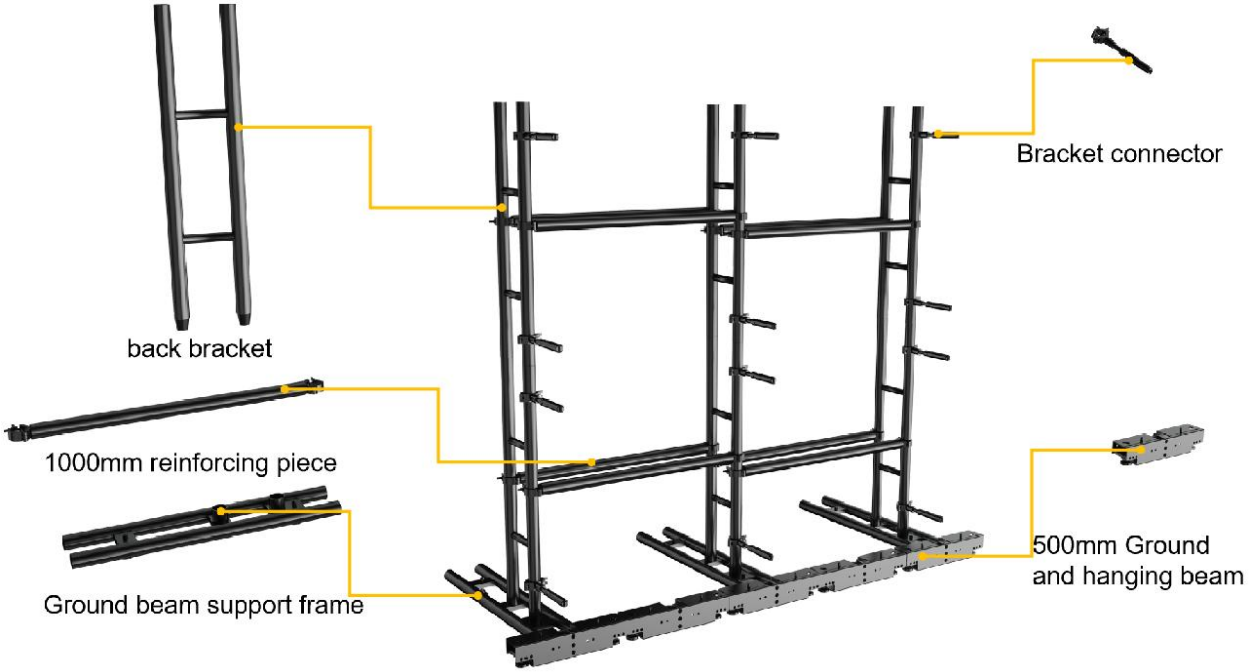


2.4 Installation Structure Section

This product can be installed by stacking and hanging ;

2.4.1 Stacking installation

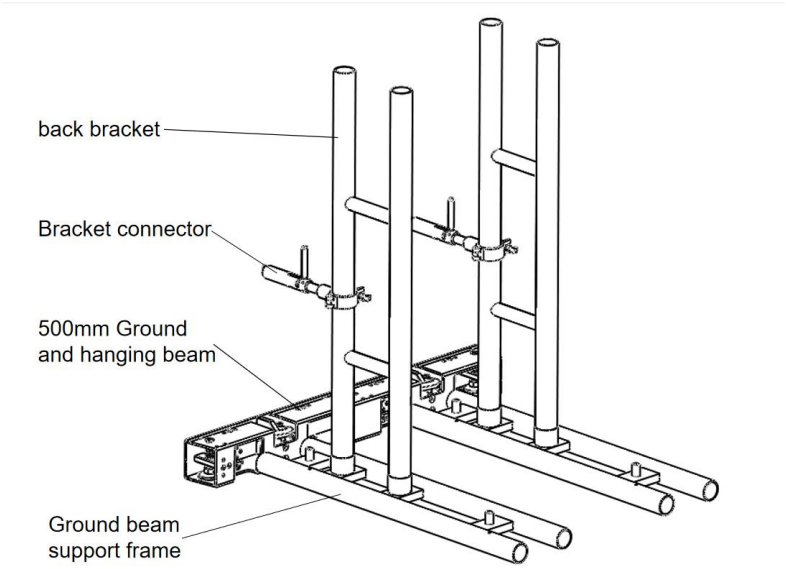
LRS series is equipped with a special mounting bracket



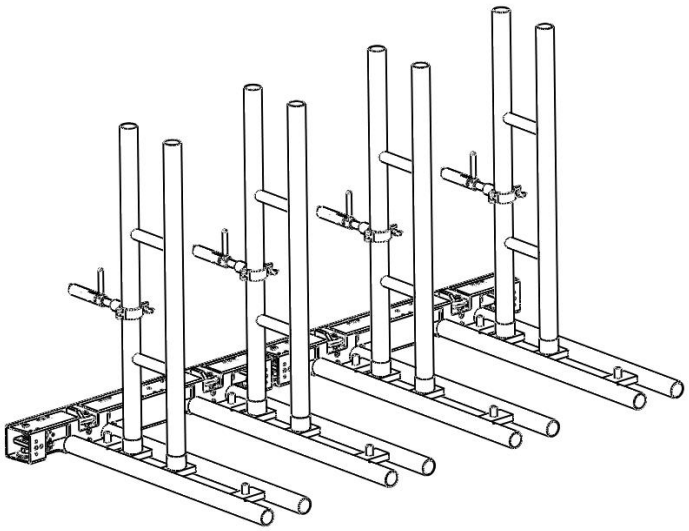
Assemble the Stacking first, and then mountain the cabinet one by one. It need to be connected with the frame by Back Connector.

a. Put stacking bar on the floor and insert the stacking support. Lock the stacking and stacking support with latch

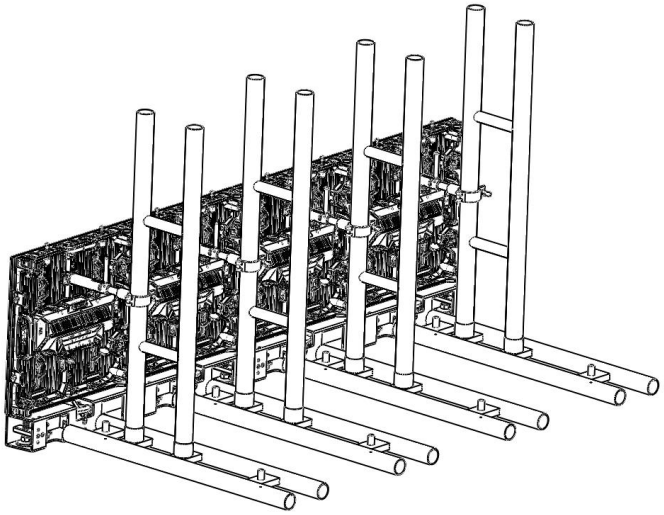
b. Put the Back frame on the Stacking Support and lock the Back Frame and Stacking Support with latch. Lock the Back connector on Back Frame.



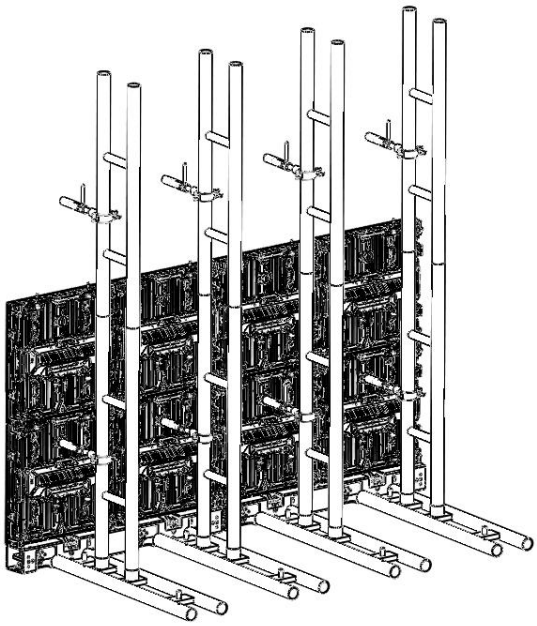
c. Install the Stacking System one by one. As the picture. Adjust the Stacking in same level by adjustable foot.



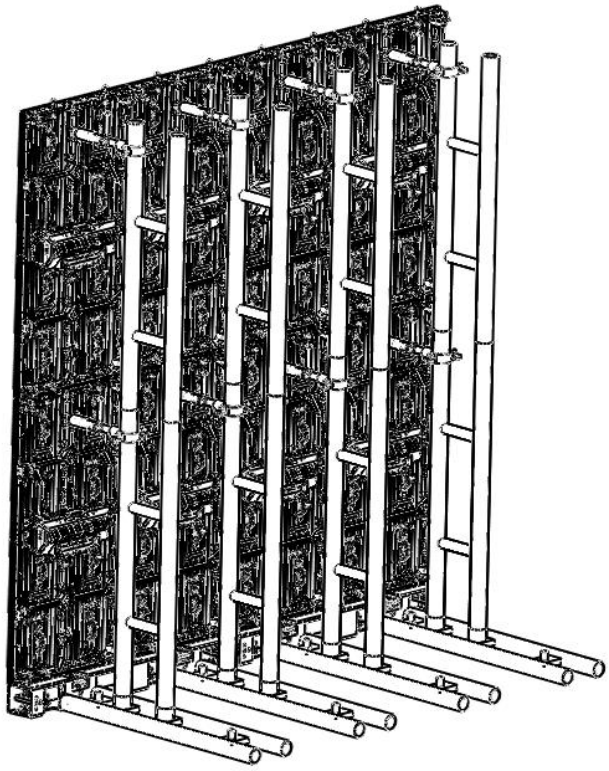
d. Mountain the cabinet on the Stacking System. Connect the Back Connector on cabinet and then mountain cabinet one by one. Lock the connector between cabinets.



e. Put the next floor Back Frame on Stacking System



f. Keep mounting cabinets, lock the connector between cabinets and adjust flatness of the module side.



g.For stacking installation we recommend maximum height is 6 meters. when the screen height more than 3 meters, we need put some weights (sandbag)on the back to make sure the safety of the screen.

2.4.2 Hanging

The design of LRS series by Lamp includes 0.5m and 1m hanging beams to realize hanging installation. (The following steel structure and screen size are only for demonstration and reference)

1.Put two cabinets(at least 5 to 6 cabinets) on the ground, adjust the flatness and the gap well of two cabinets and then connect the locks between two cabinets, make sure two cabinets each pixels align on the same level line, repeat above step to connect other cabinets, until first row cabinets all connected well(according to the screen size, at least need connect 5 to 6 cabinets together like above method)

2. Put the hanging beam on the first row cabinets top side, adjust hanging beam location hole match to the cabinet location pin completely ,and then connect the cabinet and the hanging beam by the top lock on the cabinet,make sure each lock

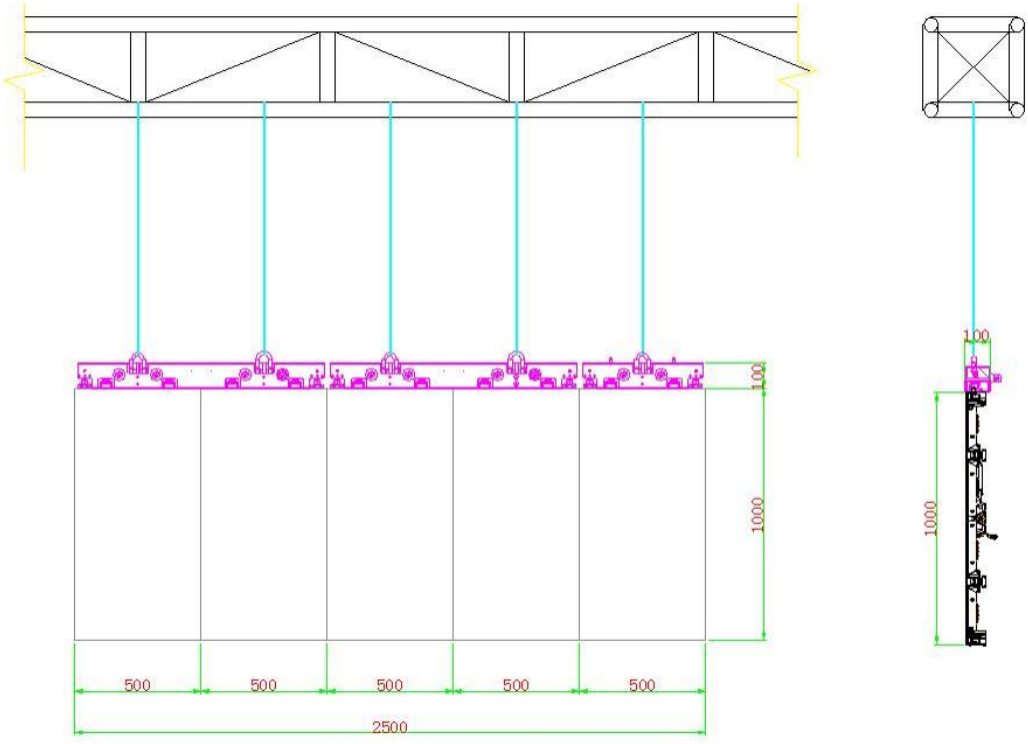
3. Use M10*15mm screws to fix two holes and four holes connecting plate(refer to following figure) between hanging beam and first cabinet, through the connecting plate connect each hanging beam together, in order to increase safety factor and make sure the flatness between each cabinets when the cabinets be hanging, this is very important (only between the first row cabinets and hanging beam need the use connecting plate)

4. Use lifting belts and bow shackle to connect hanging bar ‘s hanging ring, usually each hanging beam need use a lifting belt, but according to the screen size and weights , can choose each two hanging bar use one lifting belt, as shown in the following figure

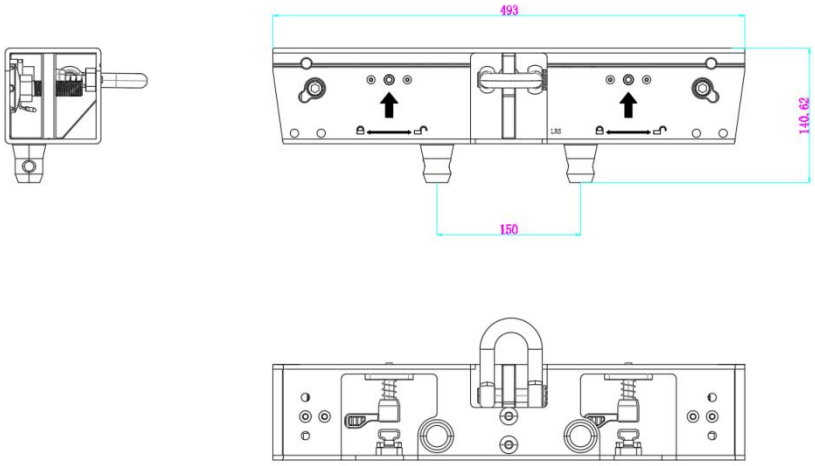
5.After first row cabinets be install well , check the flatness and gap between each cabinet, make sure it good , then can fix second row, third row etc, each row first cabinet must start from middle to two side of the last row, in order to keep the balance of the screen weight, make sure flatness and gap of the screen, fix the rest cabinet one by one until finish the installation of whole screen(when connect every cabinet, make sure the flatness and gap between each cabinet is ok, then can start to connect next one, if there have flatness and gap issue, can adjust the left side lock latch’s tightness and loosening)

6. LRS standard cabinet are equipped with magnetic assisted magnet base, can support one person installation, after install first row cabinet on hanging beams, the rest row cabinets is very convenient to installation,just need to put the cabinet top side close to upper cabinet bottom side,align the location hole and location pin between two cabinets, then two cabinets will adsorbed together automatic, people can release two hands to lock two hanging locks(magnet base are auxiliary function only, not a substitute for hanging locks)

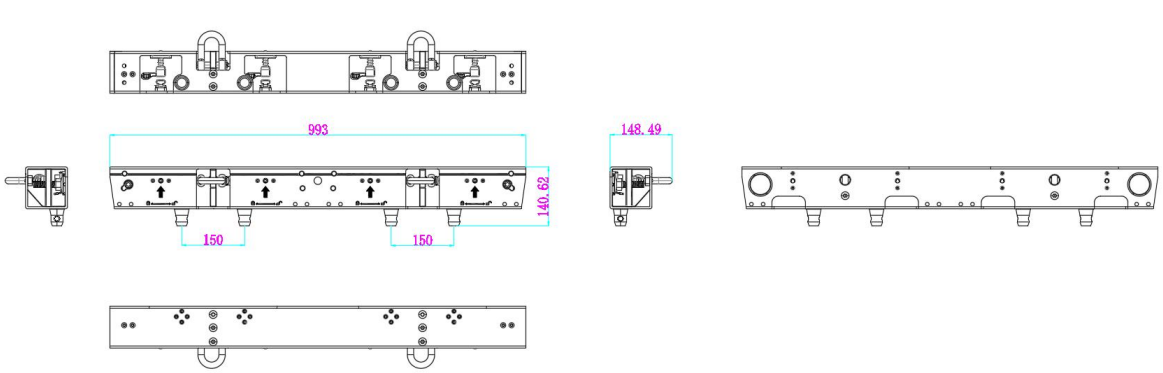
7.After the installation of all cabinets, connect the signal cables, data cables and connecting plates by drawings, and check whether all are connect well



LRS hanging installation



LRS 500mm hanging and stacking beam



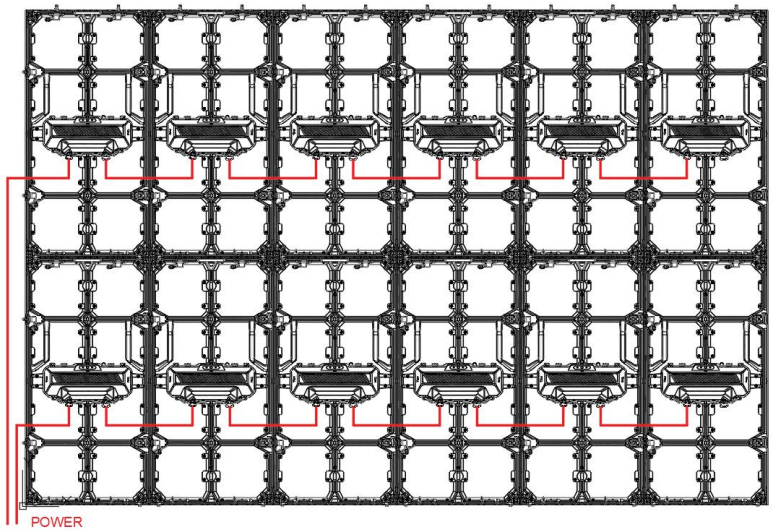
LRS 1000mm hanging and stacking beam

2.5 Wiring

The power supplies between LRS series cabinets are connected with connector, one is for input and the other is for output; the signals are connected with aviation connector. One is for input and the other is for output (any port can be taken as input or output).

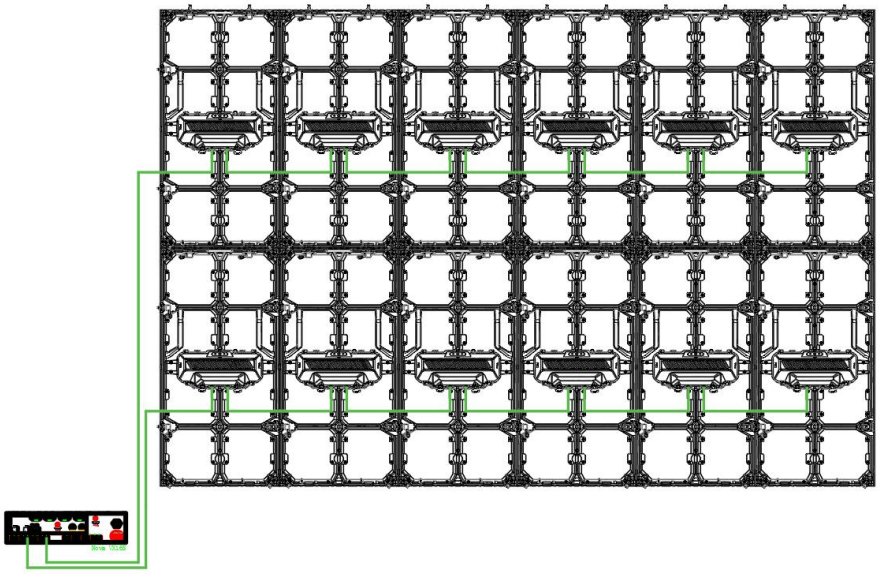
Please refer to the cabinet wiring diagram delivered with the goods for the panel wiring mode.

Before power on for entire screen, please carefully check the power and signal cable connections. Please carefully check the "L" line, "N" line and "PE" of each cabinet's AC input port, make sure there is no short circuit between each lines (Use multi-meter to measure it).



Power connection for the entire scree

Data cable connection

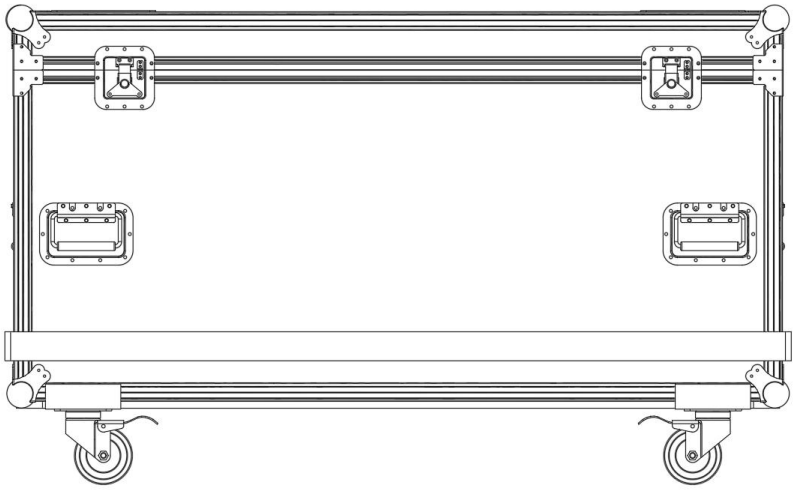


Pixel load range for each signal port cannot be more than 650,000 pixels.

*This is only one of the ways, and the specific situation is subject to the order plan

2.6 Product Packaging

LRS series adopt flight case for the cabinet transportation. For 500*500mm cabinet is 10 cabinets in 1 flight case as standard , 500*1000mm cabinet is 5 in 1 flight case as standard , flight case size also can be customized as 8 in 1 and 4 in 1 .



LRS series flight case

2.7 Accessories

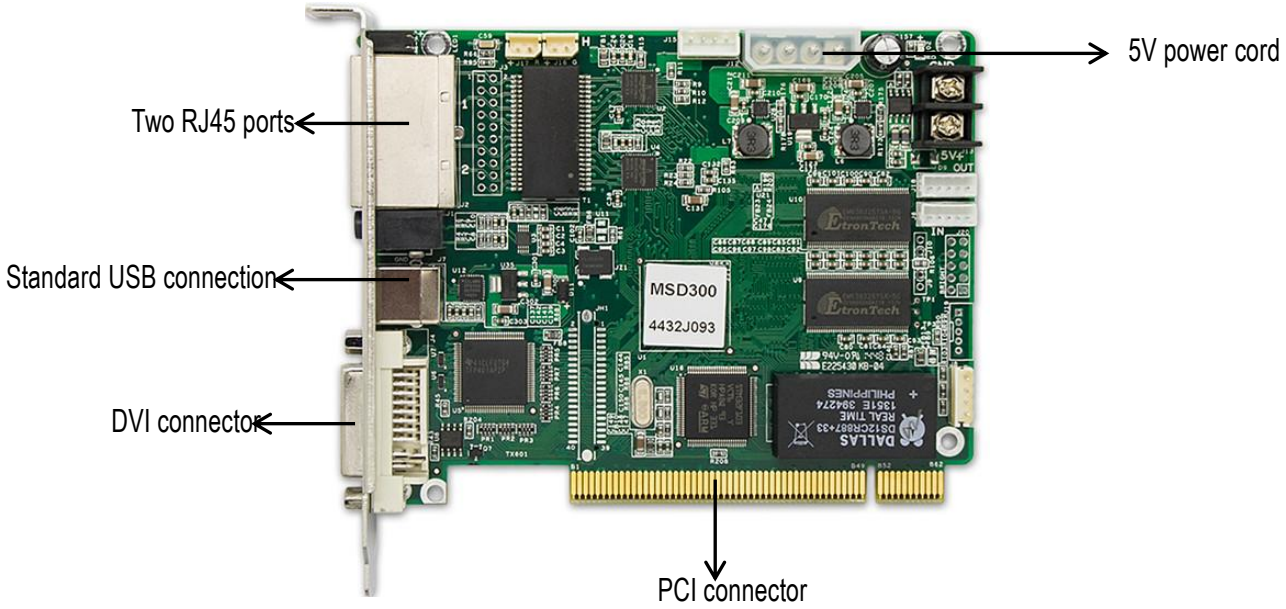
Vacuum tool for front maintenance

3. System installation

3.1 System hardware

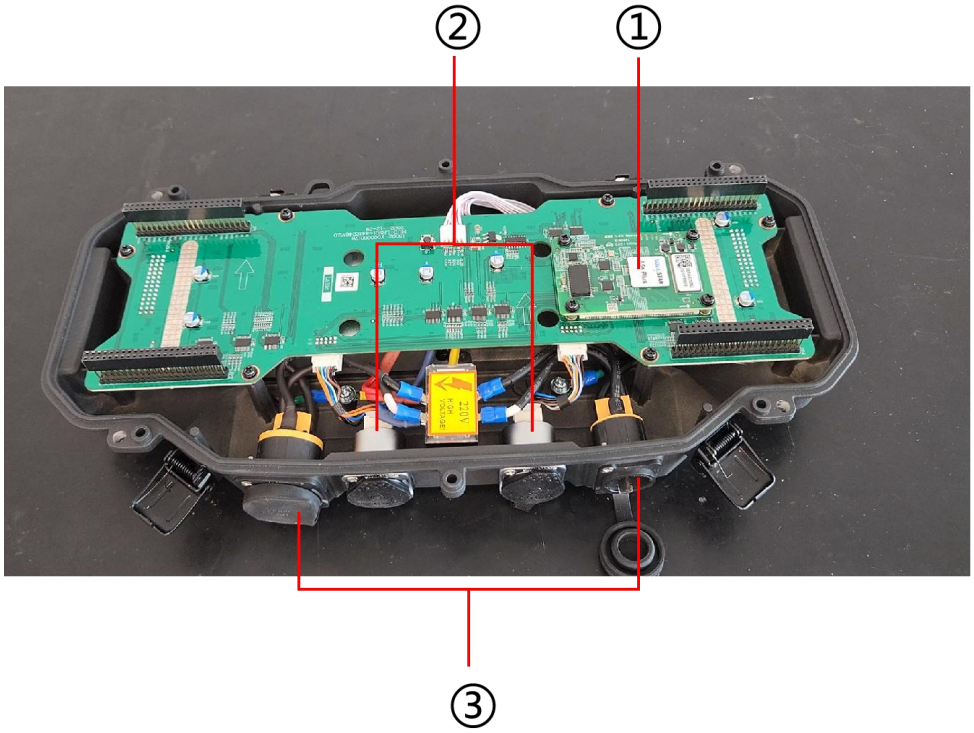
The main controller for this controlling system includes sending card, receiving card, and HUB board. Details are as following:

3.1.1 Sending card



NO.	Name	Function
1	PCI Connector	The sending card could insert into computer PCI slot by this connector. PCI slot only provide 5V DC to sending card.
2	DVI connector	Connect to the computer graphic card DVI output with the DVI cable.
3	Two RJ45 ports	Main data output ports. The one close to the USB port is 2nd PORT. The other one is 1st PORT. These ports are connected to receiving card by cat-5 cable.
4	Standard USB connection	Connect to computer USB port.
5	5V power cord	Sending card can be powered by this cord using 5V power supply instead of installing in computer sometimes.

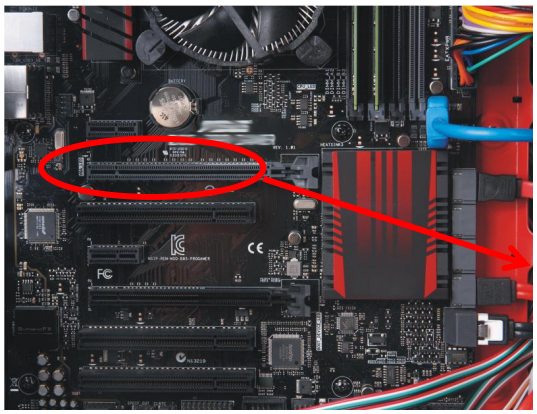
3.1.2 Receiving card



NO.	Name	Description
1	Receiving card	NOVA A series receiving card
2	Signal connector	Signal connector ,connect to sending card or receiving card by CAT5 cable
3	Power connector	Input and output power connector

3.2 System hardware installation

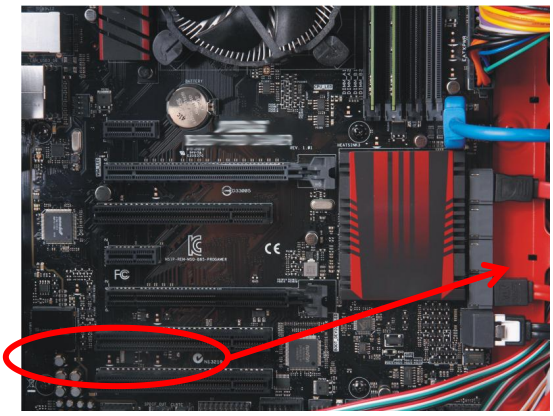
1. Install the DVI graphic card in the computer, and then install the driver for the graphic card.

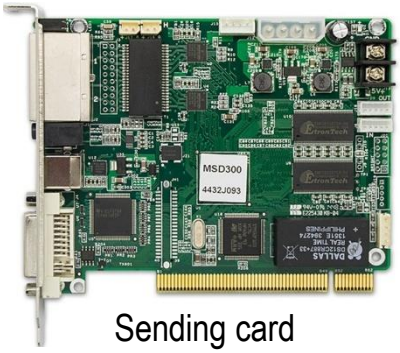


Graphic card- rear view

Graphic card- front view

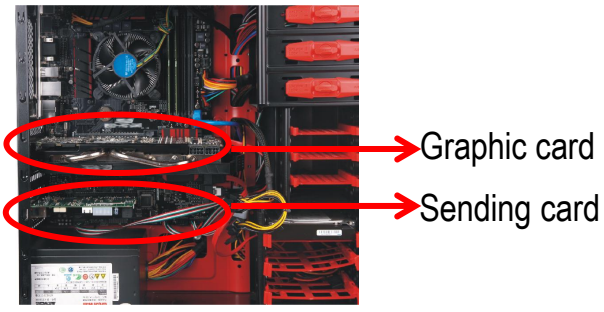
2. Install the sending card in the computer



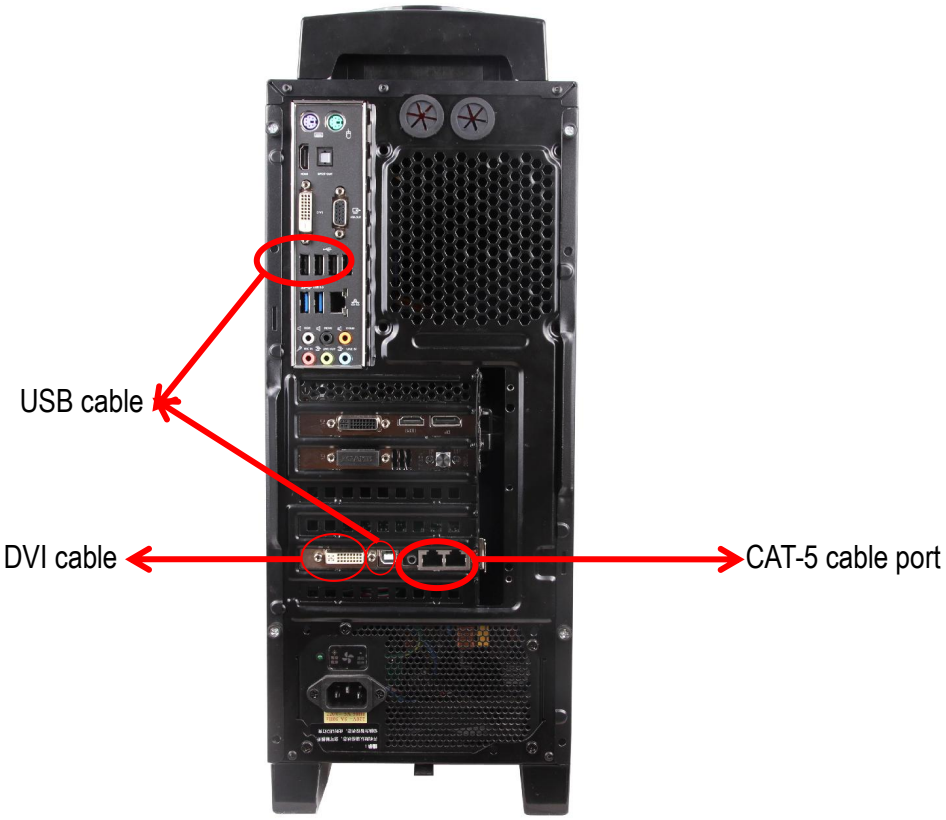


Sending card

3. After installing these, the computer shows like this:



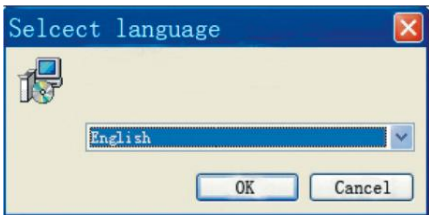
4. Then we can connect the cables within computer and cards. First connect USB cable from computer USB port to sending card USB port. Then connect DVI cable from graphic card to sending card DVI port. Then connect CAT-5 cable from sending card 1st port to first cabinet.



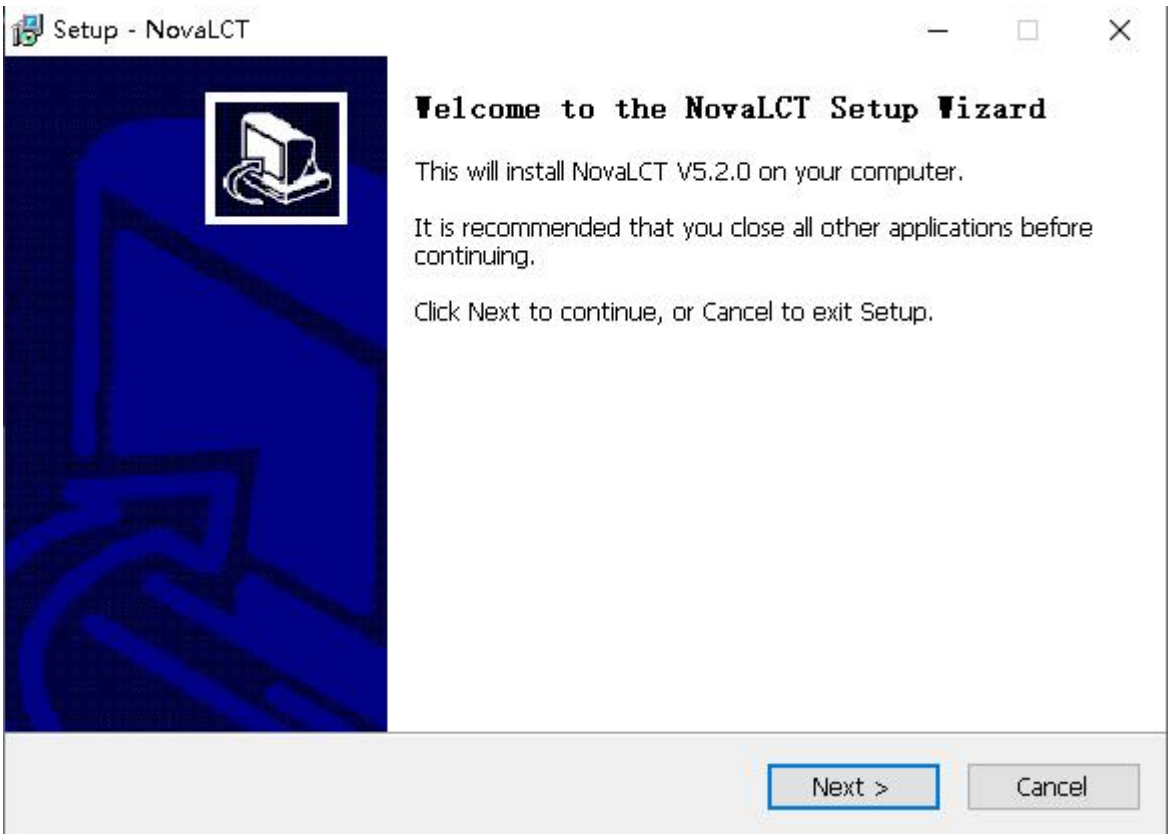
3.3 Control software installation

1. Double clicks the setup file.

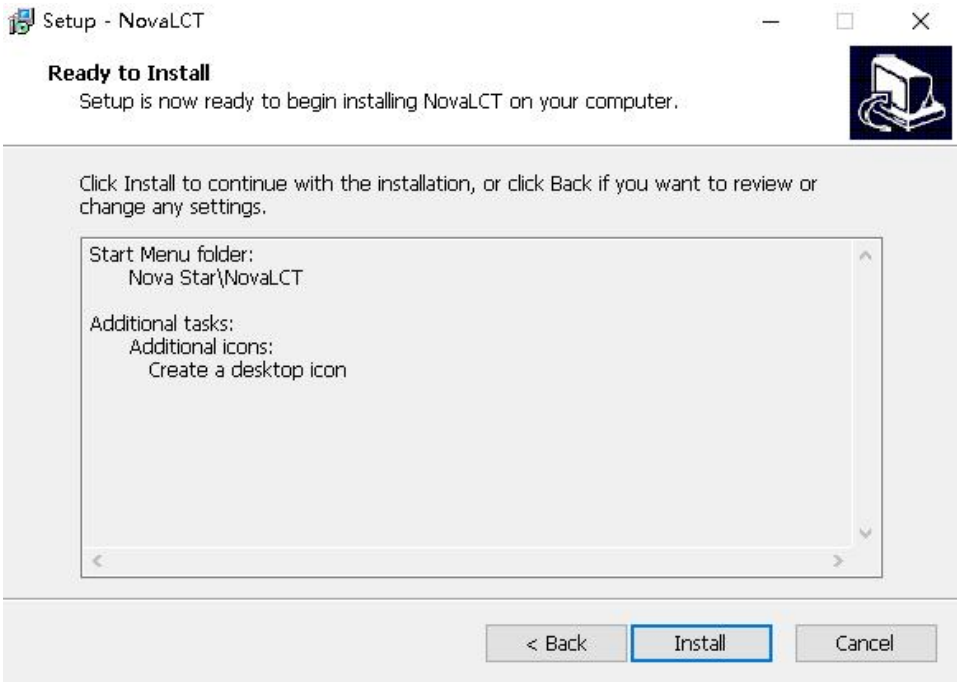
2. Select the English language. Then click "OK"



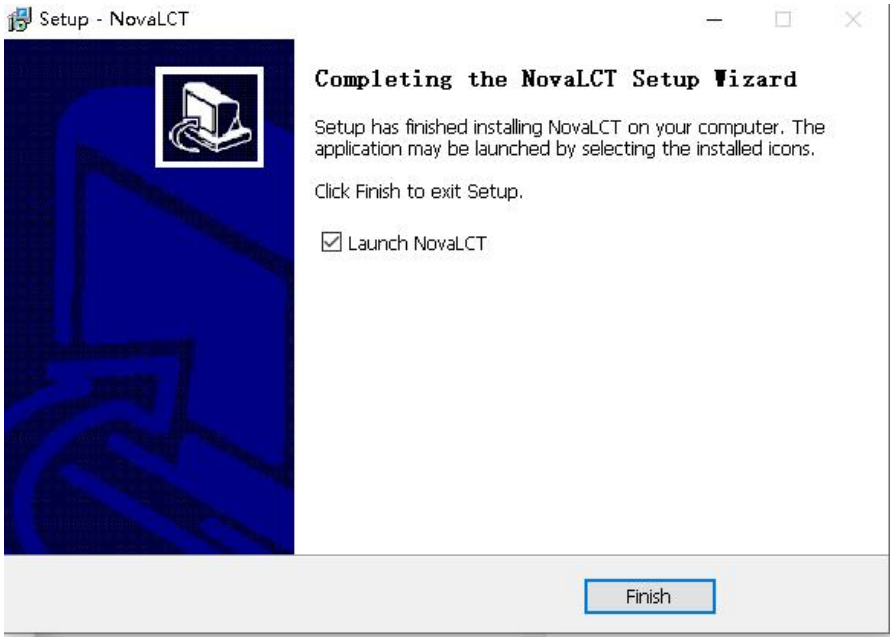
3. Click "Next" four times.



4. Click "Install".



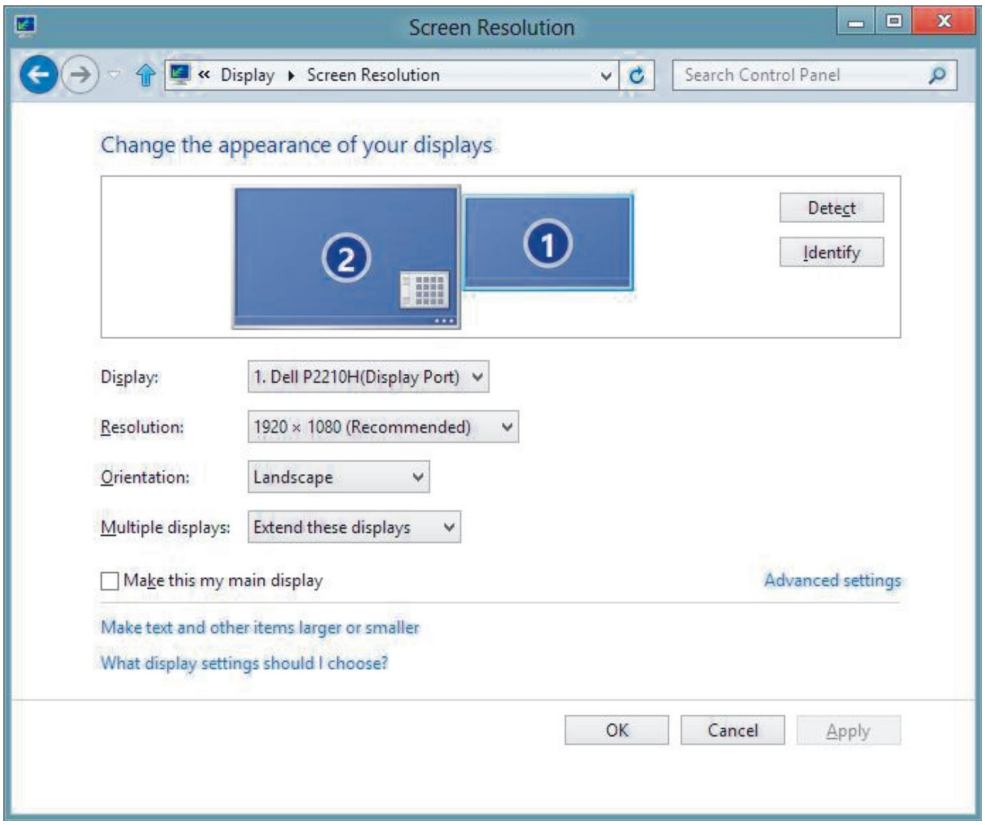
5. Click "Finish" and then the "NovaLCT" will be installed.



3.4 How to set up copy modes

Please choose one suitable for you from three graphic cards setups, as follows:

3.4.1 Intel HD graphics



To configure the monitors' positions,

1. Right-click the desktop, and then choose Personalize from the menu.

2. In the resulting window, click the Display, and then click Change Display Settings

3. In the Change Display Settings window, click and drag the virtual monitors to mimic your physical setup.

4. Click OK, and you're done.

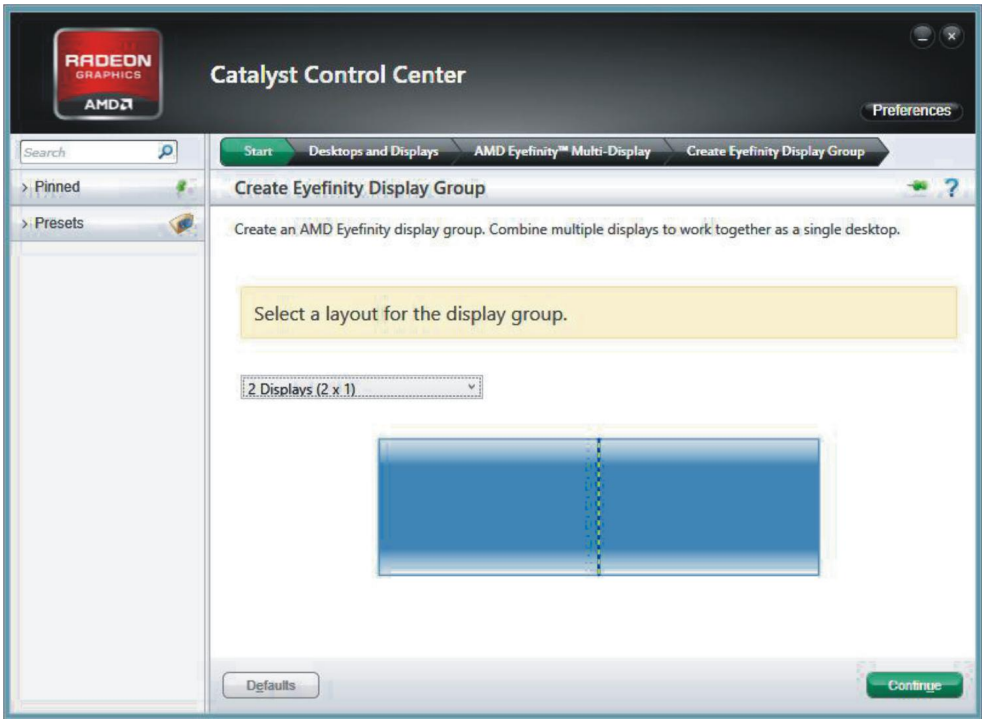
5. Another way to bring up the necessary control panel is to open your Start menu and enter Display Settings in the search field.

3.4.2 AMD Radeon Graphics (5000Series or Newer)

1. We recommend pointing your browser to AMD.com, and downloading and installing the latest drivers from the company's site.

2. The subsequent setup process for a basic multi-monitor configuration is identical to the one for Intel's integrated graphics.

3. Users can configure to treat multiple monitors as a single, large surface.

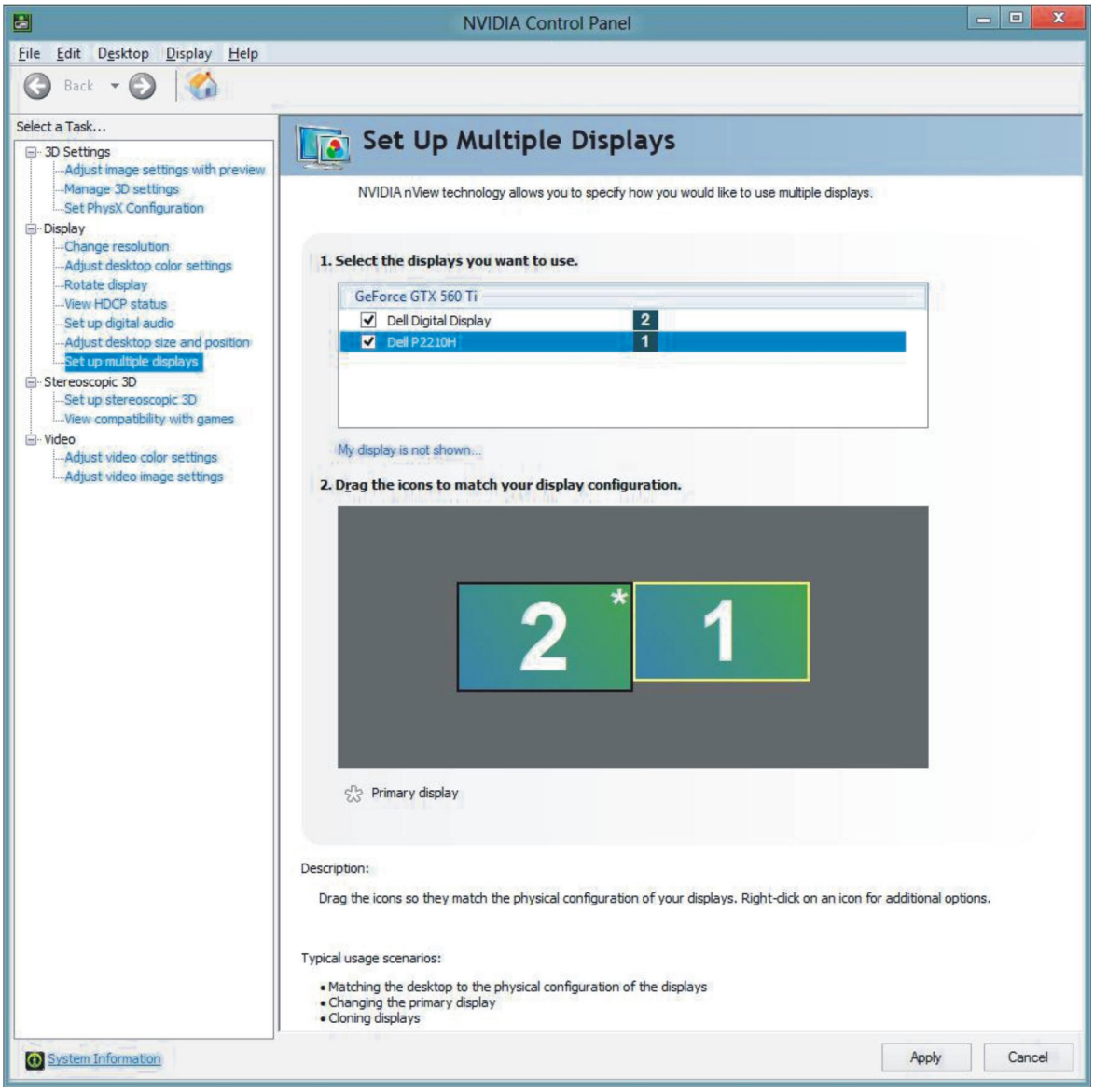


1. We recommend pointing your browser to AMD.com, and downloading and installing the latest drivers from the company's site.

2. The subsequent setup process for a basic multi-monitor configuration is identical to the one for Intel's integrated graphics.

3. Users can configure to treat multiple monitors as a single, large surface.

3.4.3 NVIDIA Graphics



1. Download those drivers and install them.

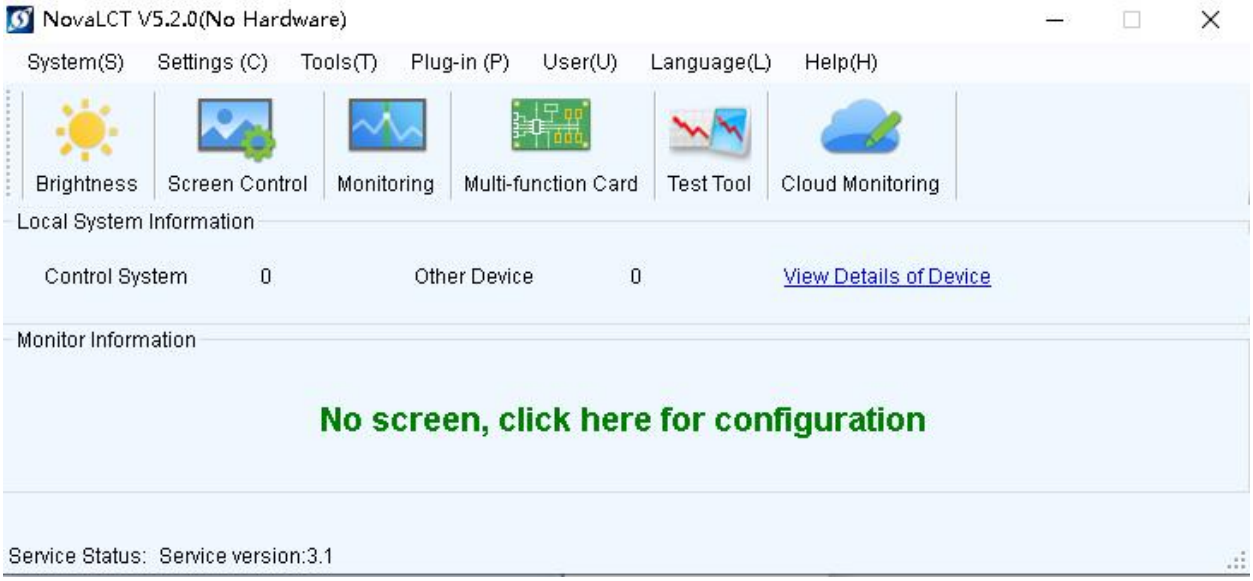
2. Open the NVIDIA Control Panel by right-clicking the desktop and choosing NVIDIA Control Panel

3. Click the Set up multiple displays link in the left pane and follow the procedure outlined above to mimic the monitors' positioning.

3.5 System software configuration

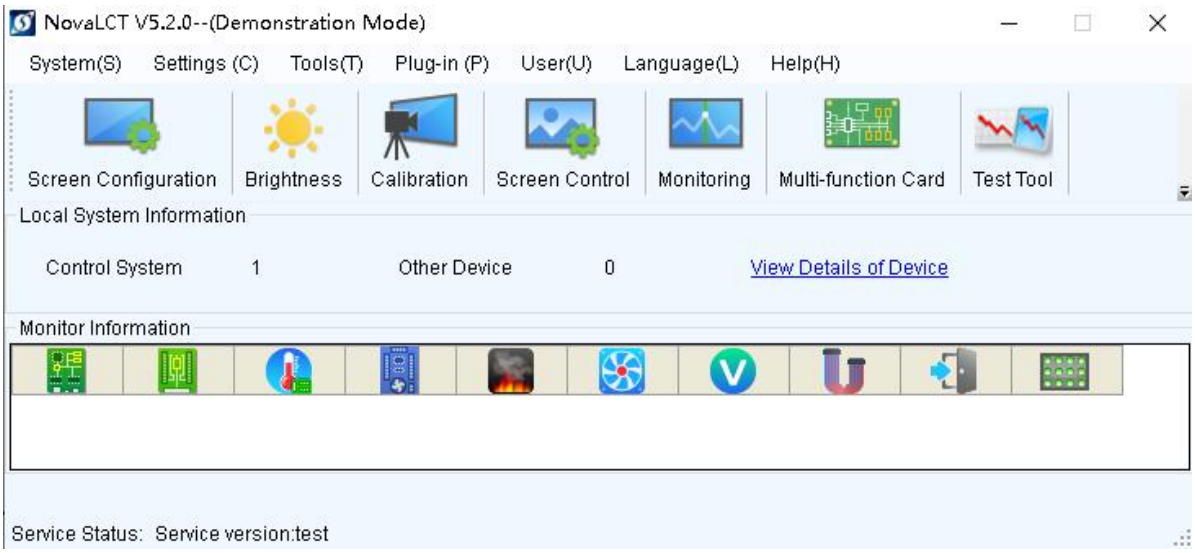
1. Connect the data cable from sending card to the cabinet, clone the graphic card, power on the panel, then every cabinets should be working and showing the same image—or showing one part of the desktop in disorder. If the cabinet is not working, first please check if power is turn on and power cable are connect well. Then check if the green LED on receiving card whether flicker quickly or not, if it flickers very slowly, please check the data cable connection till the green lights is flashing. Once it's done, open NovaLCT  , we will get a window as below:

2. Click "User ——> Advanced Login"

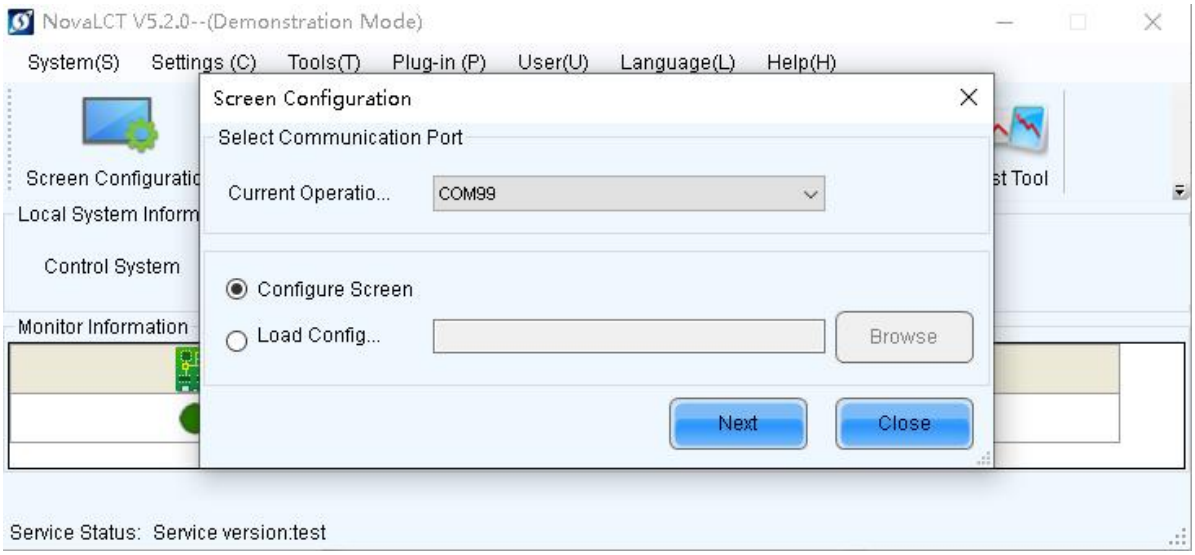


3. And then will appear a dialog box, "User Login"

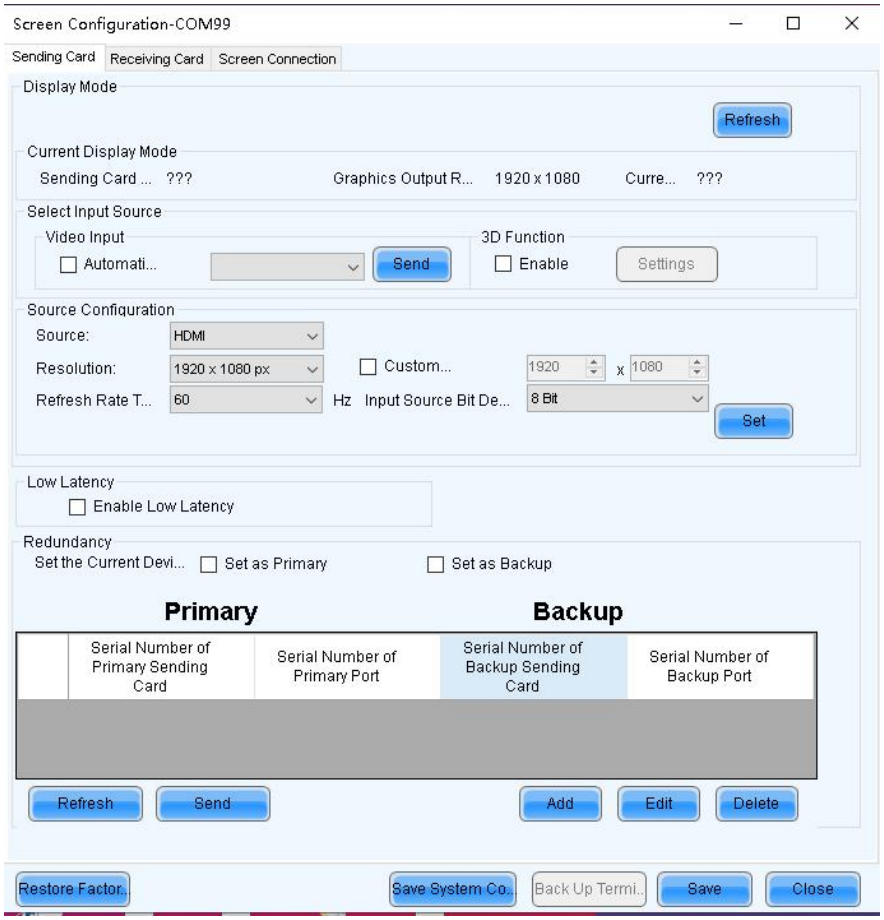
4. Then input the password “666”



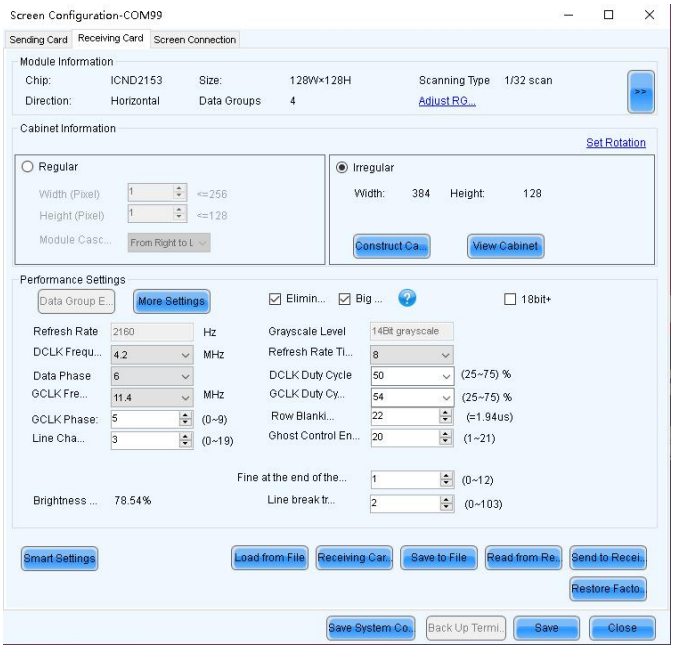
5. Click "Screen Config"



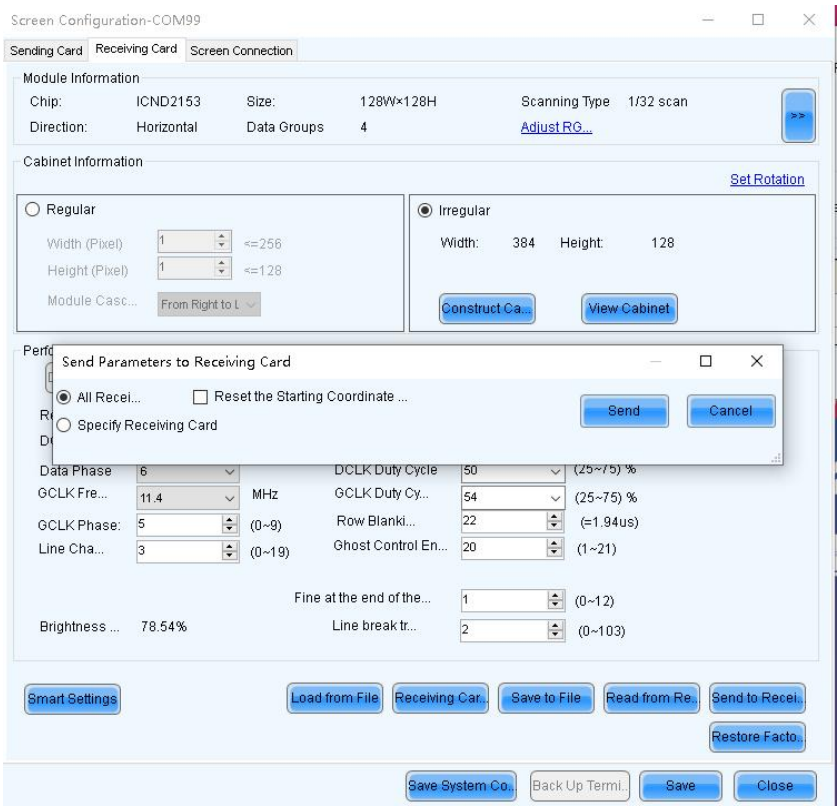
6. Click "Next", Come to the window of "Screen Config", including "Sending Card", “Receiving Card” and "Screen Connection". Click "Sending Card", set "Resolution" and "Refresh Rate" the same with your graphic card. Then click "Save" ->"Ok"



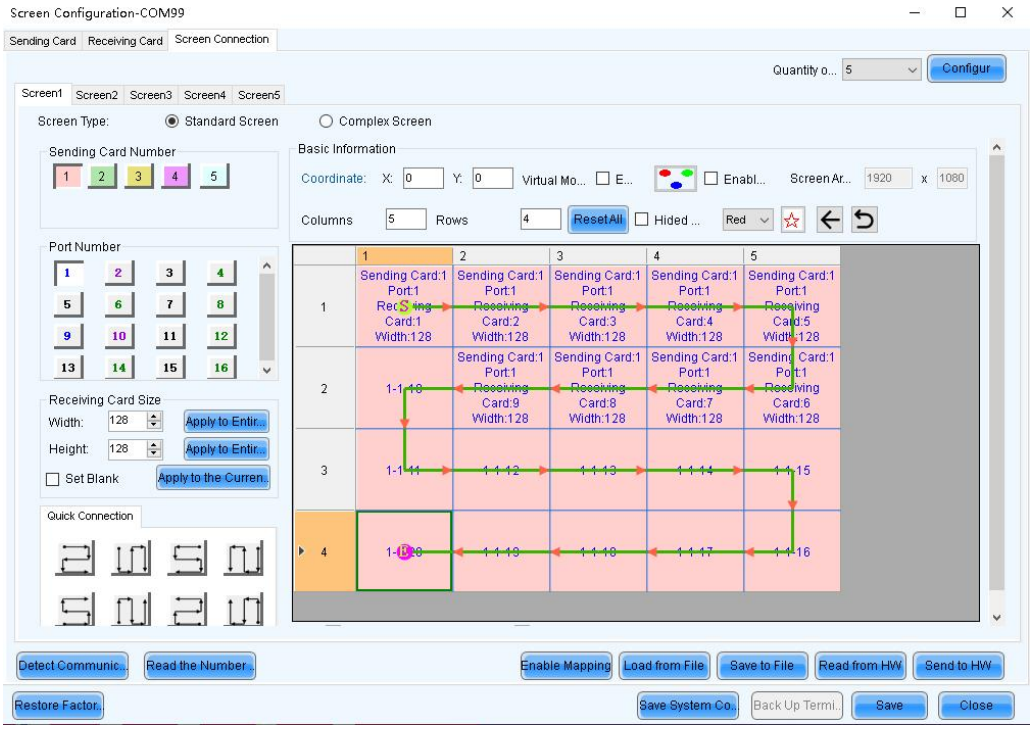
7. Click "Receiving Card" -> “Load File”, load the right *rcfg file, then click "Send to Receiving Card"



8. Then select "All Receiving Cards" -> “Send”



9. Click "Screen Connection" ->Screen Number : select “1”.Then select "Standard Screen" .If we have 5 screens for example, then we need to change the "Receiving Card Columns" number to 5. And then connect them in the order they are installed

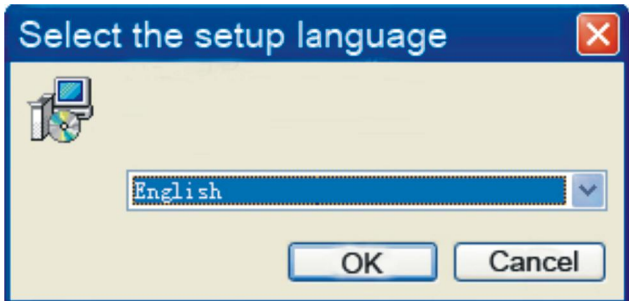


10. Click "Send to HW"->“Save"

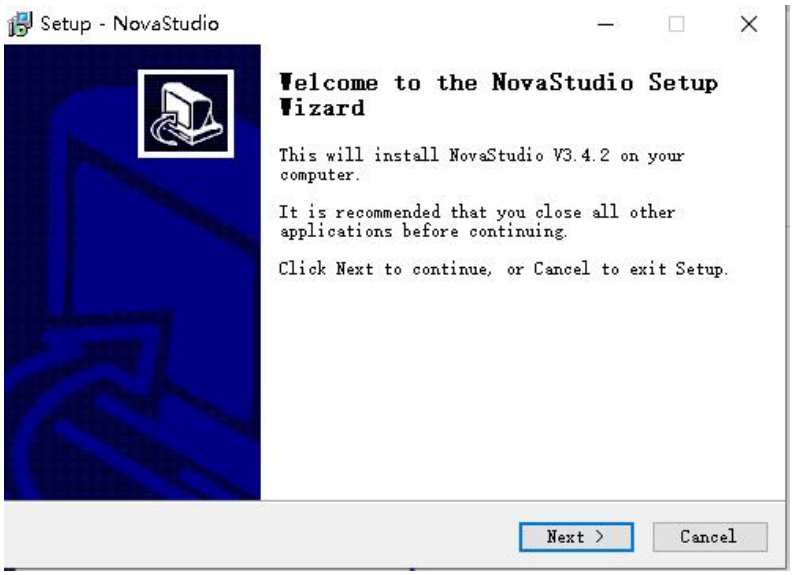
3.6 Quick operation with Nova studio

1. Install the Nova Studio by click the icon

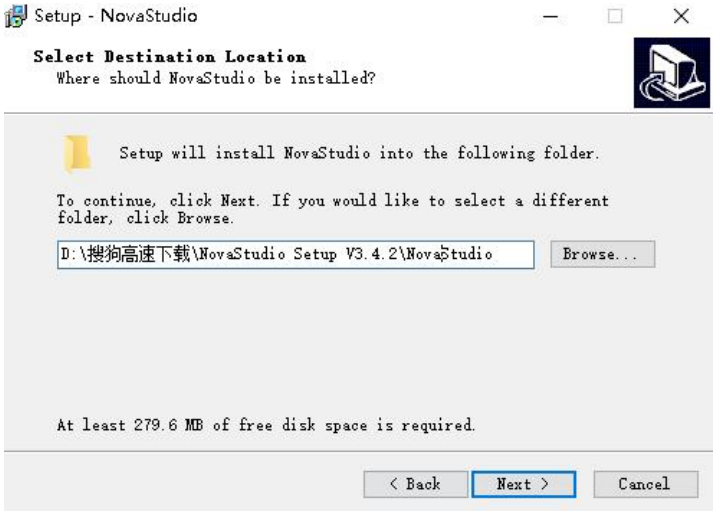
2. Select the English language. Then click” OK ”



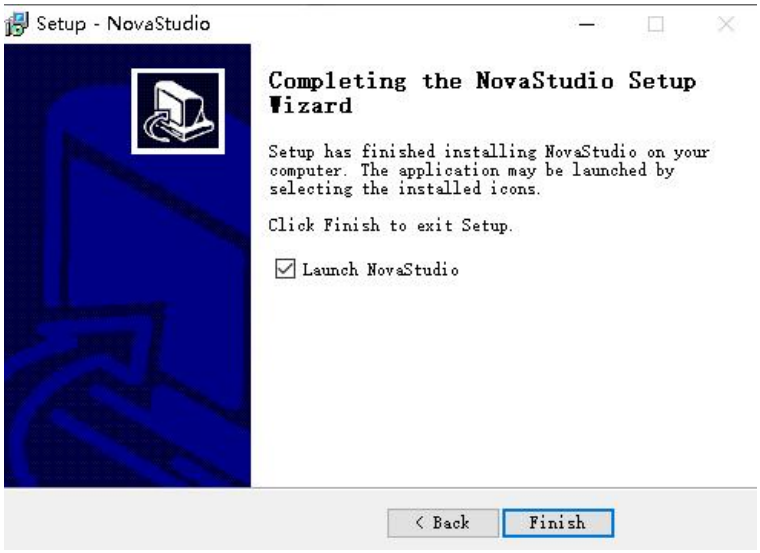
3. Click "Next" four times



4. Click "Install"

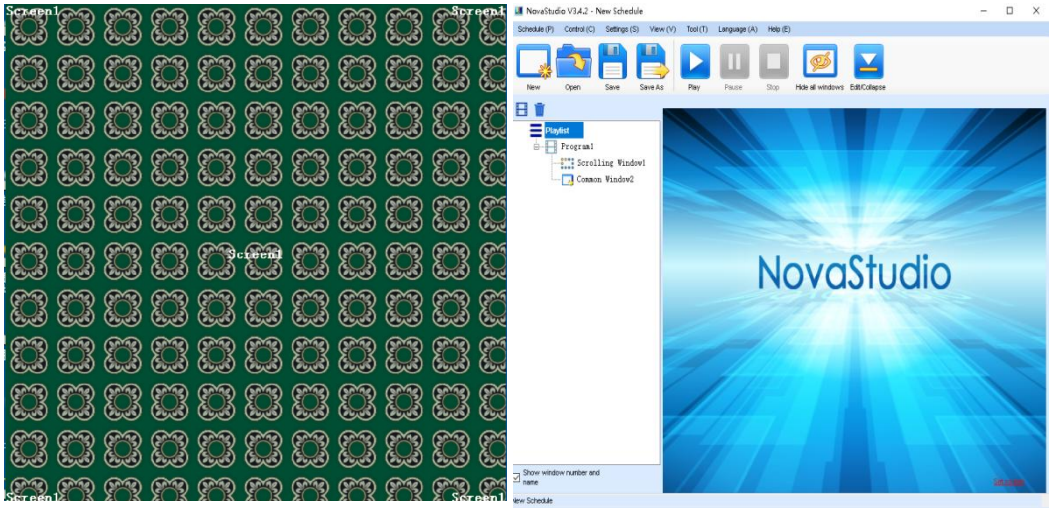


5. Click "Finish" and then the "Nova Studio" will be installed



6. Click the icon 

, we will get two windows as below:



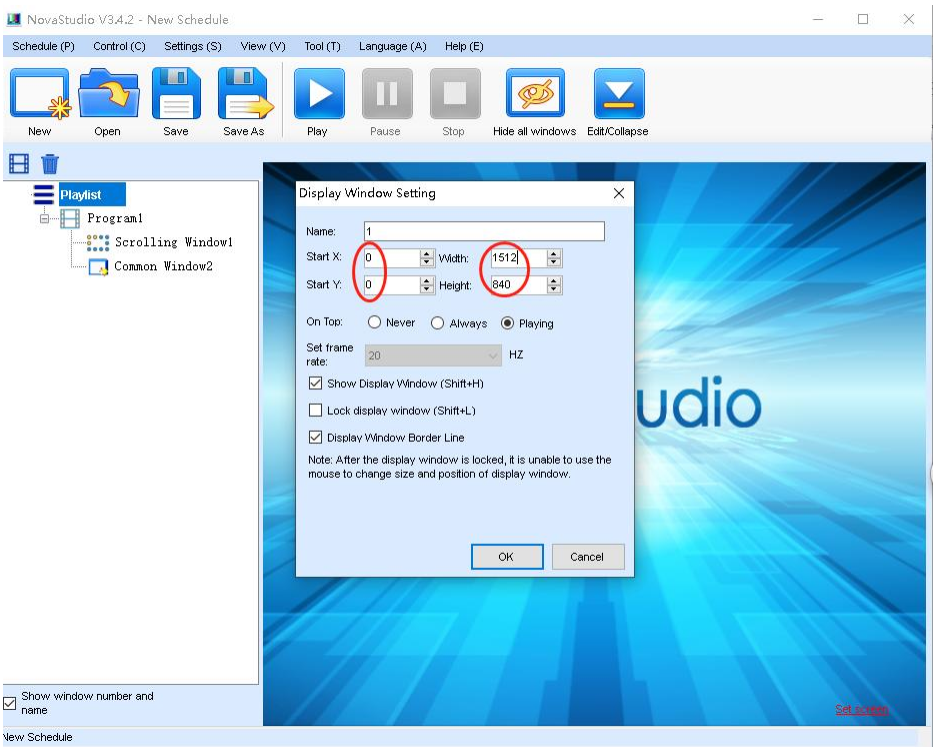
7. Click "Settings" -> “Display Settings”, come to the following window:

Count of Display Screen: 1

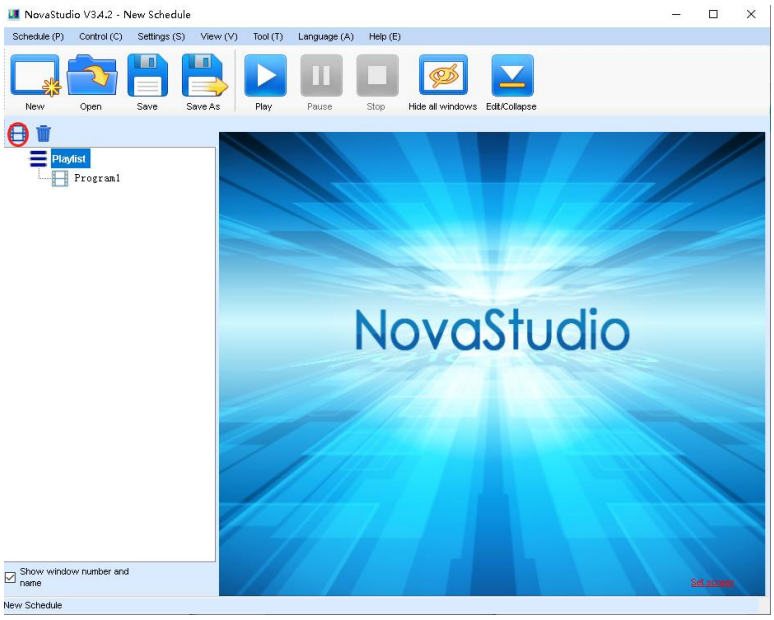
Start X: 0, Width: set according to the field installation

Start Y: 0, Height: set according to the field installation

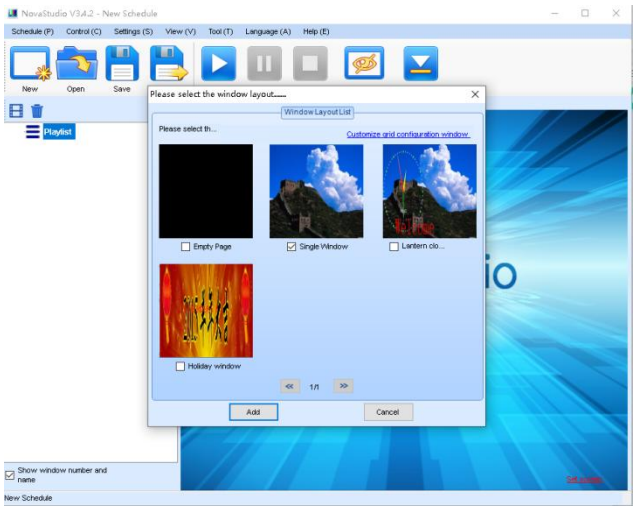
Click "Ok"



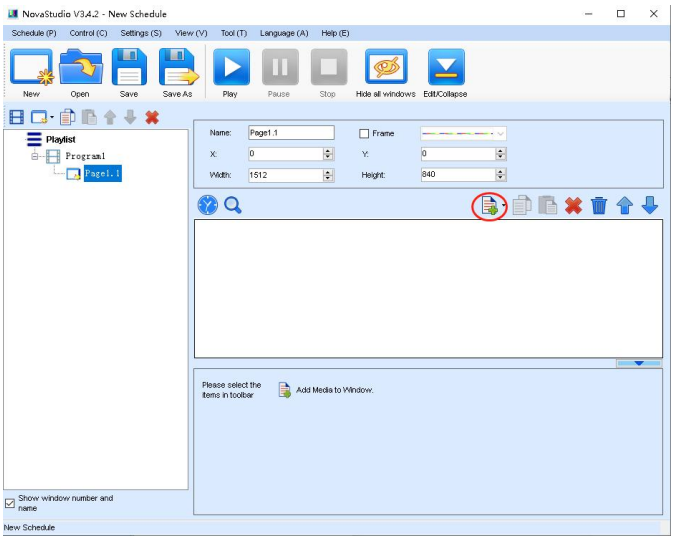
8. Click "Add Programs", then select "Empty Page"



9. Select "Single window", then click "Add"



10. Click “page 1.1”, then click "Add media", select "file", open the right video file.



11. Then you can control you display with  button

4. Product Installation

Warning: Safety first. Create an installation area before starting to install the display. Make sure that you read, understand and follow all of the "safety" tips or instructions in this Manual. In addition, all installation requirements for the display must be met. See the "Installation Requirements".

4.1 Installation of Cabinet

1） Steps for installing the cabinet

Step 1: Open the top cover of the outer packaging of the cabinet and move out of the cabinet.

Step 2: Unpack the anti-static plastic bag/moisture-proof plastic bag and check the appearance of the cabinet for damage.

Step 3: Unpack the cabinet, and check all the screws, cables, and power cables for looseness or detachment.

2） Precautions during installation

A. Handle the cabinet with care, and put a protective layer (paper or carpet) on the ground to prevent bumps, scratches, falls, etc.

B. When installing the cabinet, it is absolutely not allowed to hit the cabinet with iron items such as iron hammers, or construct in barbaric manners such as kicking.

C. When installing the cabinet, if the gap between the two cabinets is too large, it can be padded with hard objects to ensure the parallelism and verticality (Note: The gap between the cabinets should be less than 0.1mm).

4.2 Testing of the Screen Power Supply System

Note： the power supply in the power distribution cabinet and the cabinet needs to be tested by the inspectors with electrician knowledge

A. Test the L wire, N wire and ground wire (FG) for short circuit.

B. Test the N wire and ground wire (FG) for short circuit, and the resistance should be ∞.

C. Test the receiving card +4.2V power supply and GND (30～50Ω), ground wire (FG), L wire, and N wire for short circuit, and the resistance should be ∞.

D. Test the receiving board GND, ground wire (FG), L wire, and N wire for short circuit, and the resistance should be ∞.

E. Test each power supply output +4.2V and GND for short circuit, and the resistance should be 30～50Ω

4.3 Precautions for Installation

A. After the display screen is installed, the screen body is protected against lightning strikes. The main distribution input terminal is connected with an arrester.

B. The display is strictly prohibited from operating with electricity.

C. The sending system does not support hot swapping. Be sure to unplug the power cord before plugging in the connections between various devices.

D. It must be fixed firmly during the process of fixing the cabinet. Meanwhile, the cabinet is prevented from colliding during the fixing process, causing damage to the display product.

E. Workers should take safety measures during the installation process (wearing protective helmets, safety belts, etc.).

F. When disassembling the control system board and other equipment, it is necessary to prevent static electricity (wear anti-static gloves, etc.).

Installation instructions：

A. The indoor product of this series is only suitable for indoor places where temperature is between 0 to 40℃. For outdoor product, it is suitable for outdoor places with temperature between -30℃ to 50℃. Do not install the screen over items with high temperature or a stove, nor install it in the environment with temperature over its normal working temperature, or it might be damaged.

B. In order to ensure your safety, the installation of this product must be performed by a professional.

C. Cut off the power supply before installing the product, check whether the insulation of the power supply circuit of the product is intact, and ensure that the local voltage is consistent with the rated voltage of the display screen. If it is not used for a long period of time within the rated voltage range, it may cause overheating of the product and thus cause damage.

D. Ensure the reliability of the product and installation connections. Make sure that the connection is reliable before installing the product to prevent potential safety hazards.

E. Be careful during the installation operation. The safety of the support and the installer must be ensured to prevent the center of gravity from falling down.

F. Be sure to install the ground wire.

G. Non-professionals should not open for repairs.

Precautions for installation

For other questions in the operational process, please refer to our relevant instructions. If you have any further questions, please contact us. The above considerations are not comprehensive, and will be

supplemented later in the course of use. We also hope that you can make more suggestions to jointly maintain and use the display.

Warning: The fixed objects (such as screws) and quantities are for reference only. The installer should determine the appropriate fixtures and quantities based on the actual installation environment.

5. Product Maintenance

5.1 Module Disassembly and Assembly

This product is with specialized maintenance tool for modules :vacuum tool.

Attention: Use the maintenance tool gently and slowly to avoid damage to the lamp surface caused by sudden strong contact with the lamp surface.

Dismantle of the cabinet modules

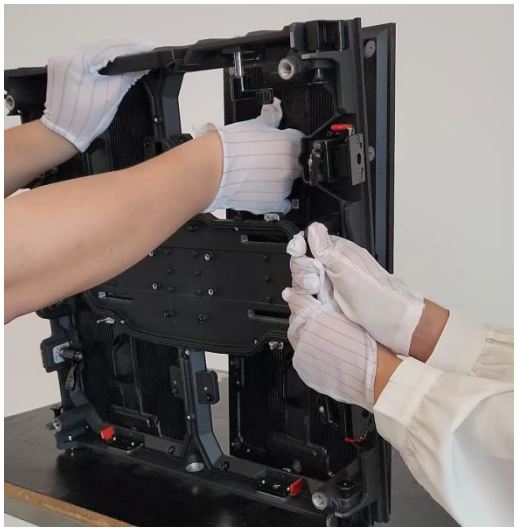
Fornt Maintenance:

1. Put the vacuum tool to the module that needs repairing(bottom of the module would be best)
2. Turn on the vacuum tool, and take down the module by the vertical direction of LED board.
3. The other hand holds the module firm.Unbuckle the safety harness on top of the module.Take down the specialized maintenance tool and put the module on the soft-surfaced place.

Rear Maintenance:

1. First remove the control box, then unscrew the screws that hold the module,12 screws per module(if there is no optional screws, please skip)

2. The module will be pushed to the front, is the module and the box separation



3. Remove the module from the cavity reserved for the cabinet

Assemble of module:

Locate the positioning columns of the module to the hole of the cabinet, and put the module back slowly (Strong magnetism exists between modules and cabinet. Be careful of hand pinching when installing)

5.2 Maintenance of the control box

The control box uses four snaps and cabinet fixed, maintenance control need to open the snaps, grab the two sides of the handle to remove the control box

The PSU, Receiving cards and Hub cards are inside the control box. , take down responding screws and you can maintain them (make sure control box disconnect power).

5.3 Precautions for Daily Maintenance of the Screen

With the full spread of LED displays in the market, many consumers often overlook the daily maintenance of the display. Long-term use not only affects the user's visual experience, but also shortens the life of the display. Please pay attention to the daily maintenance of the LED display.

1、Avoid being hurt by hard objects

If the LED display is accidentally damaged or scratched by hard objects, this display will be damaged. Therefore, be careful not to let the hard object damage the screen of the LED display.

2、Do not let water or iron powder into the screen.

It is strictly forbidden to let water, iron powder and other easily conductive metal objects into the LED display screen. LAMPRO Tech also recommends using LED displays in a low-dust environment. Dust will have a great impact on the display effect, and will cause damage to the circuit. In case of water ingress for various reasons, immediately disconnect the power and ask for maintenance personnel. The display can be used only after drying.

3、Humidity and temperature requirements: For indoor screens, the highest humidity of working environment should be 60% lower than that of relative humidity，for outdoor screens, the highest should be 90% lower than that of relative humidity. For temperature, indoor LED screens should be working 0-40℃. while for outdoor LED screens, it should be -30-50℃. Storage temperature for all products is -40-60℃.

5.4 Cleaning of Fixed Display Panel

Warning: Isopropanol (200-661-7)

Dangerous goods, irritating to eyes and skin. Always use in areas with good ventilation. Steam can cause drowsiness and dizziness. Avoid contact with skin and eyes. If it accidentally comes into contact with your eyes, rinse immediately with plenty of water and seek medical advice.

Warning: Isopropanol (200-661-7)

Dangerous goods, flammable. Always use in areas with good ventilation. Keep away from fire. Smoking is prohibited when operating with isopropanol. Store in a well-sealed, original container in a cool, well-ventilated, and fire-resistant storage space.

Attention: The LED components used in the fixed display are susceptible to ESC (electrostatic discharge) damage. In order to avoid damage to the LED, take the necessary precautions.

Necessary Tools

1. Air compressor.
2. Isopropanol.
3. Antistatic damp cloth.
4. Vacuum cleaner.
5. Mild detergent.

Clean the exterior of the display fixing plate

1、Turn off the display

Use compressed air to blow off dust from one side of the display (LED indicator). A safe distance of 10cm is maintained between the nozzle of the compressor and the LED indicator.

2. Clean one side of the display (LED indicator) with a damp cloth. Clean the LED indicator with isopropanol as the solvent.

3. Use a vacuum cleaner to clean the dust from the ventilation grille of the module and control cabinet.

Warning: Make sure that the area is well ventilated. Smoking is prohibited when operating with isopropanol.

Attention: Do not use a brush to clean the LEDs to avoid scratching.

Attention: The LED components used in the display are susceptible to ESC (electrostatic discharge) damage. In order to avoid damage to the LED, take the necessary precautions.

Attention: Do not use a vacuum cleaner to clean the display side (LED indicator) due to ESD.

Attention: Do not push hard or sharp objects onto the LED soft lens to avoid damaging the LED. The maximum load allowed on the LED soft lens is 300g/LED.

Tip: Use a soft brush nozzle to avoid scratching.

4、 Clean the casing of the rental frame and control cabinet with a damp cloth. You can use a slightly damp cloth and a mild detergent to remove stubborn stains.

Clean all display panels of the LED display each time to avoid the difference in brightness between the cleaned and uncleaned display panels.

It is recommended to use a vacuum cleaner to regularly clean the dust from the ventilation grille, modules and control cabinet. Therefore, use a vacuum cleaner with a soft brush nozzle.

Pay special attention when using or maintaining the display:

Before turning on the power switch, please check if the local AC power supply voltage meets the requirements of this product.

Do not touch the power supply when the power switch is not turned off.

Please turn off the power supply before performing any maintenance, including all switches including LED display and computer terminal monitor.

In order to prevent electric shock, please make sure that the power cable is connected, the grounding wire is correct, and the connection is in good condition.

• When storing the product, be careful not to place it in a damp environment. Pay attention to moisture. Handle with care when handling and moving, so as to avoid damaging to the product due to collision or large vibration. Pay attention to the direction when placing, and place according to the marked direction to avoid damage to the product.

• Do not press objects on cables such as power cords, signal cables, and communication cables. Cables should be prevented from being stepped on or pinched to prevent the risk of electric leakage or short circuit.

• When replacing the module of the LED display, please hook a secure rope on the module and the corresponding panel.

• The power supply must meet the requirements:

① LED display's power supply voltage: 110V ~ 220V ± 10%; Frequency: 50HZ ~ 60HZ ± 5%

② When the total power of the LED display is less than 5KW, it can be powered by a single-phase voltage; when it is greater than 5KW, in order to distribute the current evenly, it is necessary to be powered by a three-phase five-wire voltage.

③ The ground wire must be in reliable contact with the earth and properly separated from the N wire. The power supply to be connected should be kept away from high-power electrical equipment.

• When there is dust on the mask of the module, please clean it in time to avoid local color cast of the display.

• When maintaining the display, all the removed screws should be installed back to avoid water leakage of the display cabinet.

• Meaning of the logo: The equipment with this logo is designed and evaluated only at an altitude of 2000m. Therefore, it is only suitable for safe use at an altitude of less than 2000m, and may have potential safety hazards when used at an altitude of more than 2000m.

• Meaning of the logo: The equipment with this logo is designed and evaluated for safety only in non-tropical climates. Therefore, it is only suitable for safe use in non-tropical climates. When used in tropical climates, there may be safety hazards.

• If the steel structure of the screen body is relatively closed, it is necessary to consider the ventilation and heat dissipation of the screen body and increase the ventilation equipment. Do not exhaust the indoor warm air

into the screen body.

5.5 Daily Maintenance of the Screen

Personnel protection:

Warning: Be sure to understand and follow all safety guidelines, safety instructions, warnings, and precautions in this Manual.

Warning: Any maintenance or repairs must be made with the power turned off and all tools and equipment must be grounded.

Warning: Be careful when the load is heavy.

Warning: Please operate carefully when the load is heavy to avoid finger injury.

Warning: Wear a safety helmet to avoid personal injury.

Precautions for safety

• Use a striking fence and a "No Entry" mark to block a restricted area at least 3m around the LED screen, preventing unauthorized personnel from accessing the LED display during the repair process.

• Check whether the entire LED display is safe and reliable, and check for wear, deformation, corrosion, and other conditions that may affect the load handling capabilities of the parts.

• Do not modify and/or copy any components. LAMPRO Tech uses special materials and manufacturing processes to achieve the required part strength. Any parts other than LAMPRO Tech parts are not allowed.

• You must rely on your hands to repair the LED display. Therefore, it is forbidden to use a ladder to access the display panel, only scaffolding or Z-lifts are allowed.

Common maintenance tools

Electric screwdrivers: Used to install and remove screws of various specifications.

Screwdriver: Used to install and remove the screws and nuts.

Multi-meter: Used for testing during repair or maintenance.

5.6 Common Troubleshooting

5.6.1 Method for problem determination

The problems must be determined on a priority basis. Deal with the obvious and serious problems first, and the minor ones later. Short circuit shall be of highest priority.

1. Resistance detection method: Adjust the multimeter to the resistance level. Detect the resistance at a point on a normal circuit board. Then, check whether the resistance value tested at the same point of the same circuit board is different from the normal resistance value. If it is different, the scope of the problem will be determined.
2. Voltage detection method: Adjust the multimeter to the voltage level. Detect the voltage at a point in the circuit suspected of having a problem and compare whether it is similar to the normal value. If not, the scope of the problem will be determined.
3. Short-circuit detection method: Adjust the multimeter to the short-circuit detection level (some are diode voltage drop level or resistance level, with general alarm function). Test for short circuit. After the short circuit is found, it should be solved first, so that it does not burn other devices. This method must be operated in the event of a power failure to avoid damage to the multimeter.
4. Voltage drop detection method: Adjust the multimeter to the diode voltage drop detection level. Since all ICs are made up of a large number of basic cells, they are only miniaturized. Therefore, when there is current on one of its pins, there is a voltage drop across the pin. Generally, the voltage drop across the same pin of the IC of the same model is similar. According to the voltage drop value on the pin, it is necessary to operate

under the condition that the circuit is powered off. This method has certain limitations. For example, if the device under test is of high-resistance, it will not be detected.

5.6.2 Common faults of LED display and its troubleshooting

1. The entire screen is not lit (blank screen)

A: Check the power supply of the screen. Use a screwdriver with voltage tester or a multimeter to check if there is power at the electrical appliance. There may be a problem with the switch or it may be broken.

B: For displays that are synchronized with the computer, first check if the computer enters dormant state or screen saver state. In case of in dormant state, first enter the "Control Panel" to click "Power Management", then select the "Never" option for the "System Waiting" and "Close Monitor" options, so that the computer will not enter the dormant state and the display will function normally. In case of not in dormant state, you can open the case to check whether the control card and communication cable are firmly connected, and check whether the communication cable is disconnected, which can basically solve the above problems.

C: Check whether the communication cable is connected, and check for errors and synchronizing panel. Please follow the connection diagram to connect and check.

D: Check if the green signal indicator of the sending card is flashing.

E: Check if the graphics card settings are normal and the FPD is turned on.

F: Check if the signal indicator on the receiving card is flashing normally.

2. The whole unit board is not lit (blank screen)

A: If several consecutive boards are not in the horizontal direction, check whether the connection between the normal unit board and the abnormal unit board is connected. If several consecutive boards are not lit in the vertical direction, check if the power supply of this column is normal.

B: Check if the position of a receiving card is not lit, check if the receiving card voltage is 5V, and whether the network cable input to the receiving card is normal.

C: If a unit board is not lit, check if the cable input to the unit board is loose.

3. Incomplete display file or incorrect position

A: First check whether the parameters of "display position" and "screen size" in the software are consistent with those given in the installation project. If you don't remember, you can count the number of pixels in the length and width on the screen. After the "screen size" is determined, you can see how much

difference is displayed on the screen, and then go back to the computer and adjust it until the position is consistent.

B: In case of incomplete display, check if the file size is the same as the "screen size" of the screen.

C: Open the case and check if the conductor is dropped on the control card.

4. Communication display is not available for communication

A: Check if the parameters in the software are consistent with the installation project.

B: Check if the serial port is connected and if the communication cable is disconnected.

5. The display is jittery, with horizontal stripes:

Check if the common ground wire connected to the computer is loose, or if the communication cable is loose. If the operator cannot determine the cause of the problem or is not familiar with the computer, do not open the case easily. If the problem of the display is very serious, please contact us in time, and then diagnose with the consent and instructions of our staff.

6. No sound on the screen

It is because the sound controller that comes with the graphics card conflicts with the sound controller in the computer. Turn off the sound controller in the computer. The operation is as follows: Open the "Attributes" of My Computer, find the "Device Manager" in "Hardware", select the sound controller, and then disable "Realtek high definition Audio".

7. Fail to play DVD or video files

A: The computer does not have a video file player installed.

B: This file format is not supported by the player itself.

C: You can install WINDVD or POWER player.

8. Display screen blurring or flashing

A: Check if the DVI cable is plugged in.

B: Check the network cable for short circuit or disconnection.

C: Check if the screen refresh rate of the monitor is set at 60HZ.

D: Check if the transmission distance of the network cable is too long and thus cause flashing.

9. Output problem

A: Check if the cable from the output interface to the signal output IC is connected or short-circuited.

B: Check if the clock latch signal of the output port is normal.

C: Check whether the cascaded output data port between the last driver IC is connected to the data port of the output interface or is short-circuited.

D: Check if the output signals are short-circuited to each other.

E: Check if the output cable is in good condition.

10. The display is confusing and the output is abnormal.

A: Check if the clock CLK latch STB signal is short-circuited.

B: Check if the clock CLK of 245 has an input or an output.

C: Check if the clock signal is short-circuited to other cables.

Note: It mainly detects clock and latch signal.

11. The display is confusing, but the signal output to the next board is normal.

A: Check if the STB latch output terminal corresponding to the 245 is connected to the latch terminal of the driver IC or the signal is short-circuited to other circuits.

B: Check if there is an open circuit or a virtual soldering or short circuit between the A, B, C and D output terminals corresponding to 245 and 138.

C: Check if there is a short circuit between the signals of A, B, C, and D or a short circuit between a signal and ground.

Note: The ABCD line signal is mainly detected.

12. Display lack of color

A: Check if the data terminal of the color of 245 has an input and output.

B: Check if the data signal of this color is short-circuited to other circuits.

C: Check if the cascade data port between the driver ICs of this color has an open circuit or short circuit or a virtual solder.

Note: It is easier to find the problem by means of voltage detection. Check whether the voltage of the data port is different from the normal voltage and thus determine the fault area.

6. Description on After-sales Services

6.1 Pre-sales Services (Technical Consultation)

LAMPRO Tech provides pre-sales consulting services to its customers. The main purpose of pre-sales services is to assist customers in engineering planning and system requirements analysis, so that our products can meet the needs of users to the greatest extent, and at the same time enable customers to maximize the overall economic benefits.

6.2 After-sales Services

Shenzhen LAMPRO Tech has established a complete engineering file for each project, has a technically competent engineering team, and is equipped with professional maintenance personnel to provide customers with after-sales services and respond to customer needs. We provide a free warranty and lifetime warranty for all products that have already been delivered. During the free warranty period, all faults caused by component quality or production and installation processes can be unconditionally repaired free of charge. However, the failure caused by violation of the regulations or some irresistible external factors (such as power supply parameters exceeding the standard, lightning strikes, etc.) is not included in the free warranty, and the service fee is charged as appropriate.

1.Warranty period:

The product is warranted for one year from the date of shipment from the factory. During the warranty period, the product is faulty and is repaired free of charge by the technical staff of the company for normal use (used in accordance with the product manual and its precautions).

2.Warranty scope:

LED modules, switching power supplies, control systems and other major accessories (products not purchased directly from our company are not covered by this warranty).

3.Warranty method:

Send to repair, by express mail or other means.

4.Response speed

a. Send to repair: The repair service shall be performed within 24 hours after receipt of the repaired product and sent back to the repairer or to a trained third party authorized by LAMPRO Tech for repair.

b. Telephone or network: Contact the user within 2 hours and provide a solution within 8 hours.

c. On-site maintenance (only for customers in China). According to the maintenance requirements, the response shall be within 48 hours in Guangdong province and within 72 hours outside Guangdong province. In case of special circumstances, both parties shall solve the problems through friendly consultation.

5.Product exchange and return

Our company supplies strictly according to the contract list. If the quantity or specification does not match the actual situation, the buyer may file an objection within 3 days after receiving the goods, and the equivalent value will be exchanged or supplemented after validation by our company.

6.Accidental damage repair:

In case of improper operation or accidental damage during use, our company can provide the corresponding accessories, and only charge the cost of the accessories without any additional fees.

7.Upgrade service:

Our products will be upgraded from time to time without prior notice. If the user needs to upgrade the product, we will try our best to provide assistance.

8.After-sales services beyond the warranty period:

Our company only charges maintenance costs (labor fees, accessories costs, and travel expenses).

9.Contact information for after-sales services:

Headquarters (Shenzhen)

Address: 6 Lanjing North Road, Pingshan District, Shenzhen 518118 China

Contact number: 0755-27657656

Fax: 0755-27653206

Email: postsale_service@szlamp.net

Dutch station (Eindhoven)

Address: Van Dijklaan 13C Waalre，5581WG，the Netherlands

Contact number: +31629152912

Email: postsale_service@szlamp.net

America service center (Nashville, Alabama)

Address: 17029 Hwy 72, Rogersville, AL 35652

Contact number: +1 (239) 920-3287

Email: obu92@szlamp.net

Middle-east service center (Dubai international city)

Address: Room 304, CBD E01, International City, Dubai UAE

Contact number: +971 054 51 77886

Email: obu91@szlamp.net

10.Under one of the following circumstances, no one can enjoy free repair or replacement:

A. Unable to provide valid proof that it is LAMPRO Tech's product.

B. The serial number on the product is damaged or has traces of alteration.

C. Failure and damage caused by improper installation, improper use or self-disassembly.

D. Failure and damage caused by transportation, falling, etc. after the acceptance.

E. Failure or damage caused by force majeure such as fire, flood, earthquake, etc., or pollution, moisture, corrosive gases, etc.

F. Failure or damage caused by abnormal voltage, abnormal current, etc.

G. Failure or damage caused by use beyond the specified range.

H. Gifted products.

I. Failure or damage not attributable to the company.

J. Modification and repair by the user or disassembly, modification and repair by a third party not permitted by LAMPRO.

K. Due to improper storage or use.

L. Beyond the free warranty period.

M. Others.

Please save the warranty card, and no replacement if lost. The warranty card is only for domestic use in China. This warranty card stipulates that any part of the warranty card shall be guaranteed.

N. The company reserves the right of final modification and interpretation of the above terms.