

Leyard TW Series LED Video Wall User Manual



LEYARD

Copyright © 2016 by Leyard Optoelectronic Co., Ltd. All rights reserved.

The contents of this publication may not be reproduced in any form without permission of Leyard Optoelectronic Co., Ltd.

Trademark Credits

Windows™ is a trademark of Microsoft Corp.

All other names are trademarks or registered trademarks of their respective companies.

Disclaimer

The information contained in this document is subject to change without notice. Leyard Optoelectronic Co., Ltd. makes no warranty of any kind with regard to this material. While every precaution has been taken in the preparation of this manual, the Company shall not be liable for errors or omissions contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Warranty and Service Plans

Leyard Optoelectronic Co., Ltd. warranty and service plans will help you maximize your investment by providing great support, display uptime, and performance optimization. From post-sale technical support to a full suite of depot services, our services are performed by trained Leyard employees. When you purchase a Leyard product, you get more than a display, you get the service and support you need to maximize your investment. To find the latest warranty and service information regarding your Leyard product, please visit <http://www.leyard.com/en/support/>

Table of Contents

Introduction	4
Safety Information	5
Safety Precautions and Instructions	6
Cabinet Appearance	8
Dimensions & Diagrams of Cabinet	9
Installation	10
Screen Connection Wire	22
Cascading Power Line Between Unit Cabinets	22
Cascading HDMI Signal Line Between Unit Cabinets	22
Cascading Serial Line Between Unit Cabinets	22
System Connection Diagram in Standard Splicing Areas	24
Cabinet Composition	25
Troubleshooting	26
European Union Disposal Instructions	29
Accessing Leyard's Technical Support Website	29
Revision History	30

Introduction

The Leyard® TW Series LED Video Wall is characterized by small pixel pitch, no splicing gap, high brightness and resolution, large angle of view, wide color gamut and low power consumption, as well as the following characteristics.

High Splicing Accuracy

All critical components are provided with advanced fine machining technology, which has greatly improved the splicing accuracy.

Fast Assembly

There are independent elastic protection devices between cabinets, with fast positioning locks on both sides to enable fast assembly.

Standardized Interface

HDMI is adopted to improve the universal adaptation of products.

High Integration of Hardware

The control board and drive board can be integrated without external LED controller.

Safety Information

Before using your Leyard TW Series LED Video Wall, please read this manual thoroughly to help protect against damage to property and to ensure personal safety.

Be sure to observe the instructions

For your safety, be sure to observe ALL the warnings detailed in this manual.

For installation or adjustment, please follow this manual's instructions and refer all servicing to qualified service personnel.

Safety Precautions

- **If water is spilled or objects are dropped inside the display, remove the power plug from the outlet immediately.** Failure to do so may result in fire or electrical shock. Contact your dealer for inspection.
- **If the display is dropped or the chassis is damaged, remove the power plug from the outlet immediately.** Failure to do so may result in fire or electrical shock. Contact your dealer for inspection.
- **If the power cord or plug is damaged or becomes hot, turn off the main power switch of the display. Make sure the power plug has cooled down and remove the power plug from the outlet.** If the display is still used in this condition, it may cause a fire or an electrical shock. Contact your dealer for a replacement.

WARNING! WALL AND/OR SUPPORT MOUNTS MUST BE SECURE

If a display or displays are hung from a wall or some other support, the structure must be verified as able to safely sustain the weight of the assembly. Simply mounting to wallboard or wall paneling won't be adequate or safe.

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use the Leyard TW Series displays outdoors or near water.
6. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat.
7. Do not defeat the safety purpose of a polarized or grounding type plug. The polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for the replacement of the obsolete outlet.
8. Protect the power cord(s) from foot traffic or kinks particularly at plugs, convenience receptacles and the point where they exit from Leyard TW Series displays.
9. You should only use replacement parts, accessories and other components specified by Leyard.
10. Unplug all Leyard TW Series displays during lightning storms or when unused for long periods of time.
11. You must follow all National Electrical Code regulations. In addition, be aware of local codes and ordinances when installing your system.
12. Refer all servicing to qualified service personnel. Servicing is required when any Leyard TW Series displays have been damaged in any way, such as when the AC power cord or plug is damaged, liquid has been spilled or objects have fallen into a product, the products have been exposed to rain or moisture, do not operate normally or have been dropped.
13. You should consider keeping the packing materials in case the equipment ever needs to be shipped.
14. Wall mounts must be secure. The wall must be strong enough to hold all Leyard TW Series displays, mounting plates, cables and accessories.

Recommended Usage

In order to get the most from your Leyard TW Series display, use the following recommended guidelines to optimize the display.

Leyard TW Series displays are designed for fixed installation, indoor use only.

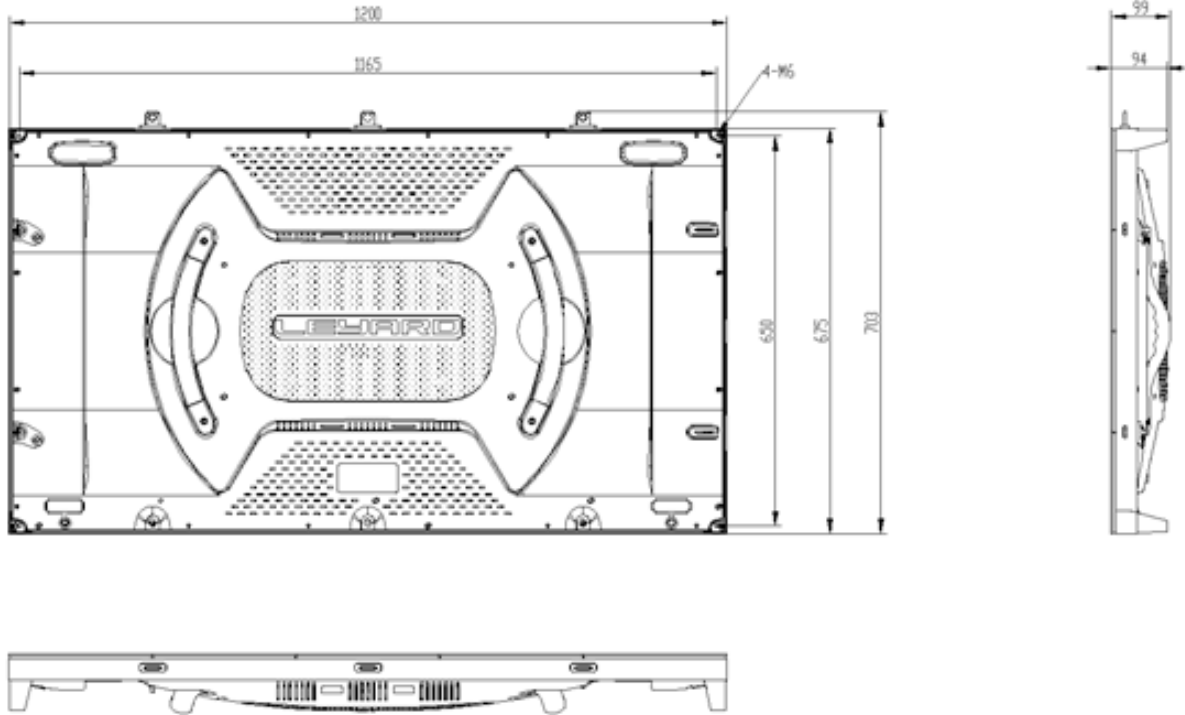
Cabinet Appearance



Cabinet Specifications

Model	Dimensions (inches)	Pixel Pitch (mm)	Physical Resolution	Board Dimensions WxHxD (mm)
TW-012OS-S	54	1.25	960x540	1200x675x99
TW-014OS-S	54	1.45	825x464	1200x675x99
TW-018OS-S	54	1.875	640x360	1200x675x99
TW-025OS-S	54	2.5	480x270	1200x675x99

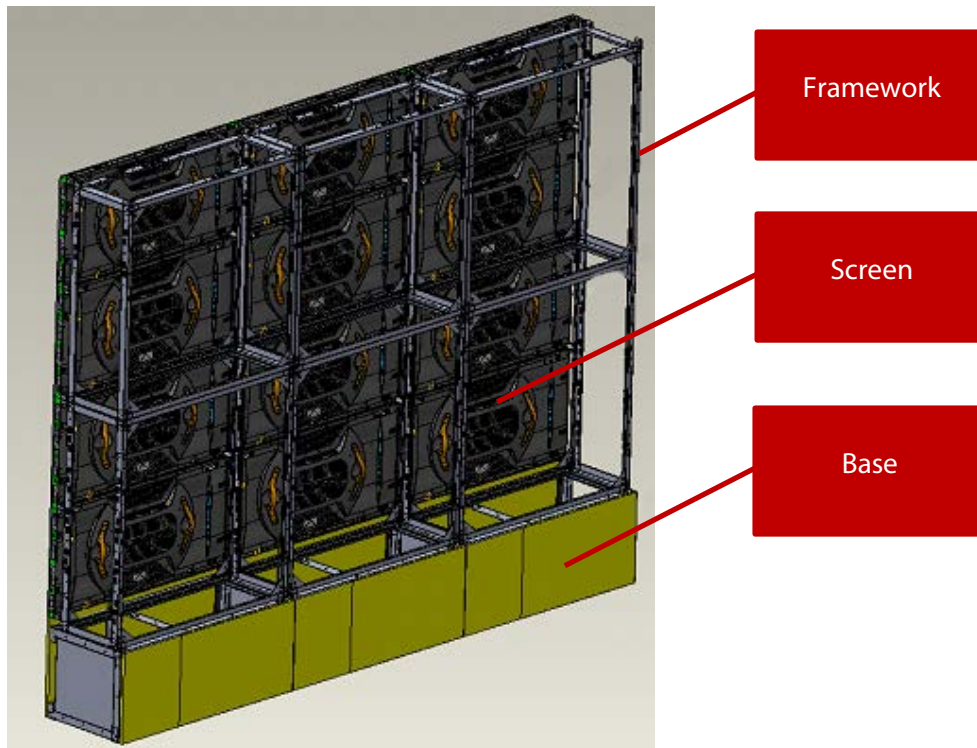
Cabinet Dimensions



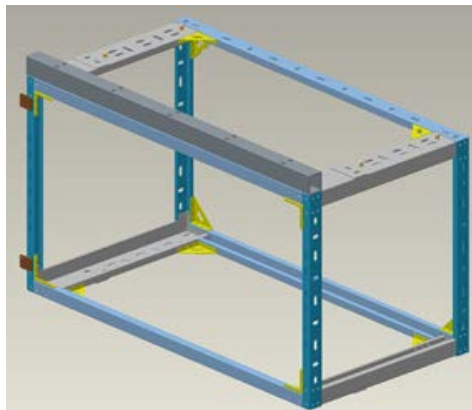
Installation

Fixed Installation

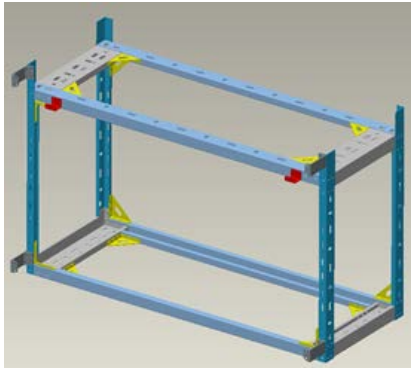
The Leyard TW Series LED Video Wall fixed installation structure, which adopts metal-plate precision stamping, is mainly composed of three parts: mainframe, base and screen as shown in figure below:



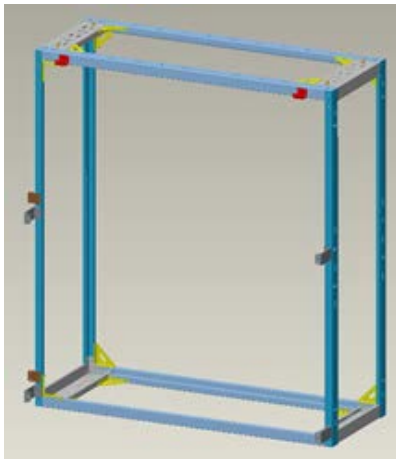
Base: Used to support and fix structures as shown below



Main Framework: It includes three standard unit structures to fix the cabinet as shown below



Top Full-Length Framework



Middle Double Framework



Top Double Framework

Installation Characteristics and Requirements

Take the load bearing and spatial distribution of the indoor installation position into consideration in combination with the environmental characteristics of the operation site, as the Leyard TW Series TV-wall project is of great importance. The framework installation modes of the TV-wall have the following characteristics:

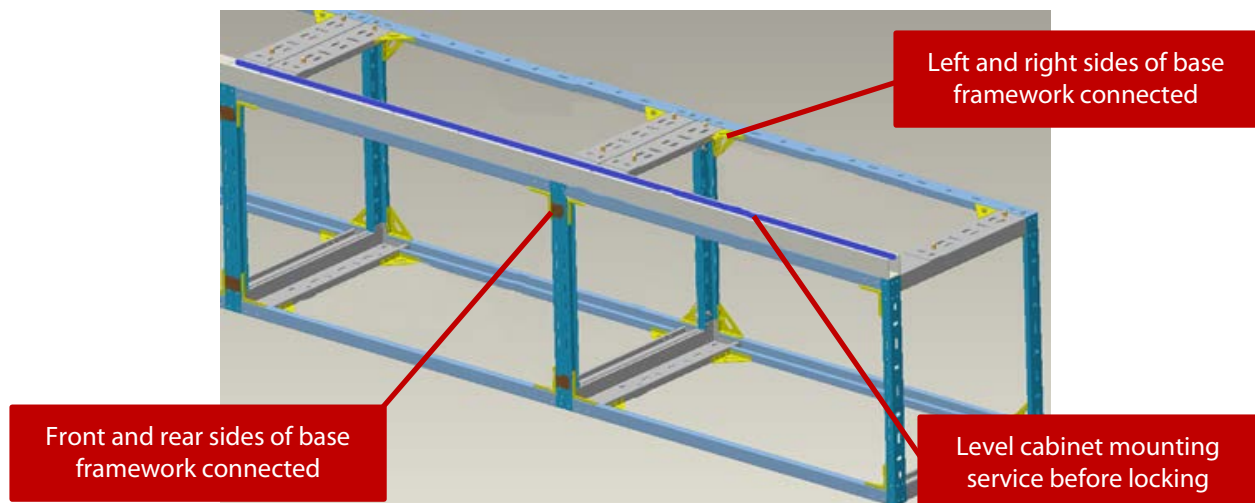
- **Modular Design:** Standard unit frameworks are adopted in installation structure; all frameworks are standard products. The sheet-metal precision stamping, as well as off-site processing, is adopted in order to ensure splicing accuracy of framework.
- **High Feasibility:** The high-rigidity modular frameworks can be quickly installed without professional personnel, which can reduce the site workload of installation structure.
- **High Installation Accuracy:** Smoothness per linear meter is $\leq 0.1\text{mm}$, clearance of display unit is $\leq 0.1\text{mm}$ and error per linear meter is $\leq 0.1\text{mm}$. After installing the first line of cabinet, light up to see if there's bright black line at the left and right sides of cabinet before installing the next line of cabinet; then check if there's bright dark line between the two lines installed and continue installation until the entire screen is completed.

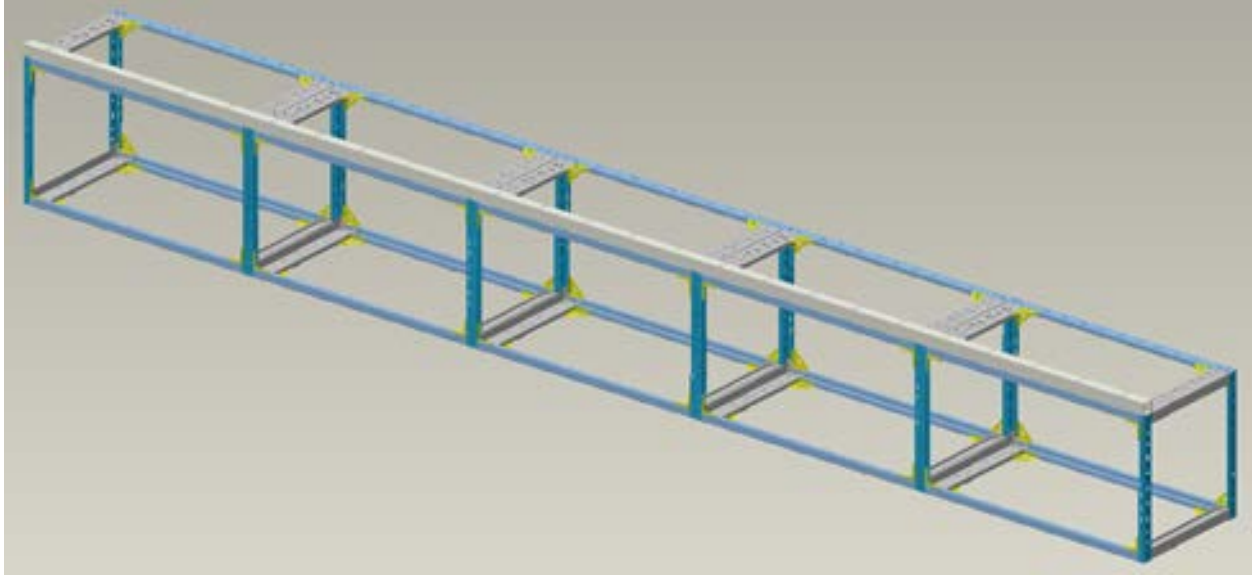
Installation Methods

Tools: leveling instrument (apparatus), laser range finder, tape measure, M16 wrench, 8mm hexagon wrench, cross screwdriver and vice

Base Installation & Adjustment

As shown in the schematic diagram for base and framework connection, adjustment sheet is installed between two frameworks for front/rear leveling; the base structure is provided with threaded holes at the left and right sides for connection. Leveling shall be made after base is adjusted.

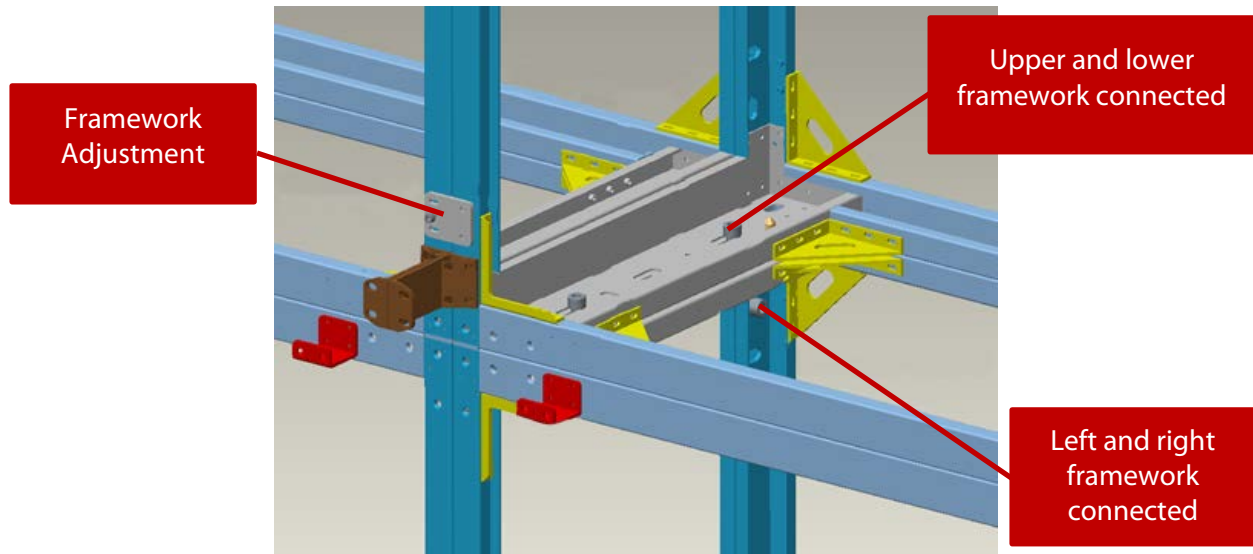




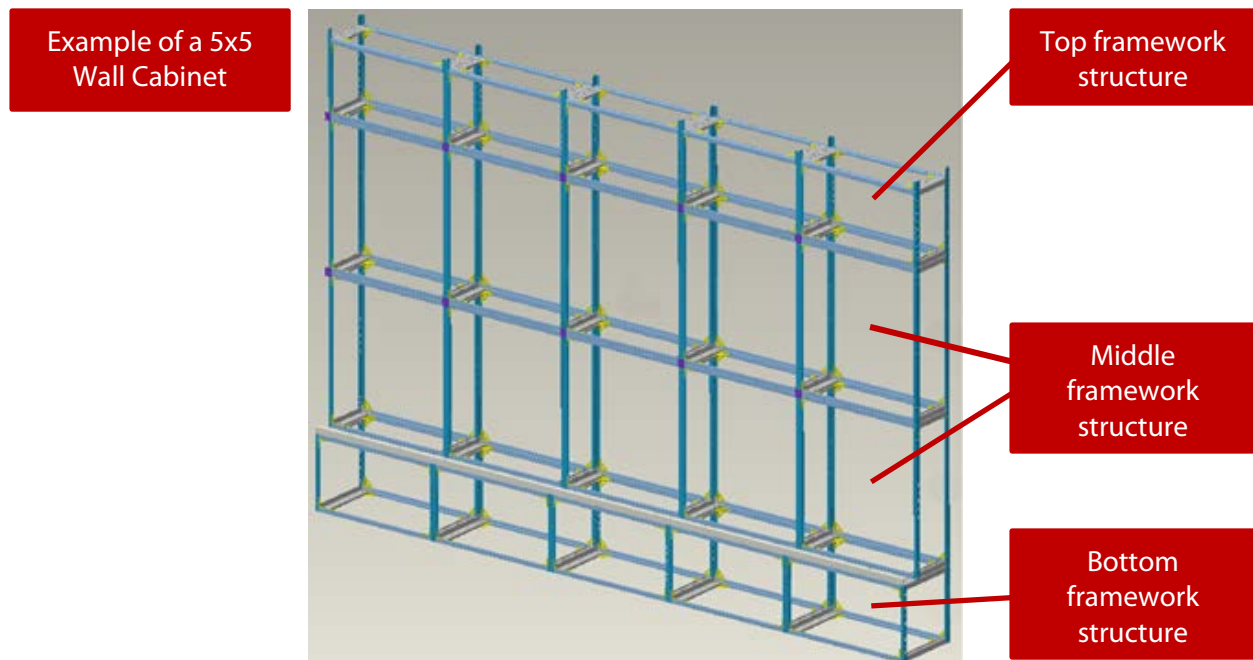
Schematic Diagram for Base Connection

Installation & Adjustment of Main Framework

Framework adjusting sheet (white) is installed at front side of left and right frameworks, the upper and lower frameworks are fixed using screws. The frameworks at four directions are connected with fixing devices.

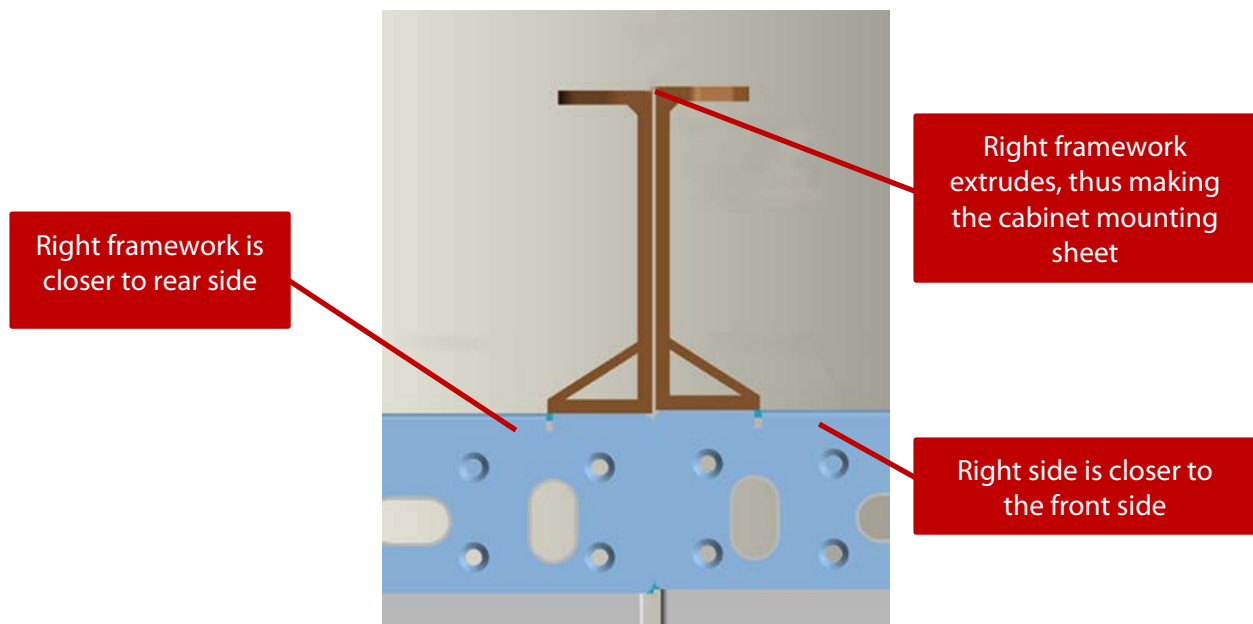


Schematic Diagram for Adjusting Cabinet Mounting Framework

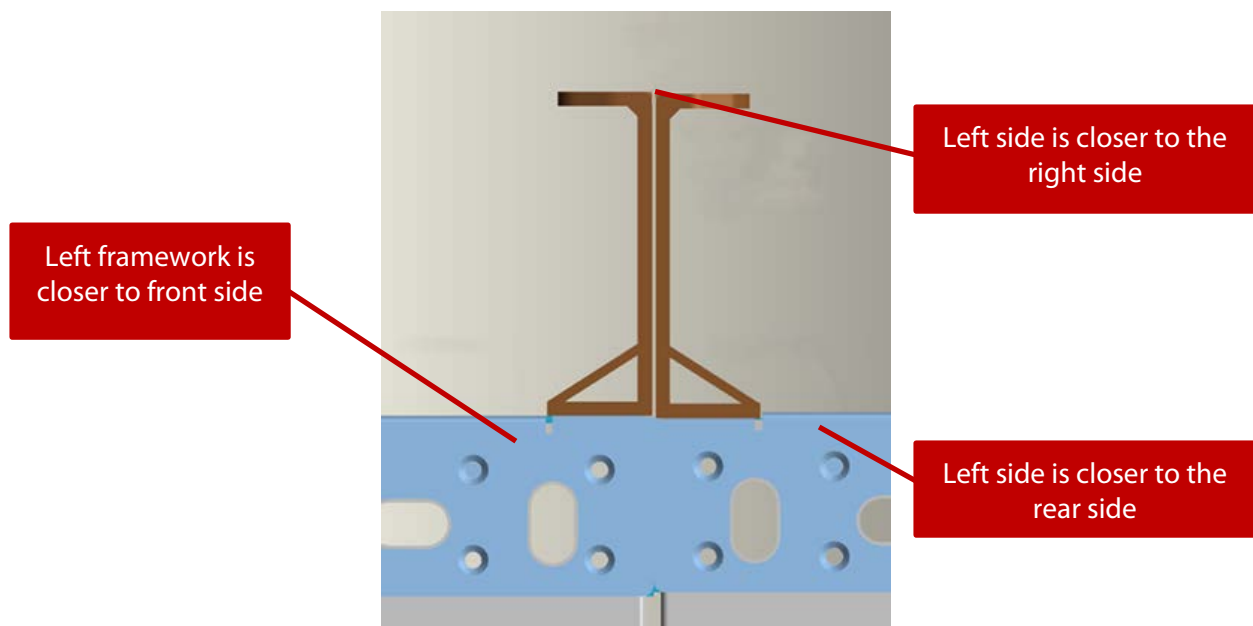


Schematic Diagram for Cabinet Mounting Framework

Possible Case Framework Cabinet Mounting Options

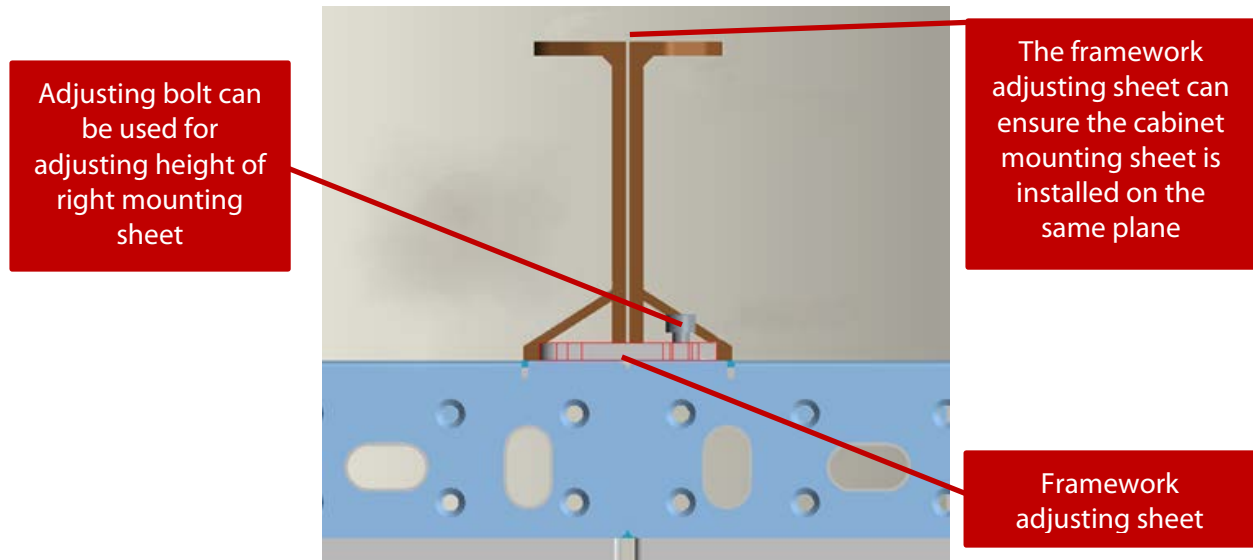


Case 1: Right Framework Extrudes



Case 2: Left Framework Extrudes

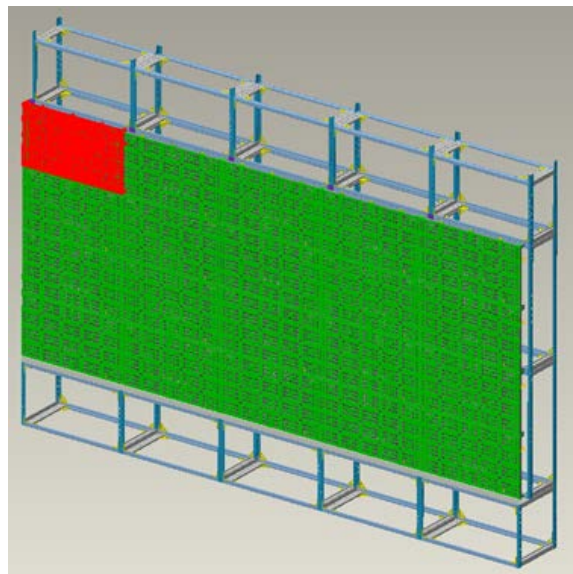
Possible Case Framework Cabinet Mounting Options



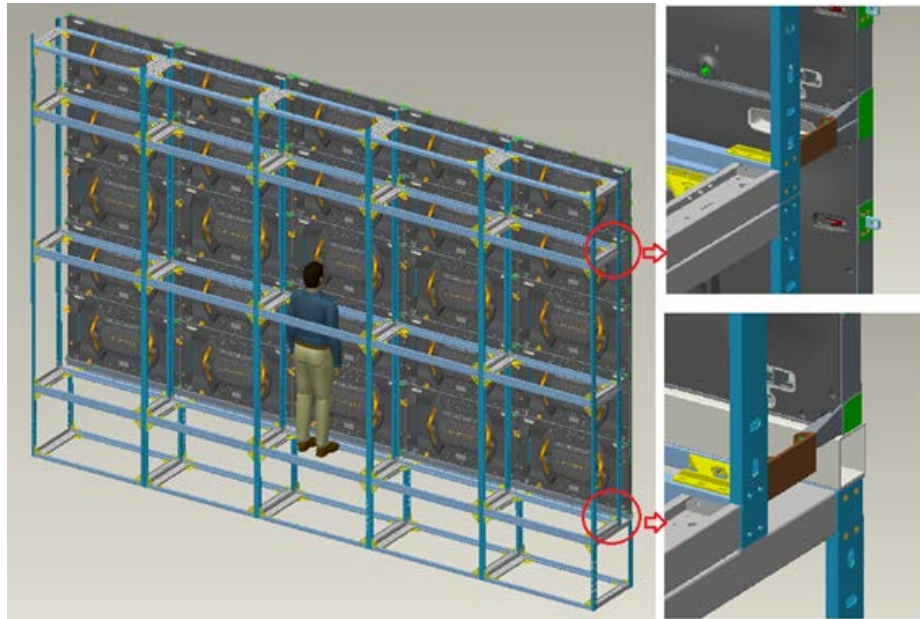
Adjustment of framework cabinet mounting sheet

Installation & Maintenance of Unit Cabinet

The unit cabinet shall be installed from the bottom line according to matrix mode; the location columns at four corners of the cabinet, together with the structure mounting sheet, shall be fixed and leveled.

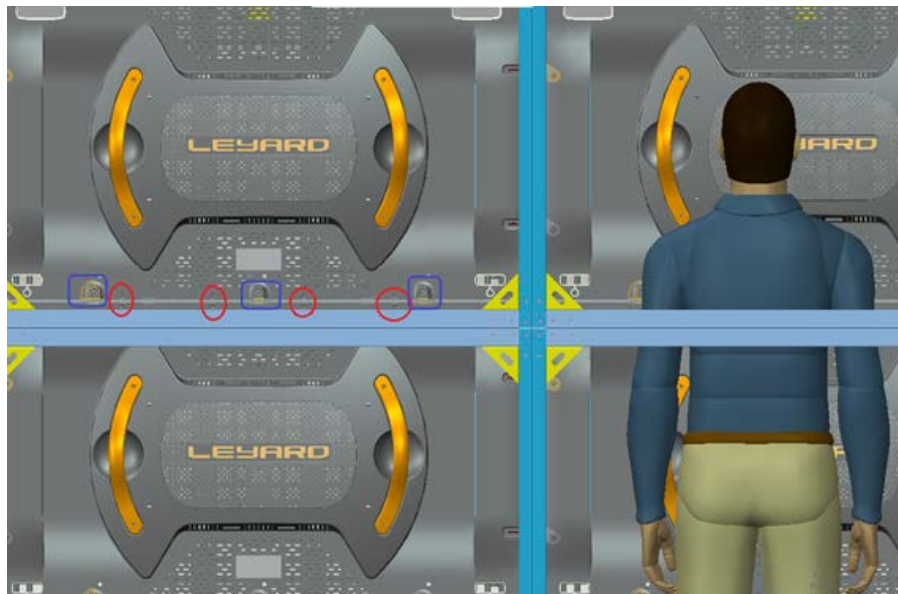


Schematic Diagram for Cabinet Mounting

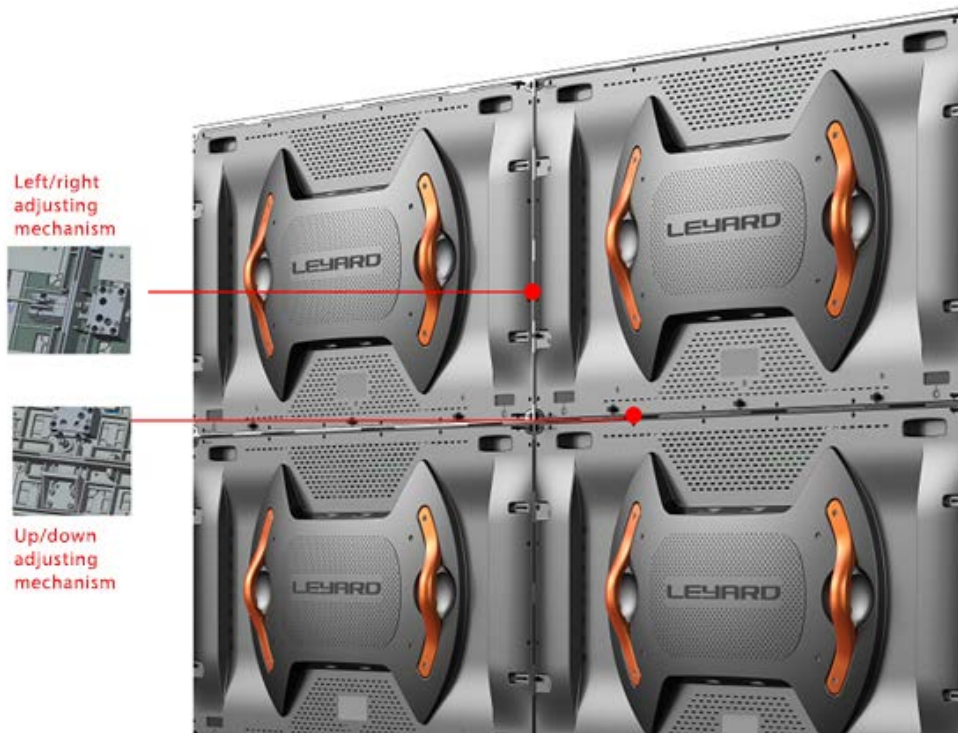


Schematic Diagram for Cabinet Mounting Structure

The unit cabinet structure is equipped with secondary adjustment function to realize fine adjustment of seams in power-on mode as shown in figure below:

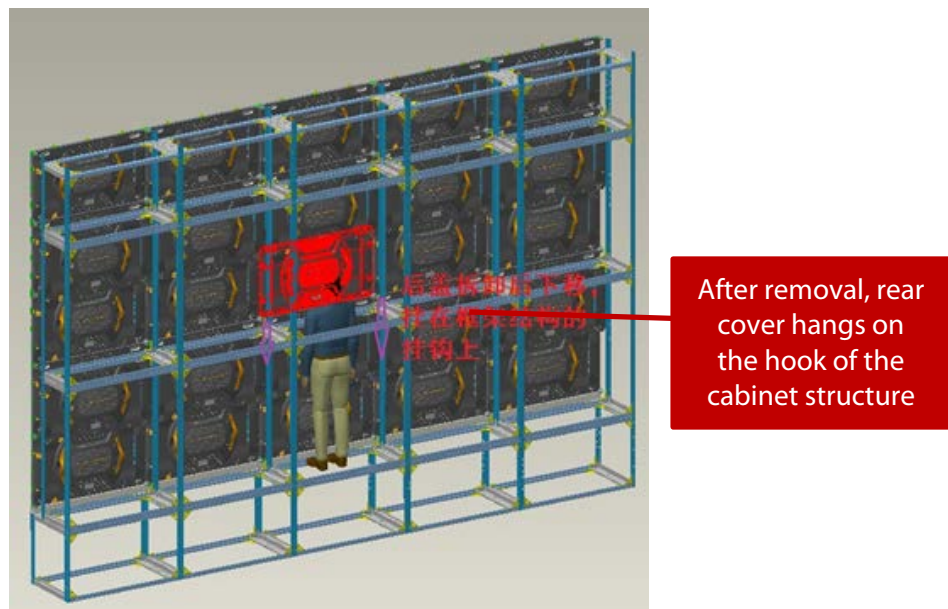


Miss-matching cabinet and framework can help simplify the removal of rear cover and operation of cabinet locks

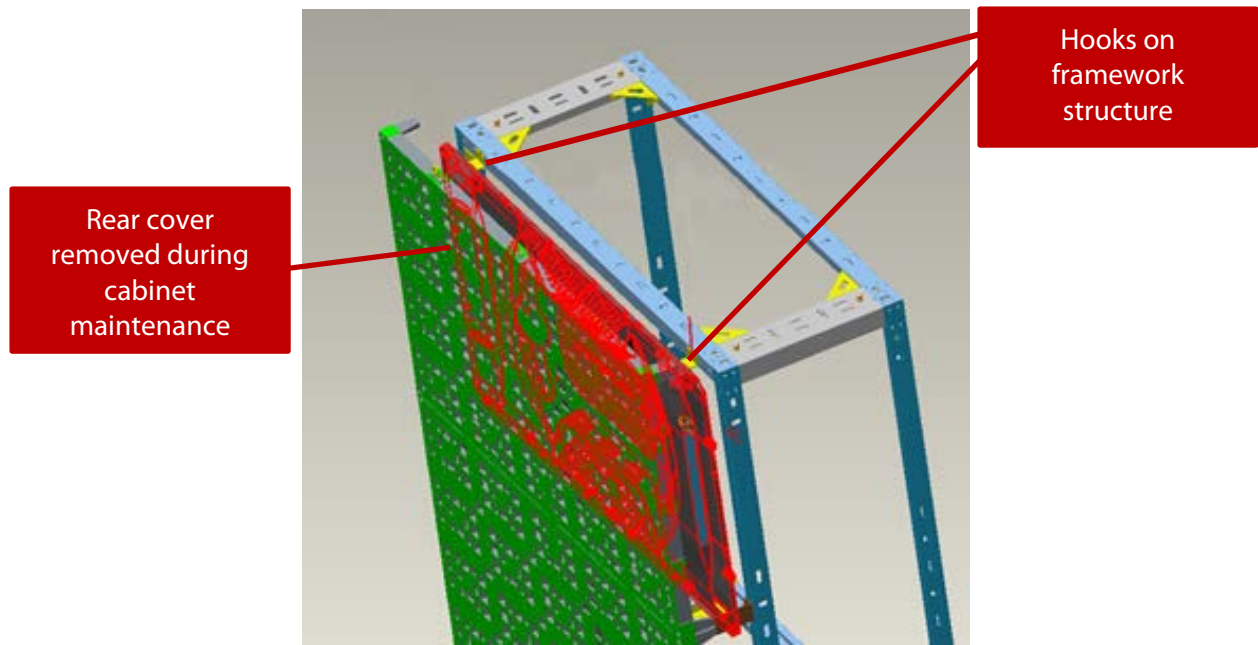


Schematic Diagram for Cabinet Adjustment

The rear cover can be removed as shown in figure below, thus allowing personnel to replace the internal power supply and control board:



Schematic Diagram for Removing Rear Cover



Schematic Diagram for Cabinet Maintenance

Leased Installation

Leased installation includes base installation and hoisting installation.

Attention:

After the entire hoisting screen cabinet is installed, all hoisting pins between cabinets must be carefully checked to make sure they are well inserted and locked before conducting hoisting installation.

Screen Connection Wire

Cascading Power Line Cable



The cascading power line between unit cabinets adopts fool-proofing design; the green and yellow marks represent input and output respectively.

Cascading HDMI Signal Line Cable



The terminal of HDMI signal line is equipped with a lock device to fit with the lock at the cabinet structure and fix the HDMI interface, thus improving the stability of transmission of video signals within cabinets.

Cascading Serial Signal Line Cable



The twisted-pair with RJ25 port is adopted as the cascading serial line between unit cabinets to transmit screen control instructions and 3D synchronizing signal commands.

- User's Manual
- Content Developer's Guide
- Fabricator's Guide

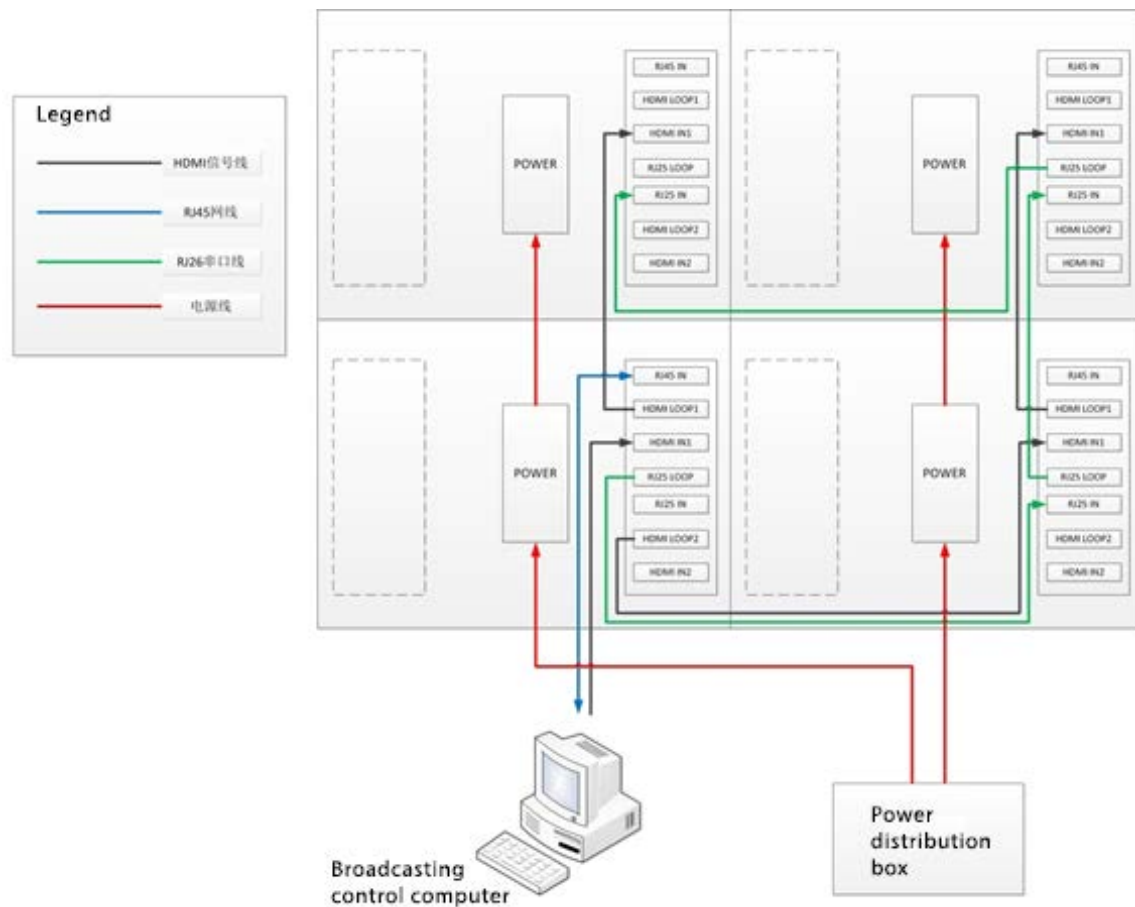
System Connection Diagram in Standard Splicing Areas

The quantity of cabinets cascaded may vary according to the pixel pitch; the details are as shown below:

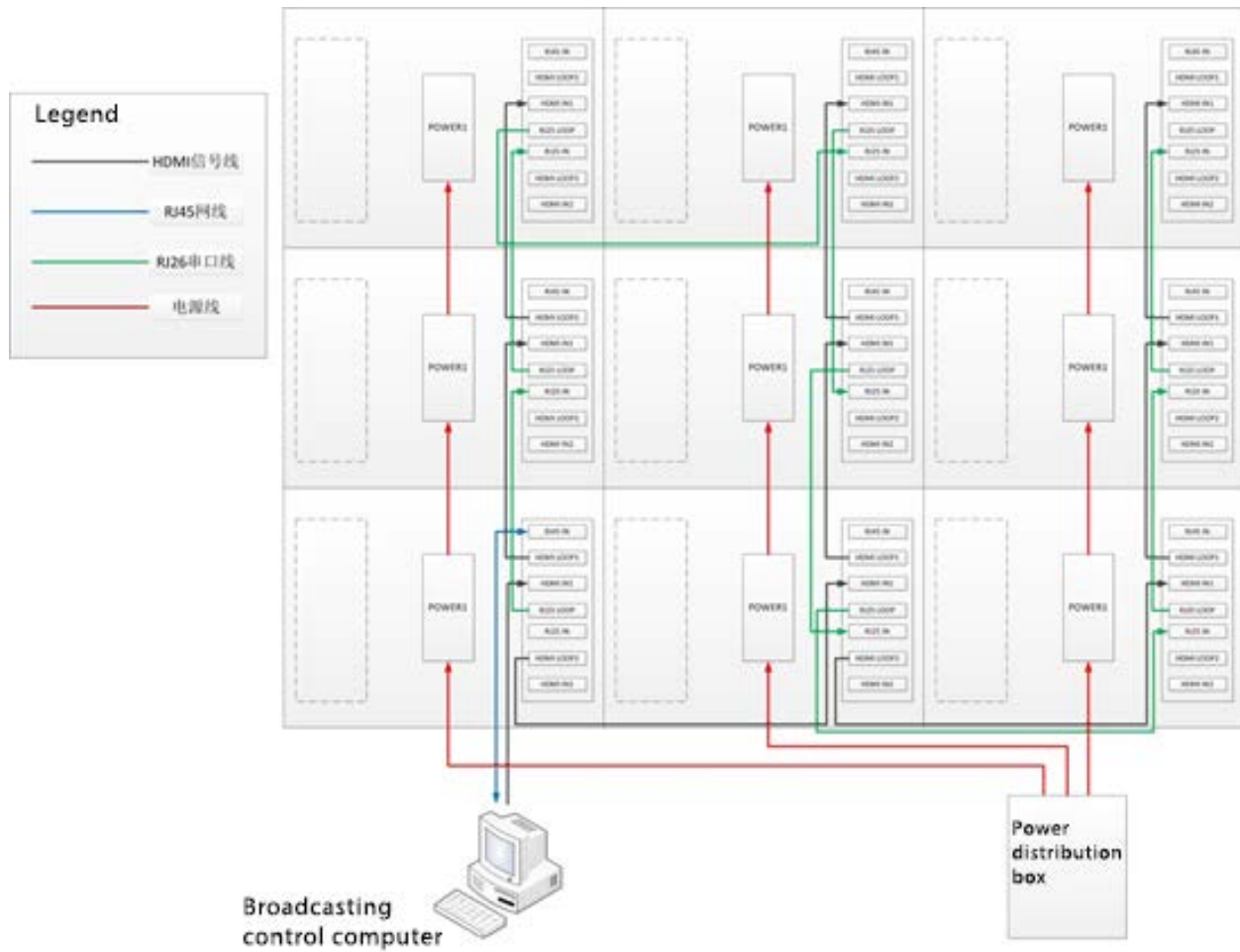
Product	Pixel Pitch	Resolution	Splicing Mode	Display Resolution in Splicing Area
TW-0120S-S	P1.25	960x540	2x2	1920x1080
TW-0140S-S	P1.45	825x464	2x2	1650x928
TW-0180S-S	P1.875	640x360	3x3	1920x1080
TW-0250S-S	P2.5	480x270	4x4x	1920x1080

The application of splicing wall shall conform to the principle of standard splicing area, that is to say, the display resolution in standard splicing area shall not exceed 1920×1080.

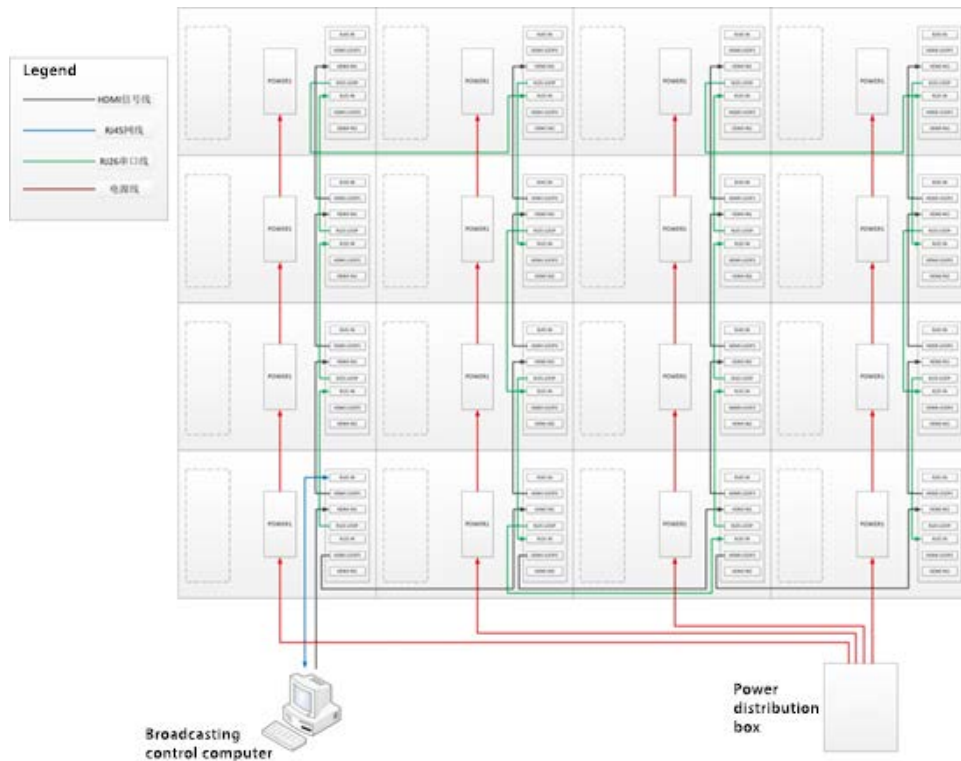
The system connection diagrams for three standard splicing areas are listed below:



System Connection Diagram with Splicing Mode of 2x2



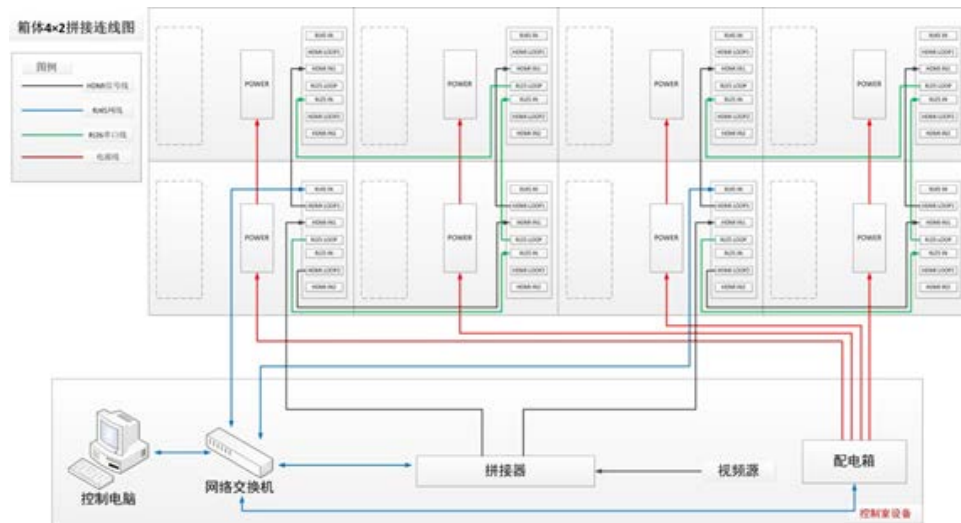
System Connection Diagram with Splicing Mode of 3x3



System Connection Diagram with Splicing Mode of 4x4

The application of splicing wall will be introduced in details as follows:

For example: 4×2 splicing wall composed of TW-012OS-S cabinet is used. The whole-screen resolution is 3840×1080.

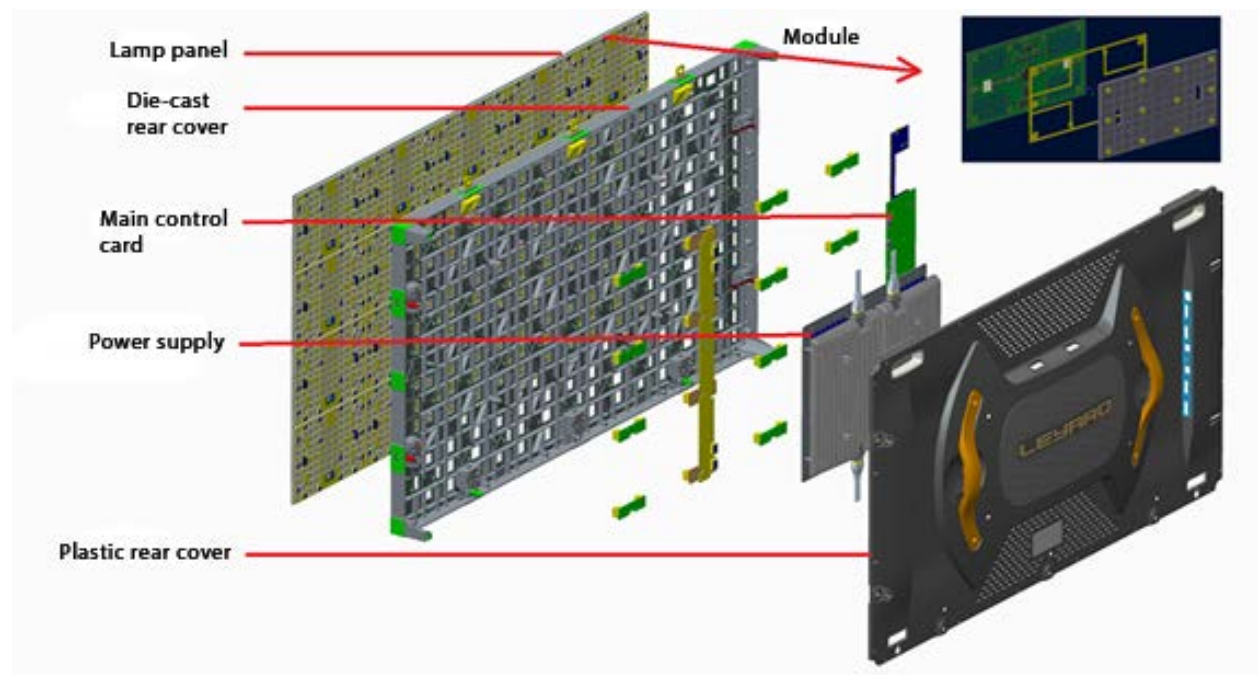


System Connection Diagram with Splicing Mode of 4x2

Screen Maintenance

Cabinet Composition

Each display unit is composed of LED lamp panel module, LED control board, 600W switch power supply, framework, rear cover, LCD screen, data exchange circuit board and conversion card. The ports and connecting pieces for display unit are as shown in figure below:



Toubleshooting

Fault Description	Troubleshooting
No image on entire LED screen	1. Check if the screen is powered on; PLC software is opened; power distribution box is powered on; and the switch power supply of display is provided with 220V input power.
	2. Check if the screen has video signal input and if the output signal of splicer is in black screen mode; check whether input signal of DVI, VIDEO and RGB is black signal when output signal is not in black screen mode; check whether the synchronous video monitor of machine room has images.
	3. Check if HDMI input of display receives the video signals from machine room.
	4. Check if optical fiber transmission system is faulty; check if the sending and receiving ends of optical fiber are normal and if optical fiber is damaged.
No image on partial LED screen	1. Find the power supply of display where image is not shown. Check if the corresponding power supply in power distribution box is tripped, not turned on or there's power voltage output; check if the switch power supply of display has 220V input or power supply is faulty, which could lead to transmission failure of signal.
	2. If no abnormality is detected in the first step, restart the power switch in the corresponding area with power-on interval of not less than 1min and the fault may be solved by re-initialization of display unit.
	3. Check if the transmission of unit cascade signal is faulty. If the fault remains after following the aforementioned two steps, you may power off this area, replace HDMI signal line or control board of display unit; if the display unit whose control board is replaced cannot be connected to periphery

	images, the address coordinate, as well as color and brightness value shall be set using software.
	4. No signal input. Check if the cabinet unit of display screen receives HDMI input signals; restart the box power supply to see if signals are detected.
	5. Check if the optical fiber transmission system of this channel is faulty; check if the sending and receiving terminals of optical fiber is normal and if optical fiber is damaged.
	6. Check if the display screen in this area has video signal input; output signal of splicer is in black screen mode; input signal of DVI, VIDEO and RGB is black signal when output signal is not in black screen mode; synchronous video monitor of machine room has images; and synchronous video monitor of machine room has images.
Images on part of LED are flickering	1. Check if the transmission of unit cascade signal is faulty. If the fault persists after the aforementioned two steps, you may power off this area, replace HDMI signal line or control board of display unit; if the display unit whose control board is replaced cannot be connected to periphery images, the address coordinate, as well as color and brightness value shall be set using software.
	2. Input signals are abnormal and the image window of display screen in this area is fully or partially flickering. Check if the input image is normal; check if there's flickering by comparing it with synchronous video monitor in machine room.
LED display module display is abnormal; the module shows partial or complete color deletion, long brightness, or is partially or completely out of control	1. Initialization of display unit is abnormal. Restart power supply in this area with interval of not less than 1min and sometimes, this fault can be removed by restarting it 2-3 times.

	2. If the fault remains unsolved after Step 1 is conducted, it preliminarily indicates that the fault may be caused by poor contact between LED module and adapter plate, which can be solved by re- plugging and inserting them again.
	3. .If the fault remains unsolved after the aforementioned two steps, the LED module or circuit of adapter plate may be faulty, which can be solved by replacing LED module or adapter plate. If LED module is replaced, the coordinate, color and brightness shall be adjusted to be consistent with color of image.
Incomplete image at video window	1. Check the video input window of processor to see if this image needs to be amplified.
	2. Check if the resolution of input signals is consistent with the saved resolution.
	3. Compare it with other displays to see if the input image window is complete.

Remarks: When replacing LED module of cabinet, the factory calibration data must be saved in the new module; after LED module is replaced, the cabinet will read the calibration data of the new lamp panel during first start-up and therefore, the startup period is longer than usual; please be patient.

European Union Disposal Information

The symbol shown below indicates that the product was placed on the market after August 13, 2005 and must not be disposed of with other waste. Separate collection and recycling of electronic waste at the time of disposal ensures that it is recycled in a manner that minimizes impacts to human health and the environment. For more information about the proper disposal of electronic waste, please contact your local authority, your household waste disposal service, or the seller from whom you purchased the product.



Accessing Leyard's Technical Support Website

Visit <http://www.leyard.com/en/support/> for technical support.

Revision History

Revision	Description	Author	Date
01.1	English Version Release		2016-07