Installation Manual & User's Guide

All In One Display

Captivate Series:

Captivate 162

Revision 1.6

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Revision	Date	Effected Sections	Comments	Author/Editor
1.0	6/24/2025	All	Initial Draft	K. O'Quinn
1.4	9/30/2025	All	Update Installation detail	
1.5	11/14/2025	P9-P10 P31-P32		
1.6	11/17/2025	P2 P32	Removed source info. Add LED module carton barcode information	

contents

1 Purpose

The purpose of this manual is to provide instructions for the initial installation and setup of the Nanolumens Captivate All in One (AIO) Display. Additional information is provided to assist in troubleshooting and acquisition of replacement parts.

2 Safety Concerns

Some of the procedures in this manual are preceded by warnings/cautions regarding potential hazards in handling this equipment. These warnings/cautions should be carefully read and understood before proceeding. Failure to observe these precautions may result in serious injury to personnel performing the work and/or bystanders. The key hazards for this equipment are as follows:

Electrical - The electrical equipment described in this section operates at moderate voltages. Personnel should closely observe all generally prescribed cautions and warnings before performing any work.

Location – Special caution should be taken when accessing or servicing equipment mounted on a vertical surface or suspended from overhead.

Weight – To prevent possible personal injury when attempting to remove or install equipment, adequate support of a lifting device or additional personnel must be used to prevent the equipment from falling. Personnel's failure to heed these warnings could result in injury or damage to the equipment.

2.1 Safety Notices

Warnings, Cautions, and Notes emphasize dangerous or important points in the associated text.

For the purpose of this document, the use of Warnings Cautions and Notes are defined as follows

2.1.1 Warning

Figure 1

A Warning indicates a hazardous situation which, if not avoided, could result in death or serious injury. Warnings will be preceded by the banner shown in Figure 1and will be formatted in red, all caps and bold to stand out.

2.1.2 Caution

Figure 2

A Caution indicates a hazardous situation, which if not avoided, could result in minor or moderate injury or damage to equipment. Cautions will be proceeded by the banner shown in Figure 2and will be formatted in bold to stand out.

2.1.3 Note

Figure 3

A Note is used to highlight an essential operating or maintenance procedure, condition or statement which does not relate to personal injury or damage to equipment. Notes will be proceeded by the banner shown in Figure 3 and will be formatted in italicized to stand out.

2.2 General Safety

2.2.1 Electrocution

POTENTIAL FOR ELECTRIC SHOCK. THIS PRODUCT USES 120 – 240 V_{AC}. TAKE APPROPRIATE MEASURES WHEN WORKING AROUND ELECTRICITY.

The Nanolumens AIO is an electronic device. While not drawing on high voltage, this product nonetheless is subject to the same hazards and precautions as any other electronic device.

2.2.2 Heavy Object

POTENTIAL FOR INJURY. UTILIZE LIFTING DEVICES OR GET ASSISTANCE WHEN LIFTING HEAVY OBJECTS.

Some components of the AIO may possess significant weight and a person can be subject to injury when trying to lift these components. Additionally, massive objects in motion can impact with crushing force. Get mechanical or human assistance when moving heavy objects.

2.2.3 Falling Object

POTENTIAL FOR INJURY OR DEATH. TAKE MEASURES TO MAKE SURE ITEMS MOUNTED ON VERTICAL SURFACES OR SUSPENEDED FROM OVERHEAD ARE SECURE IN PLACE WHEN WORKING AROUND THEM.

Any object which is mounted on a vertical surface or suspended from overhead is subject to gravity and may fall until it is securely mounted. Always maintain control of these items until the mounting is complete.

2.2.4 Electrostatic Discharge

Potential Damage to Circuits. Always use grounding straps when handling circuit boards or other semiconductors.

Circuit Bords and Semiconductors are subject to damage from Electrostatic Discharge. Use anti-static packaging, proper grounding techniques and anti-static straps and tools when working with circuit boards and other semiconductors.

2.2.5 Fragile Equipment

Potential Damage to LEDs. Do not store or transport the display in a face-down orientation that places the weight of the display on the LEDs.

LEDs are fragile and are not designed to support any weight. Do not place any pressure on the LEDs either in handling the display or in storage or transport. This could cause damage to the LEDs requiring return to Nanolumens for repair or replacement.

3 Installation Specifications

3.1 Voltage

- For areas with an AC RMS voltage of 110V:2 x power supplies are required.

3.2 Ventilation

Sufficient air space must be present to allow for convective cooling. The temperature should not be below 32°F (0°C) and not above 104°F（40°C）.

3.3 Weight

- Captivate 162: 342 lbs (155 kg)

3.4 Size

- Captivate 162: 142.94” ×84.66” × 1.22” (3630.8mm×2150.4mmx 31mm)

4 Infrastructure

This section details the necessary supporting infrastructure for the installation.
Before beginning to verify that

- sufficient power will be available for the operation of the display and its supporting equipment.
  - In regions where the AC RMS voltage is 110V, use a dual power supply configuration: current 22A.
- mounting space is available, planed (flat) and the load bearing mounting surface or hanging anchor is stressed to support the display.

If the mounting surface (wall) is glass, marble, porcelain or a hollow wall, additional measures may be needed during installation.

5 Installation

CAUTION **Potential Damage to Equipment. Installation of the Captivate All In One Display should only be performed by an approved Nanolumens Technician.**

5.1 Preparation

1. Review Location to make sure supporting infrastructure is present. For requirements, see Section3.
   - Voltage
   - Environment is free from problems (high humidity, salt air, poor circulation)
   - Data
2. Review Inventory to make sure all parts and tools are present. For requirements, see Section4.
   - Parts List
   - Tools List
3. Review Mounting configuration and surfaces. For requirements, see Section4.
4. Verify dimensions, Flatness, Stress/Load-bearing capability.
5. Verify sufficient ventilation will be present after install.

5.2 Install the Mounting Structure

This section addresses the installation of the mounting structure and is limited to penetration of the load-bearing wall, hanging and/or mounting on a vertical bracket.

WARNING

POTENTIAL FOR INJURY OR DAMAGE. UNTIL SECURELY IN PLACE, OBJECTS BEING MOUNTED ON A VERTICAL SURFACE, ARE SUBJECT TO FALL IF NOT HELD IN PLACE. MAINTAIN A FIRM GRIP ON THE ITEMS BEING MOUNTED UNTIL THE MOUNTING IS COMPLETE.

NOTICE

For wall mounting, the wall should be a load-bearing structure. Installation on special wall structures such as glass, marble, porcelain or hollow walls may require special installation with additional steps.

NOTICE

Nanolumens assumes on responsibility and bears no liability for any potentially hazardous installation designated by the client or third party nor any damage to other items caused by the use of non-standard Nanolumens mounting devices or hardware.

5.2.1 Install the Hanging Bars

This section covers the installation of the floor standing installation.

NOTICE

All pictures in this document are for reference only. The actual product shall prevail.

1. Determine the mounting positions for the upper and lower hanging bars according to the site environment and the height of the screen above the ground. Use a level gauge to ensure that the bars will be horizontal.

2. Connect Upper Hanging Bar 1 to Upper Hanging Bar 2 using Connector (see Figure 5). Fit Hanging Bar 1 end to end with Hanging Bar 2 and use 6 M5x16 countersunk screws to preassemble the Hanging Bar. Do this for the Upper Hanging Bar and the Lower Hanging Bar

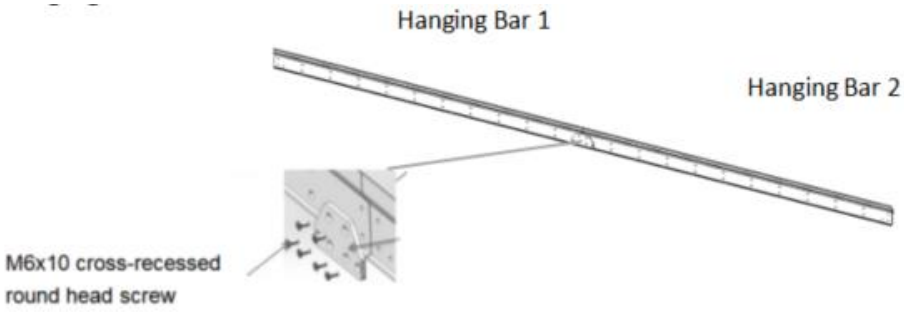
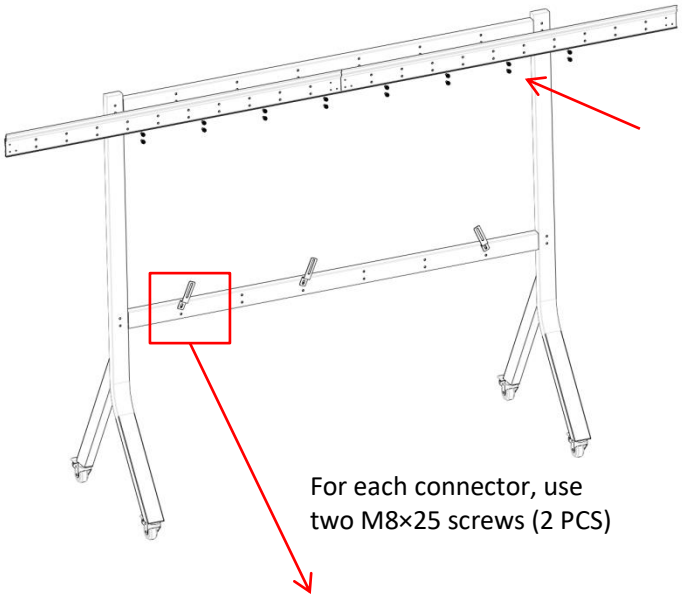


Figure 5

3.Mount the Hanging Bars to a free-standing or rolling bracket. Use 32 sets of M8x35 bolts, flat washers and nuts as shown in the following figure.Install the wall mount onto the floor stand as shown in the figure below:



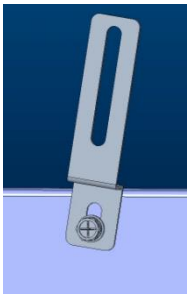


Figure 6

Wall Requirement for AIO installation：

1. Flatness (Concavity & Convexity)：

The overall flatness deviation of the wall shall be ≤ 3mm/2m (i.e., within any 2-meter length range, the vertical distance between the highest point and the lowest point of the wall shall not exceed 3mm).

Tool：

48-ft. Digital Level：

Taper Gauge：

2. Flatness Inspection

Place the 48-ft. Digital Level closely against the wall.

Insert the taper gauge into the gap between the 48-ft. Digital Level and the wall, then read the value on the taper gauge.

Record the maximum deviation within each 2-meter range. The wall is qualified if the deviation is ≤ 3mm. ；

3. Shim Adjustment Method

Material：

Stainless steel shims (thickness options: 0.5mm, 1mm, 2mm)

Steps:

According to the measured flatness deviation of the wall, insert stainless steel shims of corresponding thickness between the hanging strip and the wall.

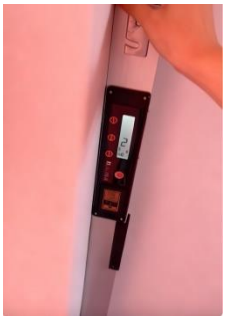
4. Verticality

Tool: 48-ft. Digital Level

Steps:

5. Place the digital level vertically against the wall.

6. Read the digital display, the verticality deviation shall be ≤ 3mm.



5.2.2 Assemble the Display

This section covers the Assembly of the Display.

NOTICE

The integrated display is delivered with the panels joined into a column according to their numbers. A total of six columns are joined.

4. The integrated LED display is shipped with the cabinets arranged in a column according to their numbers, with a total of 6 columns arranged for 162 inches;The cabinets assembled in columns have been pre-installed with back hooks and edging(see Figure 7).

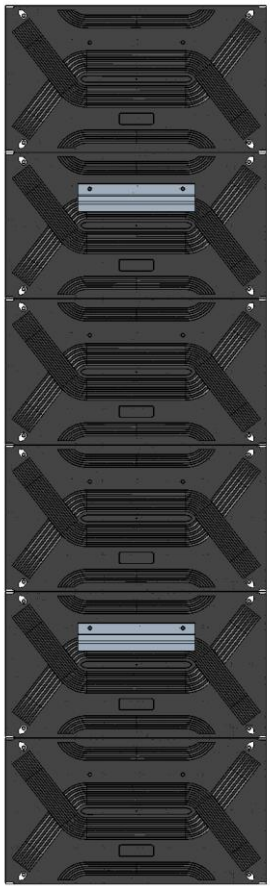


Figure 7

a. Refer to the measurements made for the Hanging Bars and identify the individual Panels on which the Hook Plates will be mounted.
b. Use two M8x25 Hex-head bolts and flat metal washers (A) to mount the Hook Plates (B) to the identified Panels. Tighten to fit.

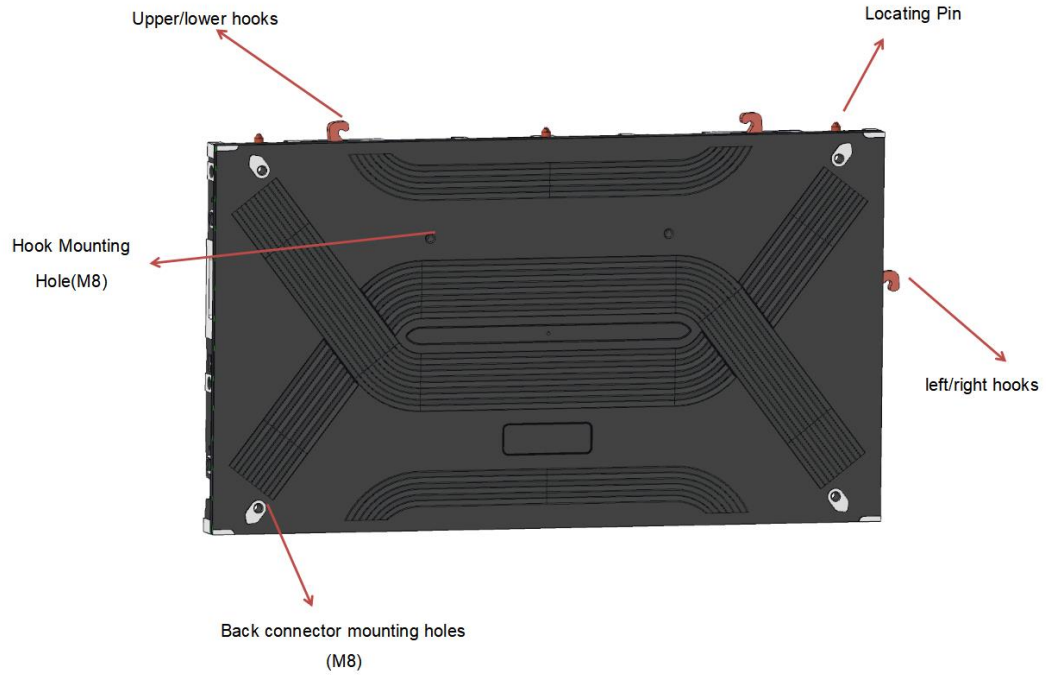


Figure 8

5.Connect the upper and lower hooks of the cabinets using a tool, and connect the left and right spring locks, as shown in the figure below:

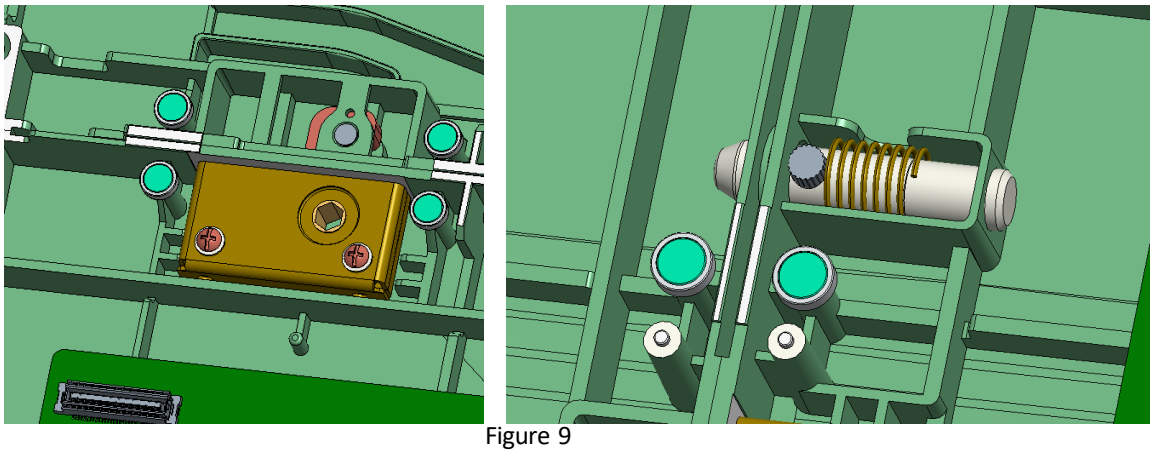


Figure 9

6.During stand installation, use a wrench to detach the hooks from the second row of cabinets and reattach them to the third row using two original M8×20 screws. Additionally, remove the hooks from the fifth column of cabinets with a wrench. No hook adjustment is necessary for wall-mounted installations,as shown in the figure below:

Figure 10

7.When individual columns are complete, hang them on the Hanging Bar starting with the center column (see Figure 11& Figure 12) and adding additional columns to either side moving outward. Place columns in position next to each other with the spring latches of one column aligned to the holes of the adjacent column (see Figure 9).

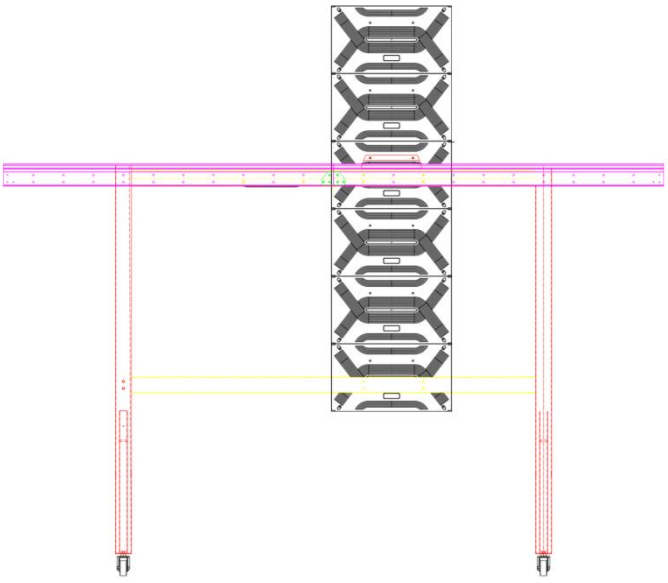


Figure 11: Viewed from back

8.Install the adjacent second column of cabinets, making the hooks hang on the wall mounts, while the adjacent sides are tightly aligned. Pull out the side spring locating pin, insert the locating pin completely into the corresponding locating hole, and then rotate

the side hook lock with a corresponding Allen wrench to completely lock the two columns of cabinets, The installation positions of the second row wall-mount bar and Z-shaped connector are shown in Figure 12,Please ensure that the device is centered when mounted(The connector plates and screws are provided in the stand packaging).

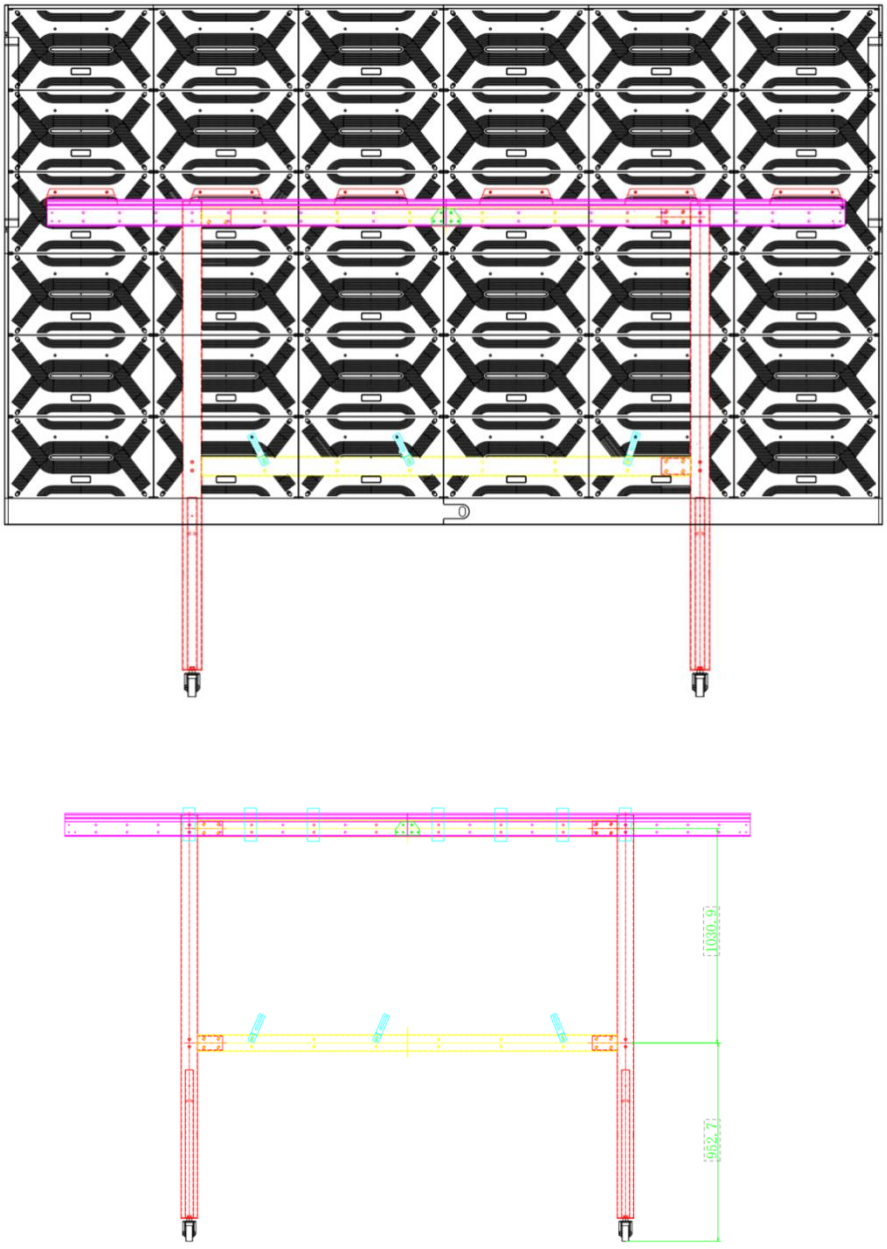


Figure 12

9.Cabinet Alignment Adjustment

9-1)Side Spring Locks & Side Hooks

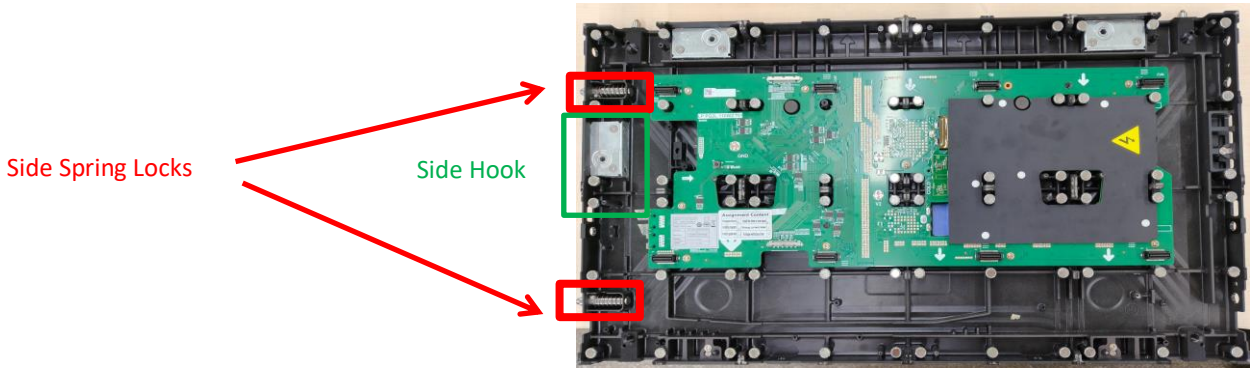


Figure 13

9-2)Cabinet Alignment

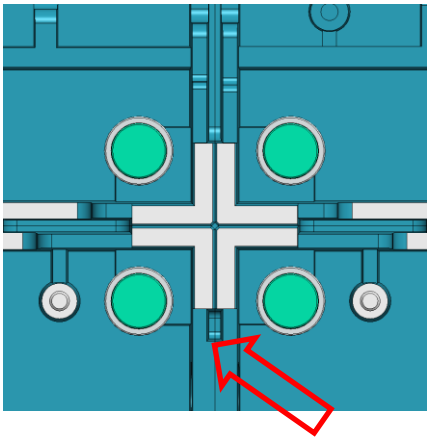


Figure 14:Good alignment

9-3)If the alignment between two cabinet columns is off:

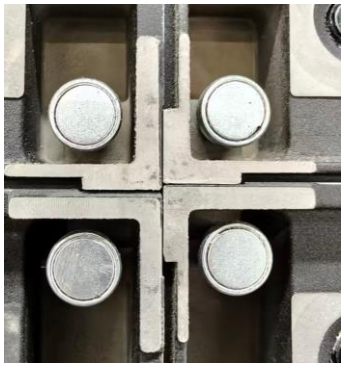


Figure 15

a. Check and make sure all Side Spring Locks are connected all the way to the adjacent cabinets.

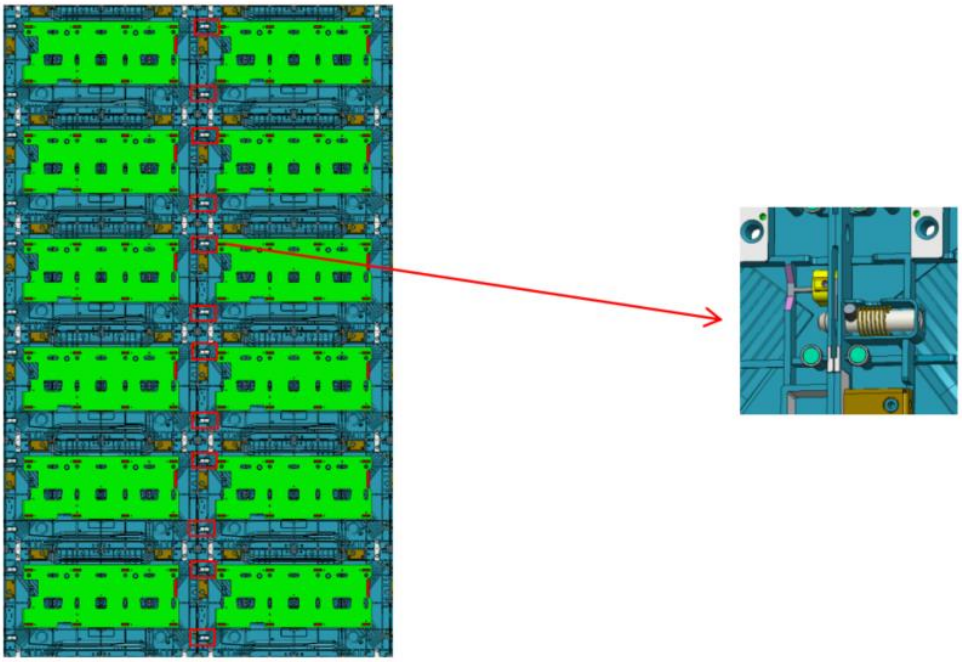


Figure 16

b. Rotate clock-wise to unlock the the Side Hooks, adjust the alignment between two columns, when it is good, rotate counter clock-wise to lock the Side Hooks.

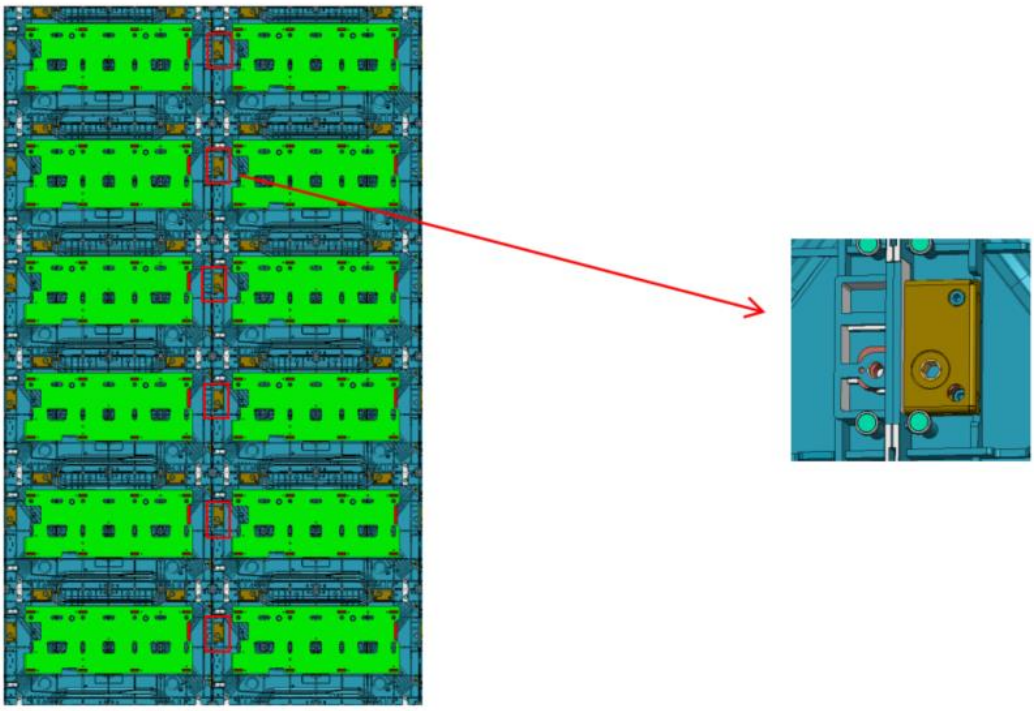


Figure 17

5.2.3 Wall-mounted installation

NOTICE *All pictures in this document are for reference only. The actual product shall prevail.*

9.According to the on-site environment, combined with the height of the large screen from the ground, determine the drilling positions of the upper and lower wall mounts. To ensure horizontal alignment, a spirit level is required;The upper wall mount and lower wall mount are respectively composed of wall mount 1 and wall mount 2, connected by connectors. Six M6*10 countersunk head screws are used to fix the connectors.Mark the appropriate hole positions on the wall and drill holes at the marked points using a tool, with each hole having a diameter of 10mm.

The drilling hole positions for wall mount 1 and wall mount 2 are as shown in the diagram;

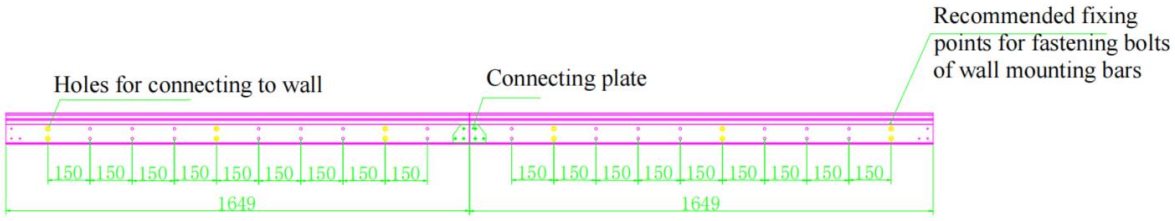


Figure 18

10.Use M8*80 expansion bolt for installation at the corresponding hole position, as shown in the figure below;

Figure 19

11.Side sectional view of the installed wall mount：

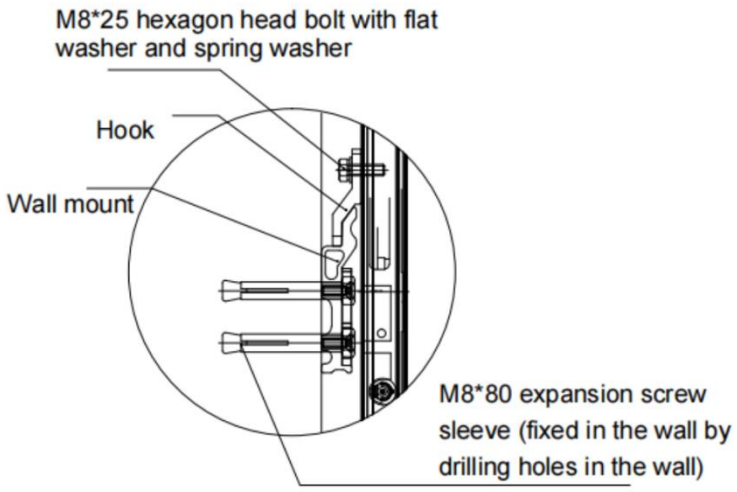


Figure 20

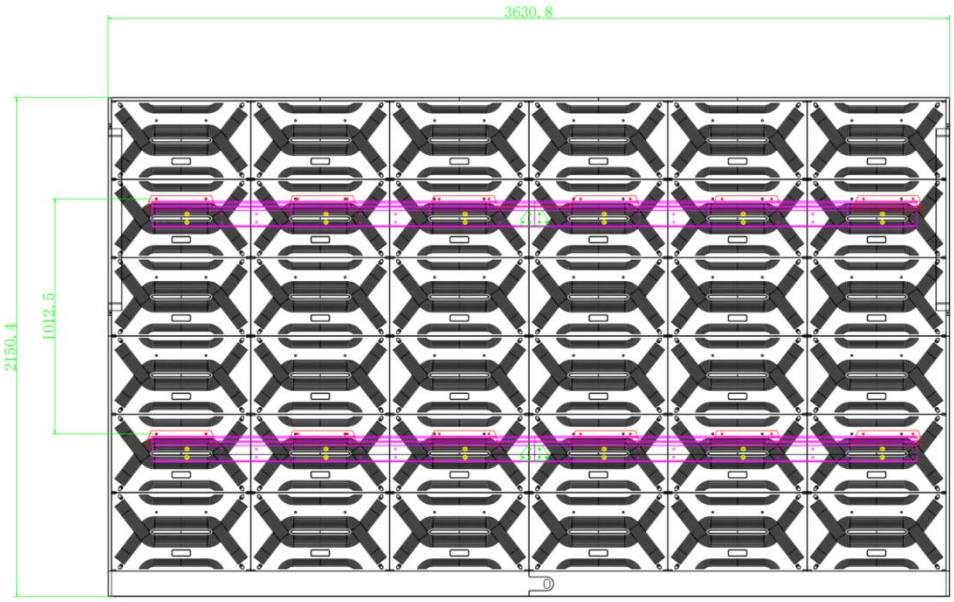


Figure 21 wall-mounted installation diagram

12.Check if the wall mount is installed properly, by determining: 1) if it is level; 2) if the distance between the upper and lower wall mounts is correct. You can check and adjust using the following methods:

a. Use a spirit level to measure if the wall mount is level. If it is not level, adjust it by loosening the expansion bolts, gently push it to be level by hand, then tighten the bolts.

b.Use a tape measure to check if the distance between the upper and lower wall mounts is correct. If it is incorrect, adjust it by loosening the expansion bolts, lightly pushing to adjust the distance by hand, and then tightening the bolts.

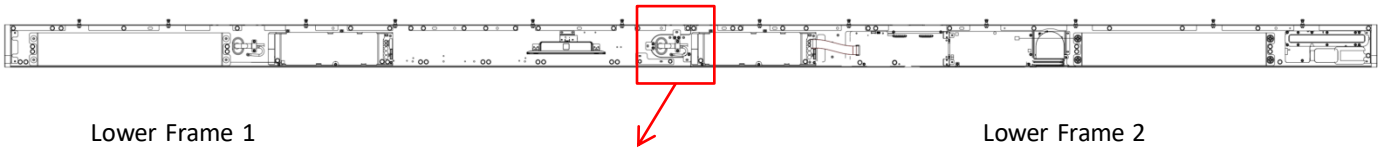
13.Install the cabinets according to the 5.2.2 steps of those for the floor standing installation,Refer to Figure 7 for the hook position

5.2.4 Assemble the Lower Side Frame

The Lower Side Frame Assembly is made up of Lower Frame 1 and Lower Frame 2 connected by the Connecting Plate as shown in the figure below.

NOTICE

For the purpose of orientation, "left" and "right" are determined from the position of standing in front of and facing the display.



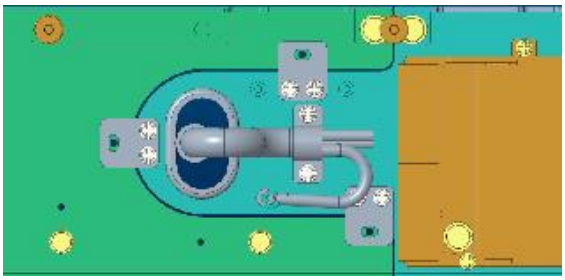


Figure 22

NOTICE

Do not mount the Connecting Plate on the back of the Lower Frame 1 and Lower Frame 2. The Connecting Plate fits inside the Lower Frame Assembly.

NOTICE

First assemble and mount the display panels; splice the bottom frame as a whole and install the cover plate; when positioning the bottom frame beneath the display, at least two people should lift it from both sides.

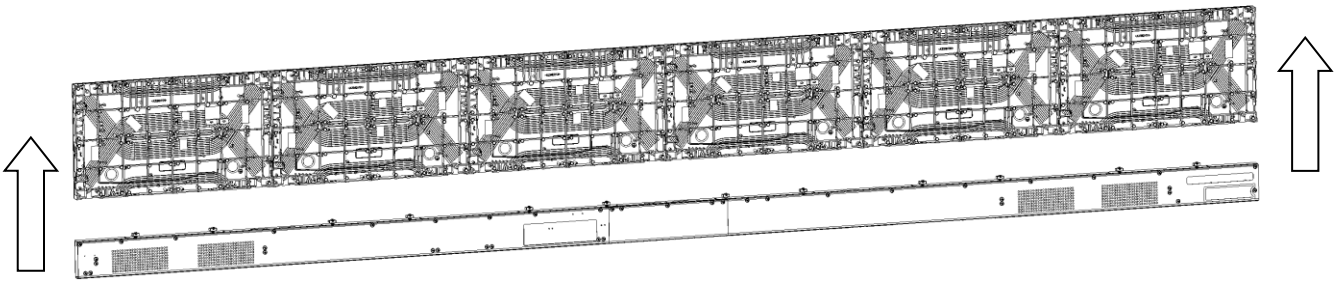


Figure 23

1.Reference for splicing the lower frame, using screws to fix the indicated positions;

1-1) Installation Location Matching Position Description:

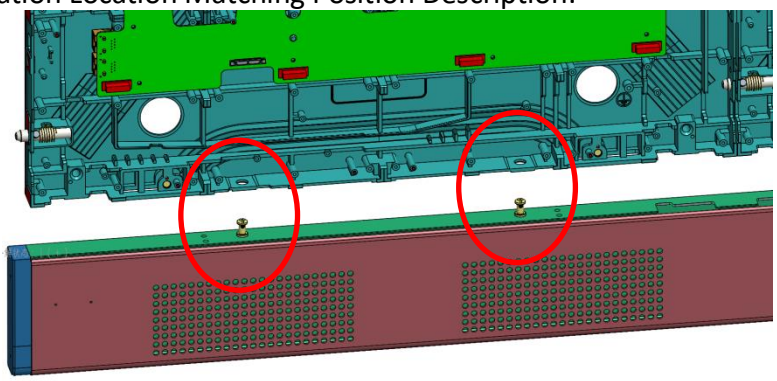


Figure 24

1-2) Each cabinet column features 2 mounting holes, which align with 2 positioning pins on the bottom frame (no installation required; pre-installed prior to shipment).Secure the positioning pins on the middle cabinet (No. 1) and the cabinets on both sides (No. 2 and No. 3). Then, fix the remaining positioning pins in order. There are a total of 12 positioning pins.

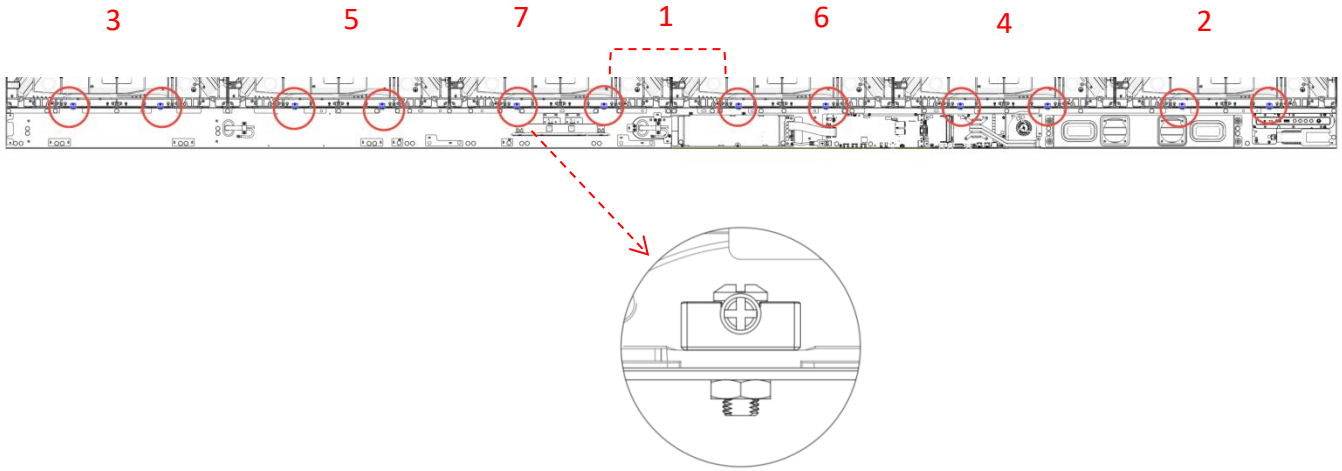


Figure 25

1-3) Align the positioning pin with the hole and move it back and forth to ensure the pin is properly fixed into the hole on the cabinet, then secure the positioning pin wedge.

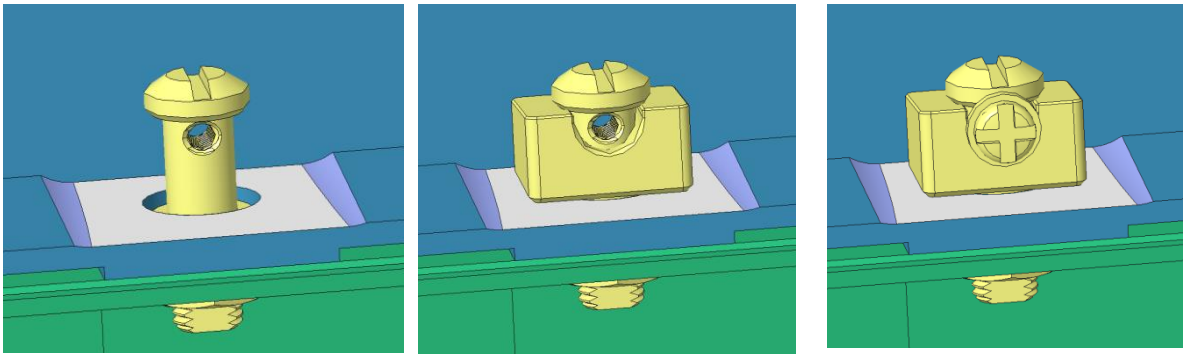
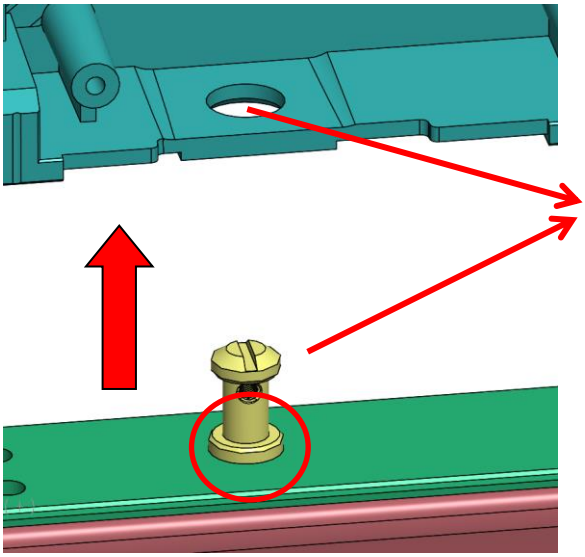


Figure 26

1-4) Installation Details

a. Ensure locating pin lower guide is fully seated in the cabinet hole (during upward lower-frame install).



After install, use the locating pin to verify pin–hole fit; ensure frame-to-cabinet alignment accuracy.

Figure 27

b. When installing the fixing block, support the lower frame from below and apply upward force at the installation location to eliminate any gap caused by the lower frame’ s self-weight, insert the fixing block inward until it engages the locating pin (do not fully seat it), and then secure it with fixing screws.

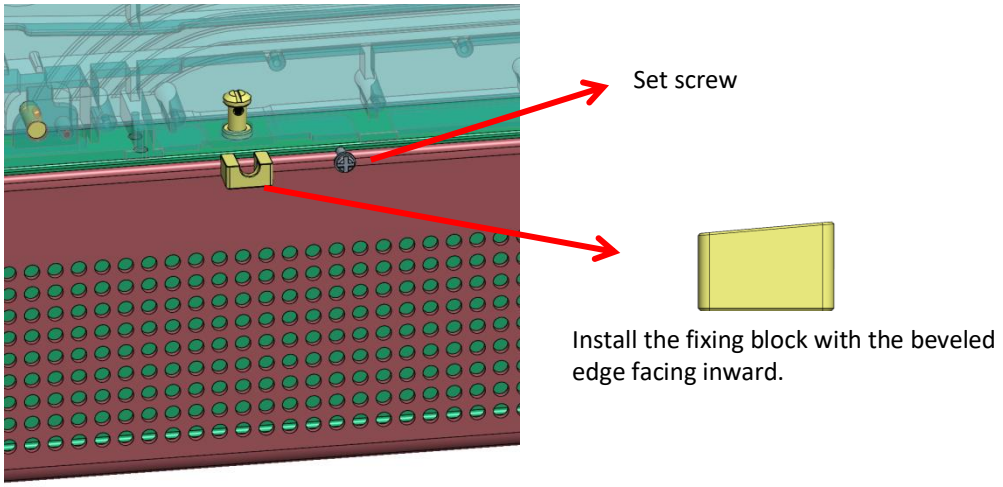


Figure 28

*Installation Tips:

After two installers align the locating pins by lifting the lower frame into position, initially secure the leftmost and rightmost fixing blocks to provide stability and allow hands to be released. Then, a single installer can install the remaining fixing blocks according to standard procedures. Finally, tighten all screws to complete the lower frame assembly.

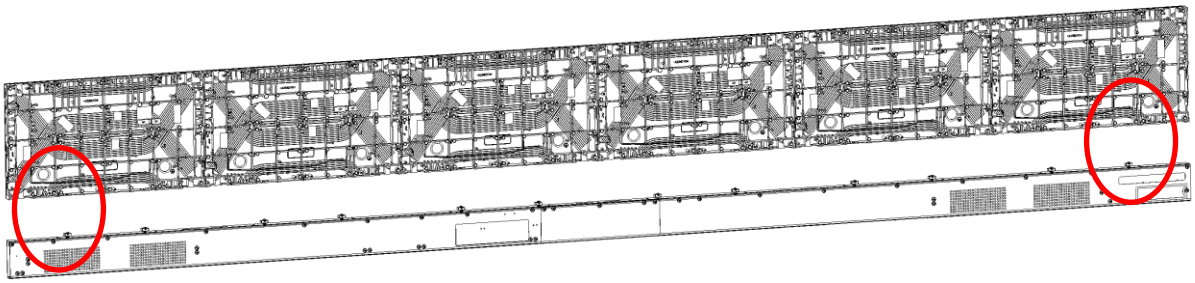


Figure 29

2.Wiring Instructions

2.1 The WiFi module is pre-installed in the lower bezel before shipment, eliminating the need for on-site installation.

Figure 30

2.2 Connect the cables inside the bottom frame as shown in the diagram below，
FFC&FPC have been pre-installed at the factory

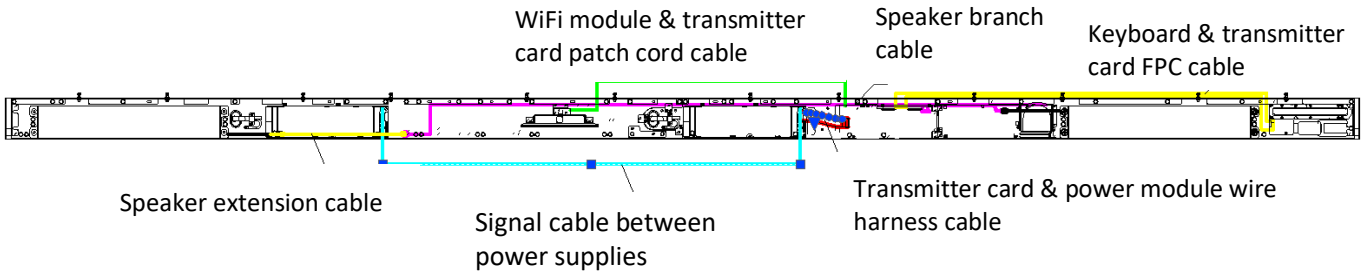


Figure 31

NOTICE *Speaker extension cable have been pre-installed during shipment，Bottom frame wiring (actual photo).*

Figure 32

1)Connect the mainboard and speaker (see Figure 33). All mainboard cables have been pre-installed during shipment (see Figure 34)

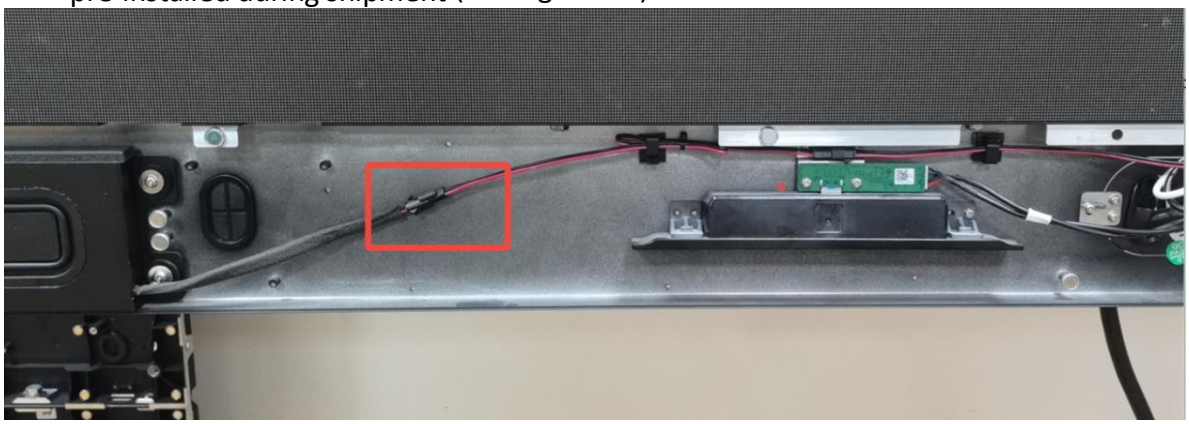


Figure 33

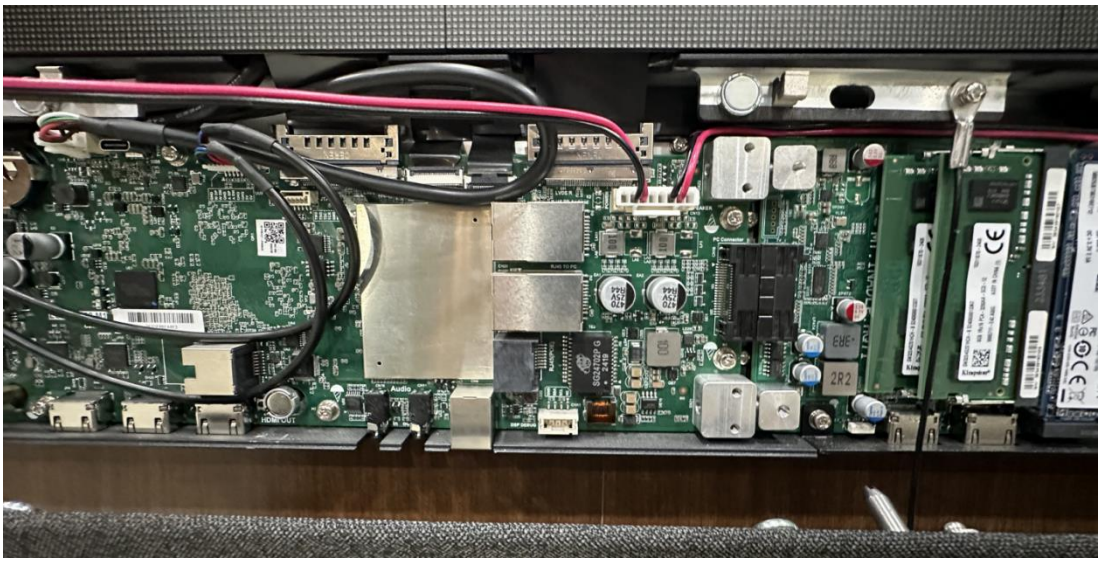


Figure 34

2)Connect the main board and the WiFi module as shown in the figure 35，The electronic wire harness on the main board is connected when shipped (see Figure 36)

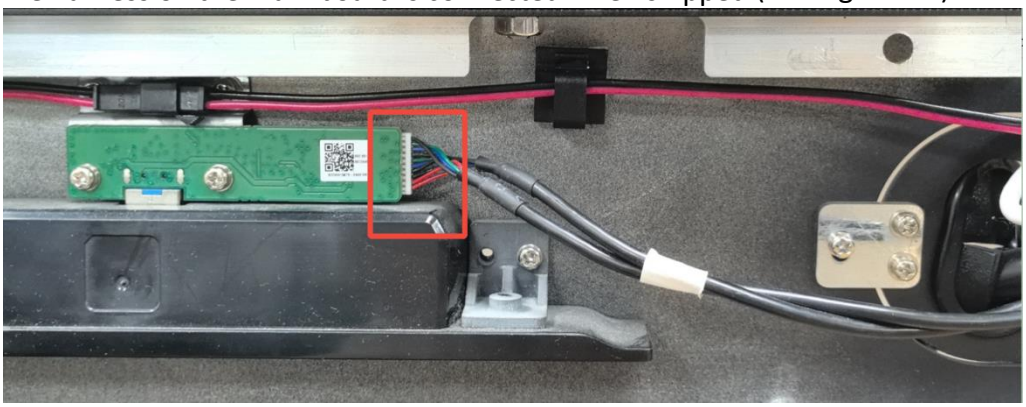


Figure 35

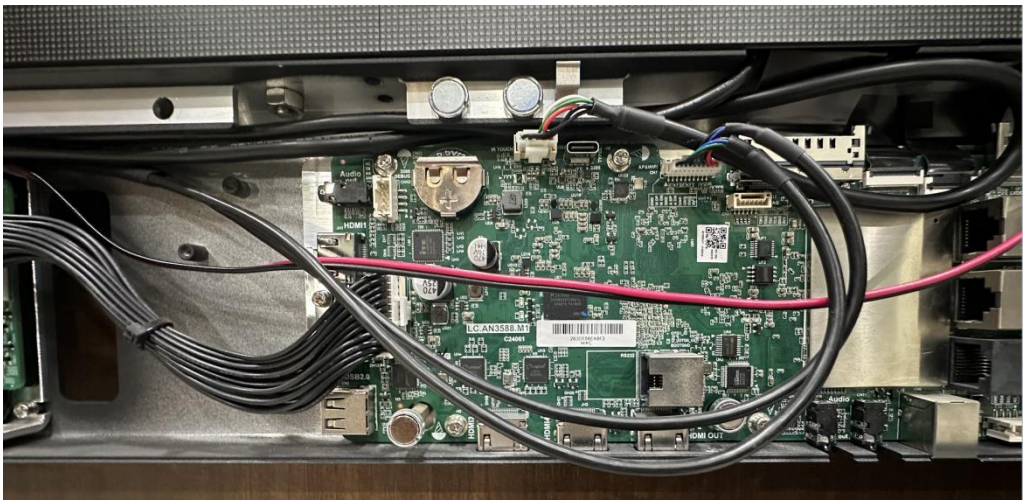


Figure 36

3)Connect the two power supplies as shown in Figure 32: connect the left power supply according to the diagram. The connection cable for the other power supply is already connected before shipment (see Figure 38)

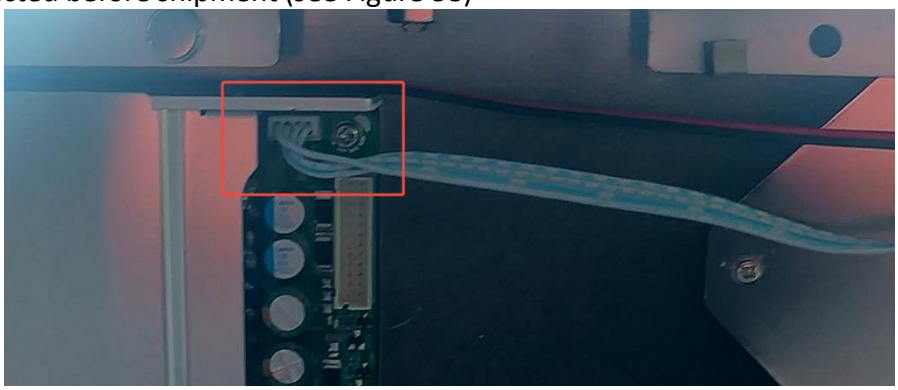


Figure 37 Left power supply

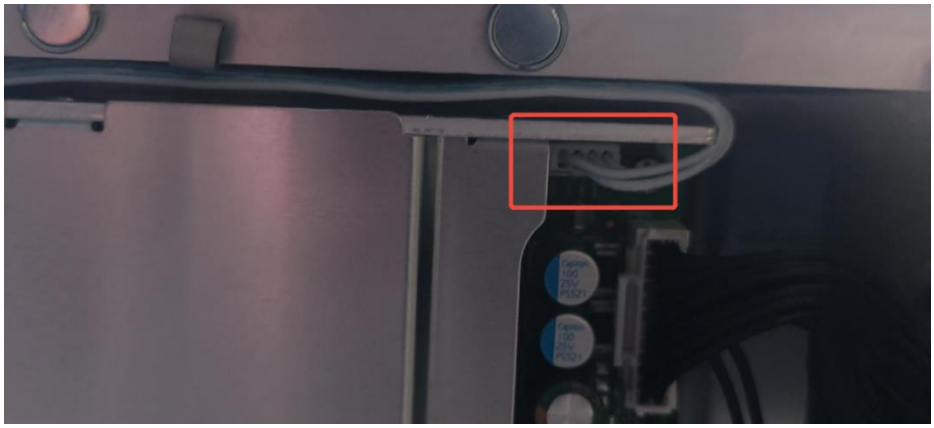
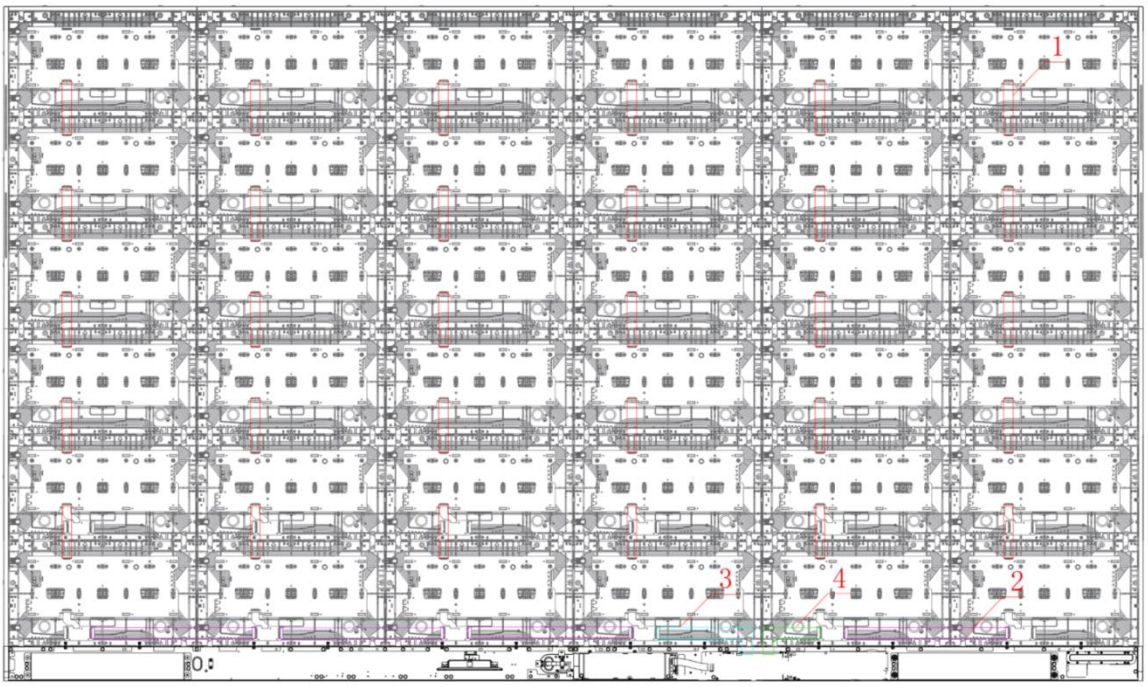


Figure 38 Right-side power supply

2.3 First, connect the power and signal cables between the cabinets according to the diagram. Then, connect the signal and power cables to the bottom frame assembly. As shown in the figure below:

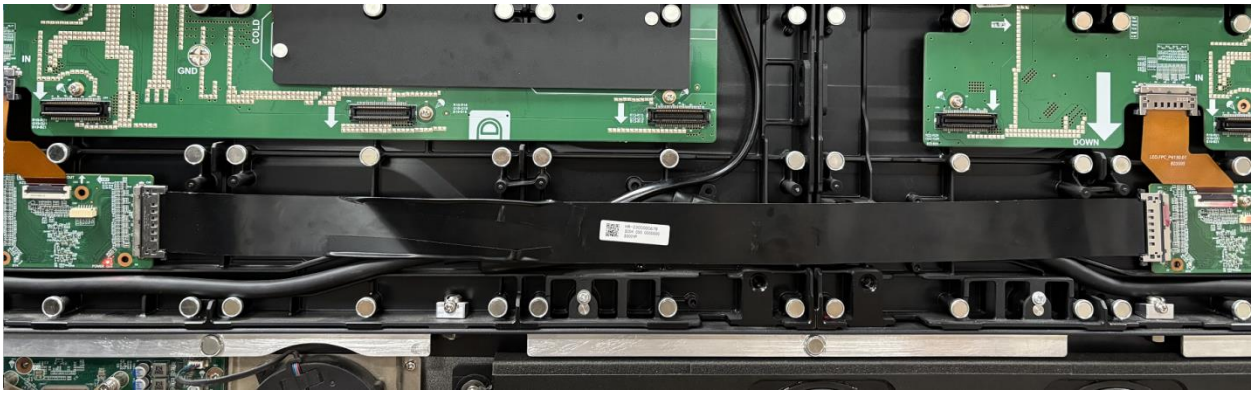


Front View
Network Wiring Diagram

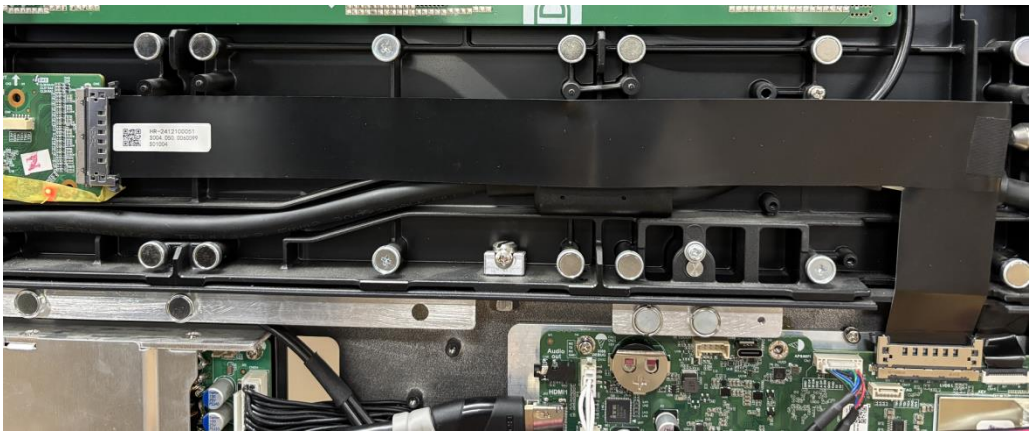
Figure 39

No.	Name	Quantity	Length	Note
1	Vertical signal FFC between the cabinets	30	175mm	Factory pre-installed，41 pins
2	Horizontal signal FFC between the cabinets	4	531.5mm	Requires user installation，51 pins
3	Horizontal signal FFC between the cabinets - left cascading	1	416mm	
4	Horizontal signal FFC between the cabinets - right cascading	1	273mm	

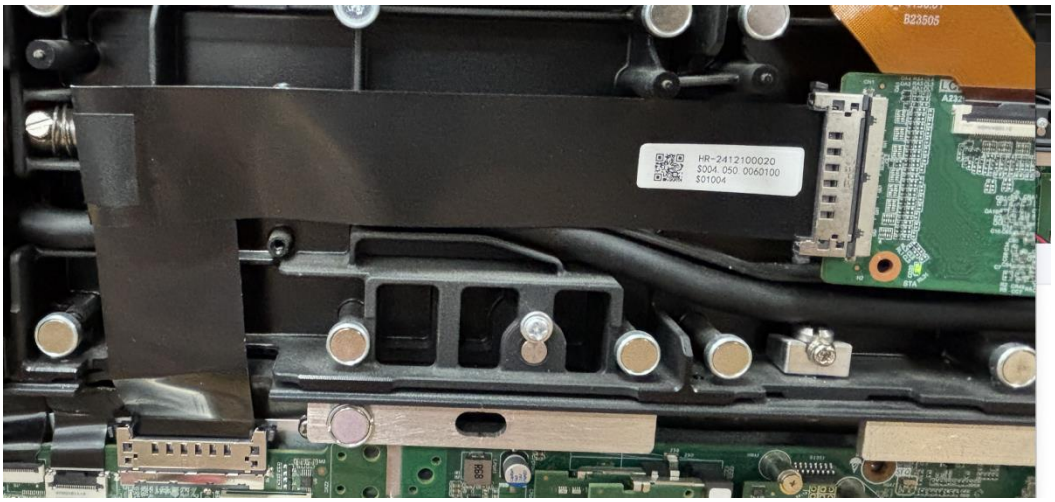
No.2:Horizontal signal FFC between the cabinets



No.3:Horizontal signal FFC between the cabinets - left cascading



No.4:Horizontal signal FFC between the cabinets - right cascading



1)Bottom Frame Wiring Diagram (2 Power Supplies)

Front View

Dual power wiring diagram

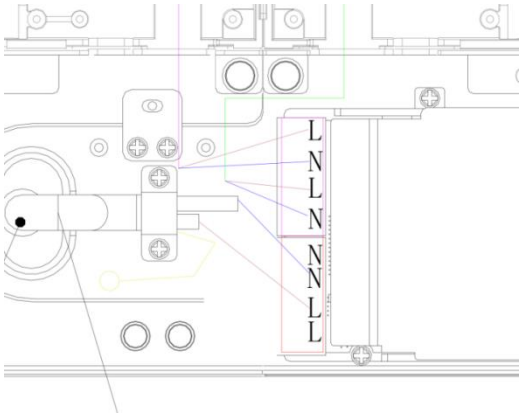


Figure 40

No.	Name	Quantity	Length
1	Vertical cascading power cable between the cabinets	30	240mm
2	Horizontal cascading cable between the cabinets	3	575mm+230mm
3	Horizontal cascading cable between the cabinets - left cascading	1	765mm+230mm
4	Horizontal cascading cable between the cabinets - right cascading	2	700mm+230mm
5	Input power cable	2	5000mm

5.2.5 Install the LED Modules

Install the modules from left to right, from right to left, from bottom to top or from top to bottom as appropriate for the installation environment on the site. Adjust each module to ensure that they are aligned in all axes (X, Y & Z).

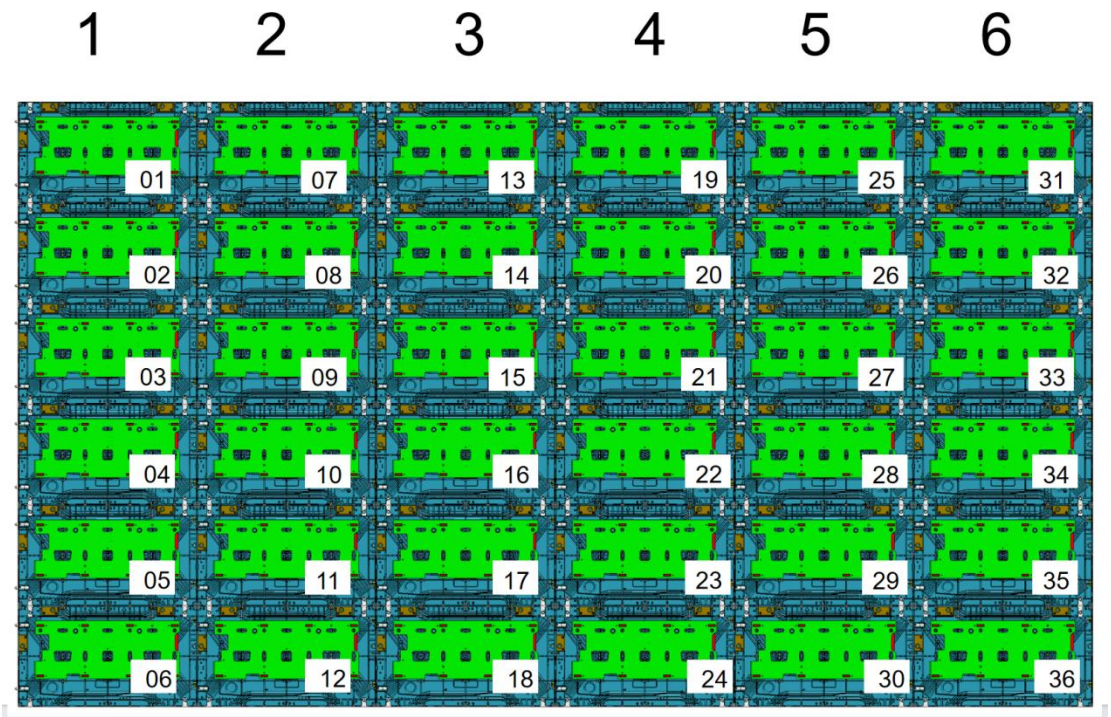
CAUTION **Potential Damage to Equipment. Use proper strength and avoid forceful insertion during installation.**

1. Install the modules. The modules shall be hard connected with hub board and the connectors on the modules. See Figure 41 for indexing positions for modules.

NOTICE *Each of the panels is delivered with a number marked on the upper right on the inside (see Figure 42), which represents the installation position of the panel at the time offactory correction. Each of the modules is also marked with a number (on the back). For example, in the number 16-5, 16 means the led board is installed in panel 16 at the time offactory correction; 5 means the position inside panel 16..*

Column & cabinet number

Cabinet label numbers 1 – 6 correspond to column 1.
Cabinet label numbers 7 – 12 correspond to column 2.
Cabinet label numbers 13 – 18 correspond to column 3.
Cabinet label numbers 19 – 24 correspond to column 4.
Cabinet label numbers 25 – 30 correspond to column 5.
Cabinet label numbers 31 – 36 correspond to column 6.



1-1	1-2	1-3	1-4	7-1	7-2	7-3	7-4	13-1	13-2	13-3	13-4	19-1	19-2	19-3	19-4	25-1	25-2	25-3	25-4	31-1	31-2	31-3	31-4
1-5	1-6	1-7	1-8	7-5	7-6	7-7	7-8	13-5	13-6	13-7	13-8	19-5	19-6	19-7	19-8	25-5	25-6	25-7	25-8	31-5	31-6	31-7	31-8
2-1	2-2	2-3	2-4	8-1	8-2	8-3	8-4	14-1	14-2	14-3	14-4	20-1	20-2	20-3	20-4	26-1	26-2	26-3	26-4	32-1	32-2	32-3	32-4
2-5	2-6	2-7	2-8	8-5	8-6	8-7	8-8	14-5	14-6	14-7	14-8	20-5	20-6	20-7	20-8	26-5	26-6	26-7	26-8	32-5	32-6	32-7	32-8
3-1	3-2	3-3	3-4	9-1	9-2	9-3	9-4	15-1	15-2	15-3	15-4	21-1	21-2	21-3	21-4	27-1	27-2	27-3	27-4	33-1	33-2	33-3	33-4
3-5	3-6	3-7	3-8	9-5	9-6	9-7	9-8	15-5	15-6	15-7	15-8	21-5	21-6	21-7	21-8	27-5	27-6	27-7	27-8	33-5	33-6	33-7	33-8
4-1	4-2	4-3	4-4	10-1	10-2	10-3	10-4	16-1	16-2	16-3	16-4	22-1	22-2	22-3	22-4	28-1	28-2	28-3	28-4	34-1	34-2	34-3	34-4
4-5	4-6	4-7	4-8	10-5	10-6	10-7	10-8	16-5	16-6	16-7	16-8	22-5	22-6	22-7	22-8	28-5	28-6	28-7	28-8	34-5	34-6	34-7	34-8
5-1	5-2	5-3	5-4	11-1	11-2	11-3	11-4	17-1	17-2	17-3	17-4	23-1	23-2	23-3	23-4	29-1	29-2	29-3	29-4	35-1	35-2	35-3	35-4
5-5	5-6	5-7	5-8	11-5	11-6	11-7	11-8	17-5	17-6	17-7	17-8	23-5	23-6	23-7	23-8	29-5	29-6	29-7	29-8	35-5	35-6	35-7	35-8
6-1	6-2	6-3	6-4	12-1	12-2	12-3	12-4	18-1	18-2	18-3	18-4	24-1	24-2	24-3	24-4	30-1	30-2	30-3	30-4	36-1	36-2	36-3	36-4
6-5	6-6	6-7	6-8	12-5	12-6	12-7	12-8	18-5	18-6	18-7	18-8	24-5	24-6	24-7	24-8	30-5	30-6	30-7	30-8	36-5	36-6	36-7	36-8

Figure 41

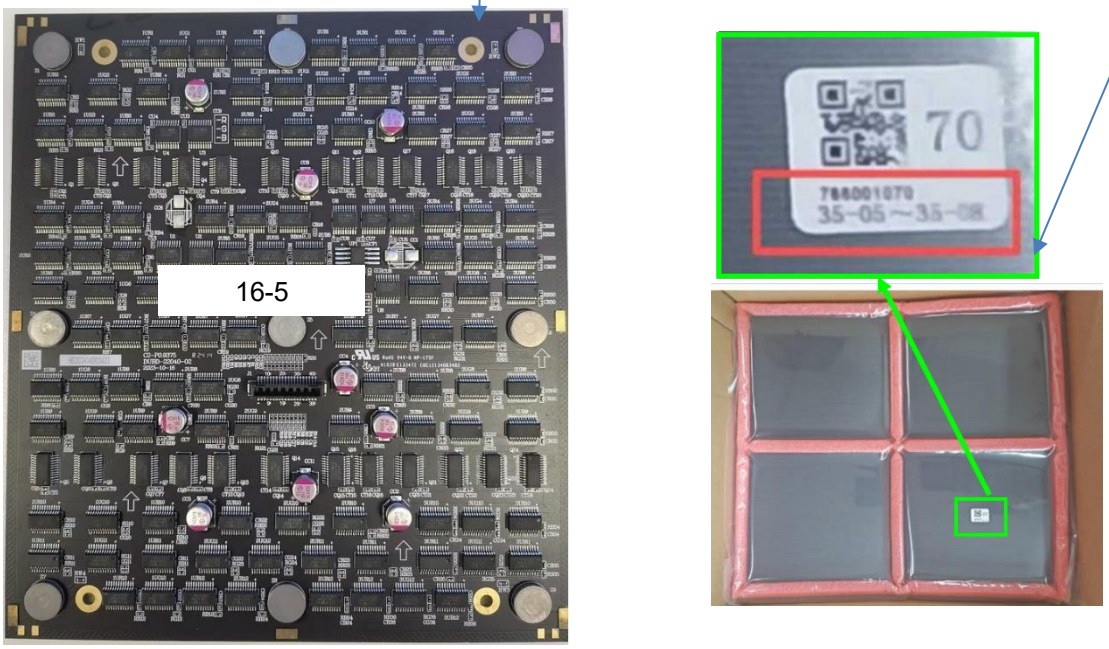


Figure 42

5.2.6 Install the Edgings & Frame Covers

1.Install the left and right edgings. The left and right edgings are clipped in the side spring locating pinhole with clips (as previously described, the spring locating pin or the leftmost of the screen should be removed and an edging should be installed), a illustrated in Figure 43.

NOTICE

The left and right edgings are marked with the letters "L" and "R" respectively as viewed from the front.

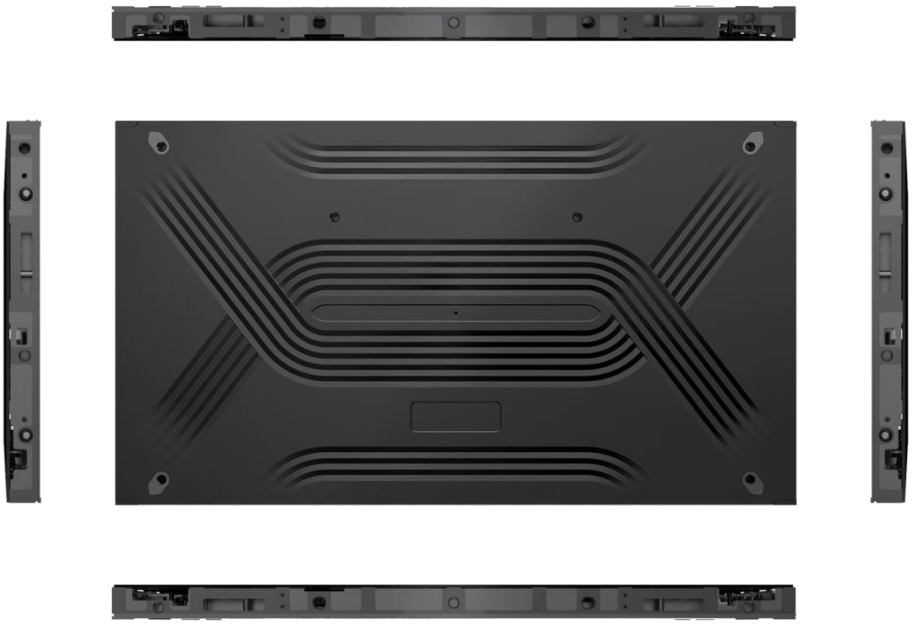


Figure 43

2. Install the lower side frame covers from left to right according to their respective positions indicated on the installation diagram ,and secure them with a Phillips Head screwdriver and M3x8 black countersunk head screws. The installed covers are as shown in Figure 44.

Figure 44

NOTICE

Under certain conditions, individual LEDs may fail over the first 30 days. Please note, this is not a defect and is considered normal in certain circumstances. If an LED fails, simply replace the module with a spare module and contact NanoLumens technical support for RMA.

6 Functional Description

The Captivate All In One system is a self-contained display. Figure 45 is a block diagram of the display function and can be used to aid in trouble analysis. In addition, the following paragraphs provide a narrative of the operational theory for the display.

6.1 Power Supply

The display's primary power source is the Input voltage of $120V_{AC}$. This Input voltage is processed in the Power Supply which possesses some surge protection and filtration capability. The $120V_{AC}$ is distributed to the multiple cabinets and speakers of the display and also is stepped down and rectified to $5V_{DC}$ for use by the Controller.

6.2 Controller

The Controller serves as the display's I/O point which supports HDMI input/output, DP video input/output and 18 Ethernet outputs. The Controller is based on an Android 13.0 operating system and is the LED display control with video processing integration and audio output.

6.2.1 Video Card

The Video Card is part of the Controller and is the primary processing and memory point for the display.

6.2.2 Sending Card

From the Sending Card is the interface between the Controller and the other components of the display. The LVDS signals are delivered using FPC cables.

6.3 Cabinets

Each Cabinet is composed of multiple subcomponents to include a number of Nixels and a control panel which in turn contains a Power Converter, Receiver Card and Hub.

6.3.1 Power Converter

The Power Converter for the cabinet receives 120VAC from the main Power Supply and then steps that voltage down and rectifies it to $5V_{DC}$ for use by the components of the cabinet.

6.3.2 Hub

The Hub connects to the display using LVDS signals over an FPC cable and routes all data for its given cabinet to the Receiver Card while passing all other data along to the next cabinet.

6.3.3 Receiver Card

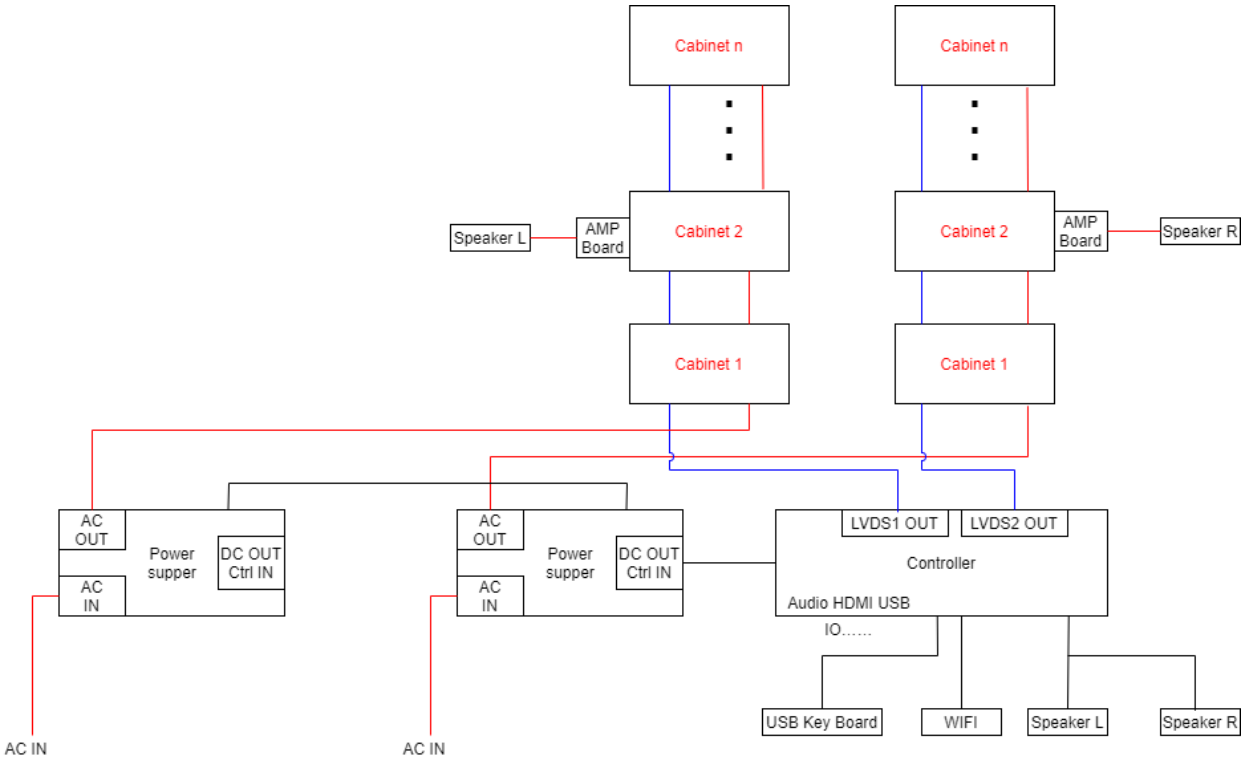
The Receiver Card processes the instructions from the Sending Card and drives the individual LEDs on each Nixel.

6.3.4 Nixel

The Nixel is a module that contains an array of LEDs and distributes $5V_{DC}$ to each LED as well as the controlling driver signals.

6.4 Speakers

The Speakers are powered by the $18V_{AC}$ from the Power Supply and are driven by signals from the Sending Card



For reference only

Figure 45

7 Troubleshooting

Preliminary troubleshooting for any malfunction of any device should begin with checking for the presence of power and verification of all electrical connections and software settings.

POTENTIAL FOR ELECTRIC SHOCK. SOME ACTIVIITES IN THE PROCESS OF MALFUNCTION ISOLATIN MAY REQUIRE EXPOSURE TO LIVE ELECTRICAL FEEDS. TAKE APPROPRIATE MEASURES TO PREVENT ELECTROCUTION.

Potential Damage to Equipment. Some activities in the process of malfunction isolation may require disconnecting and reconnecting equipment. To prevent damage to equipment due to cross circuit, always consult cable labels and terminal markings win making electrical connections..

During initial startup, it is common for some modules not to come on immediately. After turning the display on, allow up to 15 minutes before troubleshooting non-responsive modules..

7.1 Simple Troubleshooting

A. Part of the display doesn't light up after power on.
   1. Verify that the network cable in the panel has good contact.
   2. Verify that the power cable in the panel has good contact.

B. The indicator doesn't work.
   1. Verify that the power supply is functional;
   2. Verify that the switch of the display is turned on.

C. No image is displayed after connecting to the computer with an HDMI cable..
   1. Verify that the cable is in an HDMI input;
   2. Verify that the HDMI cable between the machine and the external computer is connected.

7.2 Intermediate Troubleshooting

A. No panels work.
   1. Verify that power is getting to the panels.
   - If not, verify that the Power Supply is working.
   - If the Power Supply is working, check and repair wiring.
   - If Power Supply is not working, replace the Power Supply.
   2. Check to make sure power is getting to the Controller.
   - If not, check and repair wiring.
   - If power is getting to the Controller, replace the Controller.
   3. Replace the Ethernet from the Controller to the first panel.
   - If the display starts to work, then the problem was the Ethernet jumper.
   - If the display still does not work, replace the Controller.

B. All of or part of a column of panels does not work (others do work)

1. Check to make sure power is getting to the panels. If not, check the wiring.

2. Check the Ethernet line and connection coming out of the last working panel (or Controller) and going into the first non-working panel. Replace the Ethernet jumper and observe. If the display starts working, the Ethernet jumper was the problem.

3. Use an Ethernet jumper to bypass the first non-working panel. If the other panels start working, then the problem is in the hub or incoming connection in that skipped panel. Replace the adapter board.

4. Use an Ethernet jumper to bypass the last working panel. If the non-working panels start working then the problem is in the hub or outgoing connection in the last working panel. Replace that adapter board.

8 Servicing and Support

8.1 Cleaning

NanoLumens LED displays, are robust, energy efficient and designed to operate 24/7/365, with and anticipated life span to half brightness of 100,000, hours OR 11.5 years of continual use, with basic maintenance. As with most products, lifespans are based upon normal usage, wear and tear and maintenance. A key factor in the longevity of the NanoLumens display is the cleaning and maintenance of the LED face.

Outdoor displays and displays that are installed in certain indoor, industrial environments can be subject to more than the average range contaminants found in most normal indoor environments. If a display is located in an environment which is subject to dust and other airborne contaminants it will require additional care in the form of cleaning on a quarterly or at the very least, a semi-annual basis. Neglecting this maintenance can ultimately effect the longevity of the display.

Potential Damage to LEDs. Do not apply pressure to LEDs while cleaning.

The following methods are presented in the order given to minimize physical contact with the LEDs to clean the display. It is not necessary to use all steps. Proceed until the display is clean then stop.

1. Begin with a touch-free use of low-pressure, compressed air. This will remove most of the lighter contaminants without putting pressure on the LEDs.
2. Gently run over each Nixel ™ with a microfiber cloth.
3. Use a microfiber cloth to lightly wipe over the display.

8.2 Warranty Returns

In the event a situation should arise where field service is not possible, it may be necessary to return merchandise to Nanolumens. The process for doing this is as follows:

1. Contact Nanolumens using the Support Page by filling out the requested information and providing a description of the problem and model of the product. You can additionally supply information via email or by phone as shown on the page.
2. If it is determined that a module must be returned, you will need tosupply the serial number(s) of the module(s) to be returned. The serial number can be found on a white label.
3. An RMA will be generated and will be sent to you. Fill out the form and return it in the packaging with the module(s) to be returned.
4. Pack each module individually using bubble wrap or some other cushioning medium to prevent damage to the LED during the packing or shipping process.

The sender is responsible for the cost of shipment of material to Nanolumens. Nanolumens will assume responsibility for the cost of shipment for repaird or replacement material..

8.3 Replacement of Parts

This section covers the removal and replacement of the Adapter Boards and Modules of a display.

CAUTION

Potential Damage to Circuits. Always use grounding straps when handling PCBs or other semiconductors. Place PCBs in anti-static containers when not installed or otherwise grounded.

NOTICE

If cables are not marked indicating their connection point, it is advised to mark them before disconnecting so that they can be properly reconnected later.

8.3.1 Adapter Board Removal

1. Locate the faulted panel and remove all modules. Refer to Section 8.3.3 fo removal of panels.

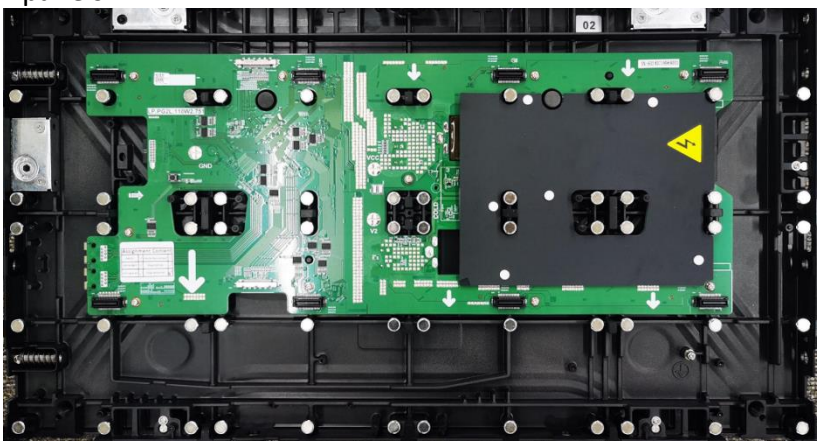


Figure 46

2. Disconnect the power cable, FFC cable.

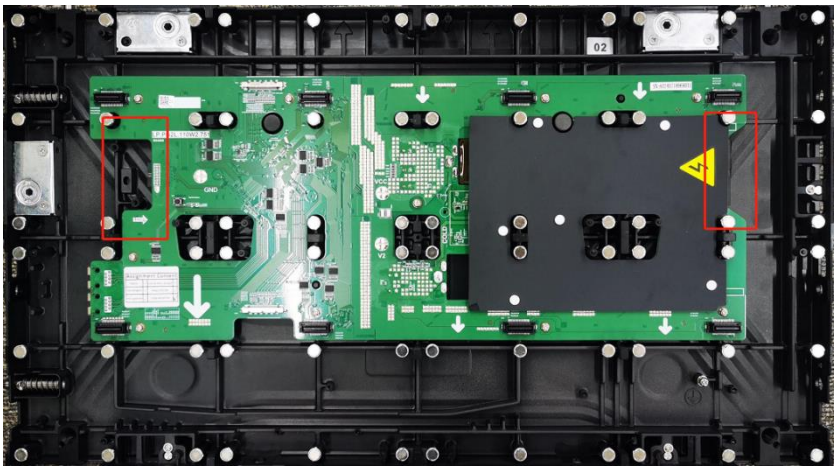


Figure 47

3. Remove the 10 screws on the 2-in-1 board.

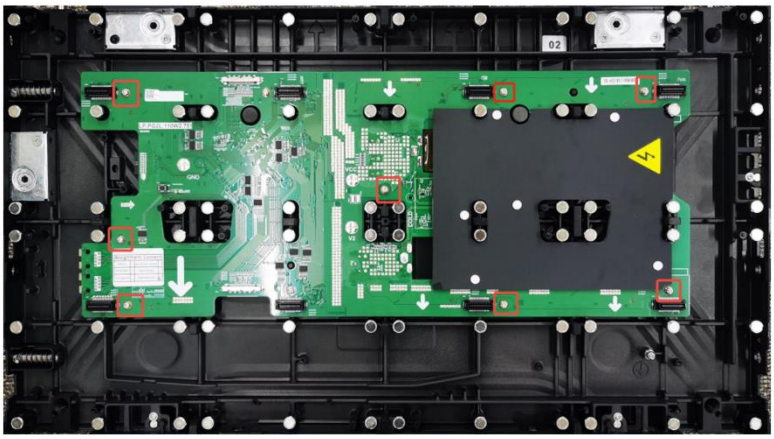


Figure 48

4. Take out the faulty 2-in-1 board and replace it with a new one.

8.3.2 Adapter Board Installation

1. Inspect the replacement 2-in-1 board for signs of damage.
2. Orient the replacement 2-in-1 board with respect to the mounting position
3. Insert the 2-in-1 board with the 8 holes aligned with the 8 mounting points on the panel.
4. Attach the 2-in-1 board with 8 screws. Tighten the screws to fit.
5. Connect the 2-in-1 board to power and the network. Consult cable labels and terminal markings when making electrical connections.

8.3.3 Module Removal

CAUTION **Potential Damage to LEDs. LEDs are fragile and can easily be damage Handle Modules with care at all times.**

NOTICE *Modules are held in place by attractive magnetic forces. No additional fasteners or excessive force is required to remove or install them.*

1. Find out the specific position of the faulty LED panel, and stick the suction cup side of the front maintenance tool to the center of the LED panel, and press with a slight force,ensure the LED panel is pulled straight out in the intended removal direction.

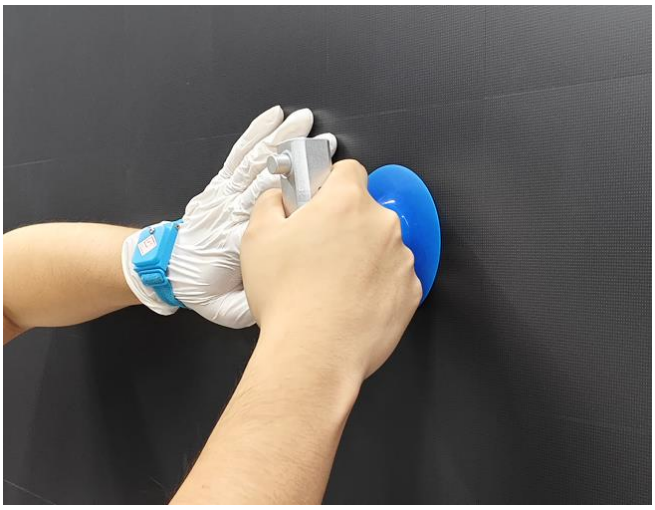


Figure 49

2. Gently remove the LED panel in a parallel direction. As shown in the figure below.

If powder appears around the perimeter of the LED panel, it is likely colloidal powder caused by friction and will not affect normal use.

Figure 50

3. Extract the module by holding it with one hand and rotate the maintenance tool off the module as shown in the figure below

Figure 51

NOTICE

For COB series products, the LED panel surface features a film layer with minimal lamp bead spacing. To achieve optimal display quality, the design requires minimizing gaps between panels to prevent cold screen seams and dark lines during illumination. Post-installation, the tight panel clearance may cause maintenance difficulties due to excessive fitting. Explanation follows.

NOTICE

Because the LED panel heats up when the screen is on, potentially causing thermal expansion, remove the panel with the screen powered off and cool whenever possible. Under normal conditions, the LED panel can be installed directly without adjustment; a suction cup tool may be used to place it.

3-1)If the LED panel cannot be seated at certain positions, gently shift the surrounding LED panels to create clearance, as shown in the figure below.

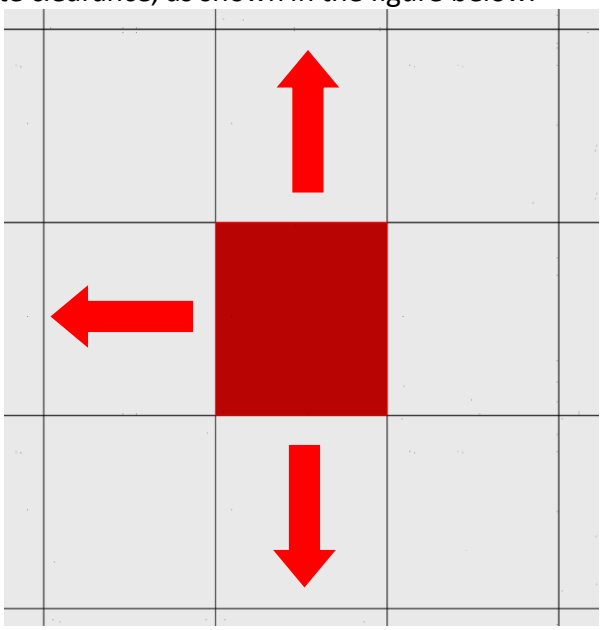


Figure 52

3-2)If shifting adjacent LED panels fails, remove the panels along the insertion path (any direction) and reinstall sequentially.

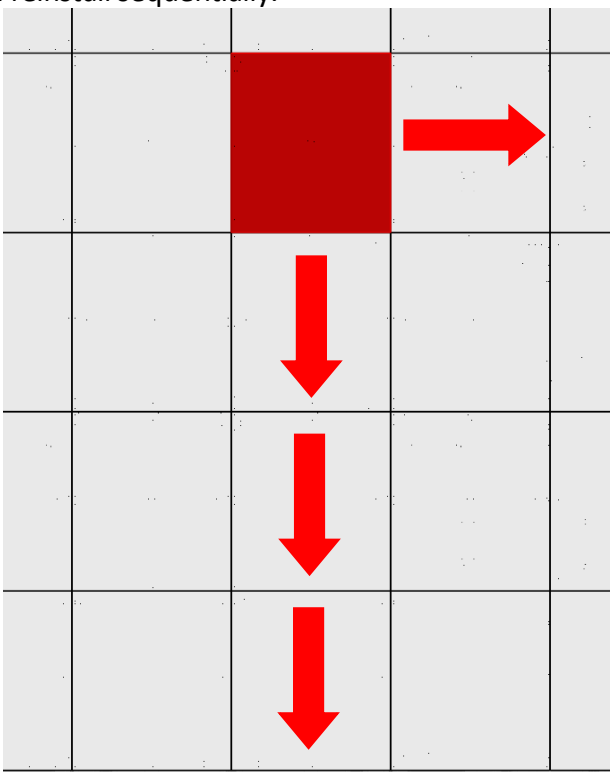


Figure 53

NOTICE *Observe ESD precautions during removal and reinstallation.*

NOTICE

The anti-static wrapping used in shipping is adhered to the inside of the shipping box and will not come out unless forced. Do not remove the anti-static wrapping. Failure to properly package Nixels may result in warranty being voided.

4. Package the anti-static wrapped Nixel board in a box with interior cushioning to absob any external shock as shown in Figure 54.
5. Tape the boxes in groups of 5 or less and place the return label on the top box. See Figure 55

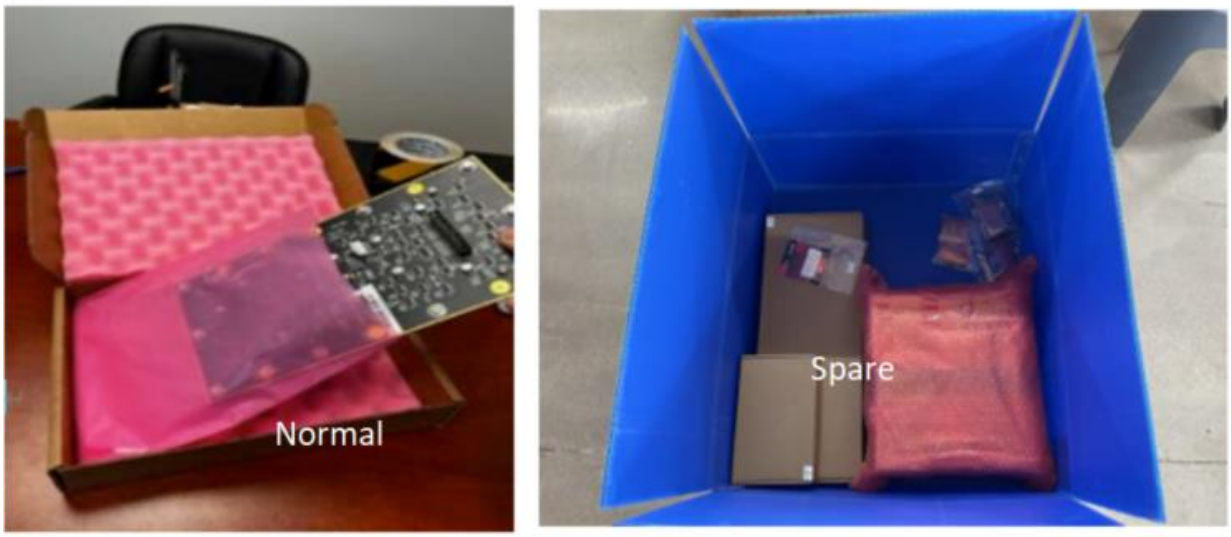


Figure 54

Figure 55

6. The arrow on the cabinet pointing upwards indicates the direction for hanging, The LED panel is installed with the arrow downwards according to the 2-in-1 board card arrow indication.

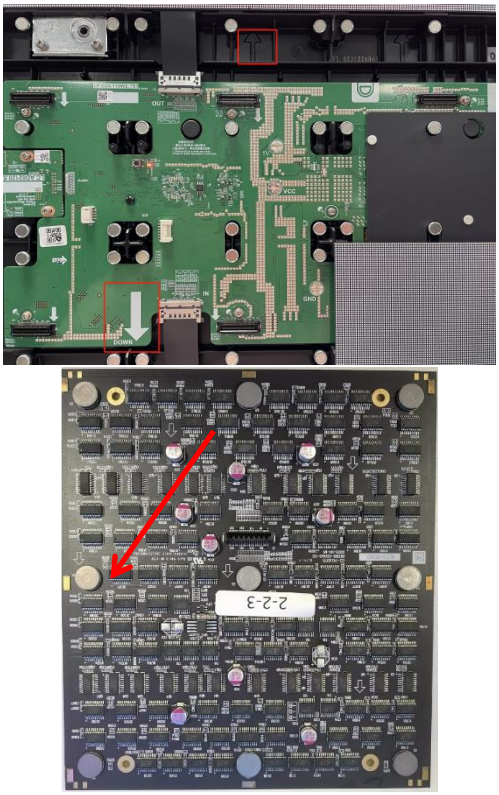


Figure 56

8.3.4 Module Adjustment

CAUTION

Potential Damage to LEDs. LEDs are fragile and can easily be damage Handle Modules with care at all times.

NOTICE

Modules are held in place by attractive magnetic forces. No additional fast eners or excessive force is required to remove or install them.

1. Each cabinet has 8 modules, each modules has 9 magnets;

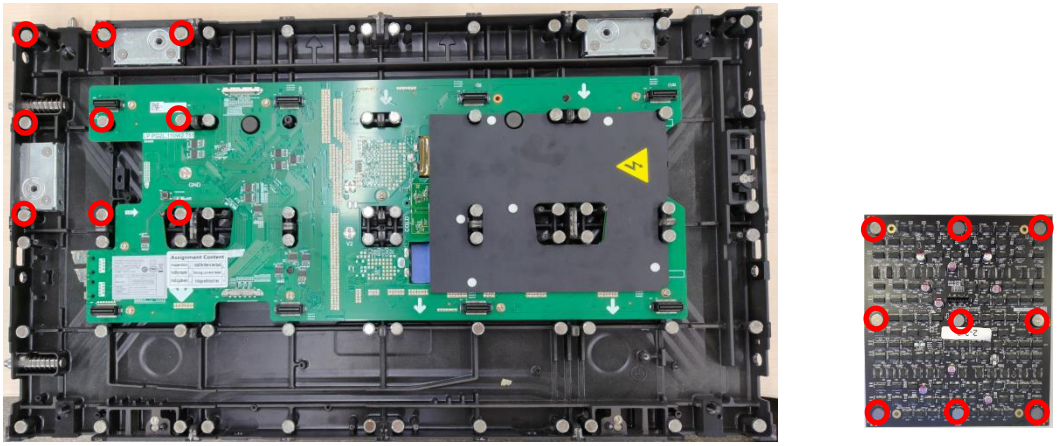


Figure 57

2. Use the T-shape tool to rotate the magnet to adjust the magnet height.
Rotate clock-wise, magnet gets closer to the 2-in-1 board;
Rotate counterclock-wise, magnet gets away from the 2-in-1 board;

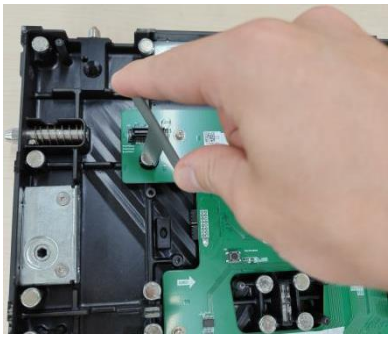


Figure 58

3. For example, the corner of one module is protruding.

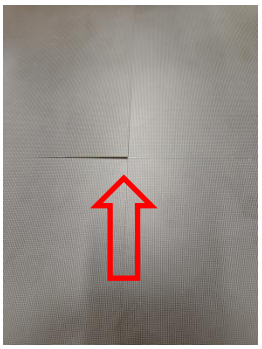


Figure 59

a.Rotate the magnet clock-wise to bring the magnet closer to the 2-in-1 board, install the module to check the Z axis alignment. Repeat this process until the alignment is good.

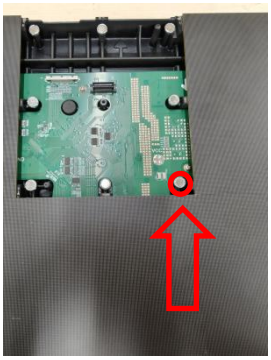


Figure 60

b.If the above magnet is already at the lowest position, and yet, the corner of one module is still protruding a little, rotate the other Adjacent magnets counterclock- wise to bring them a bit higher,install the module to check the Z axis alignment. Repeat this process until the alignment is good.

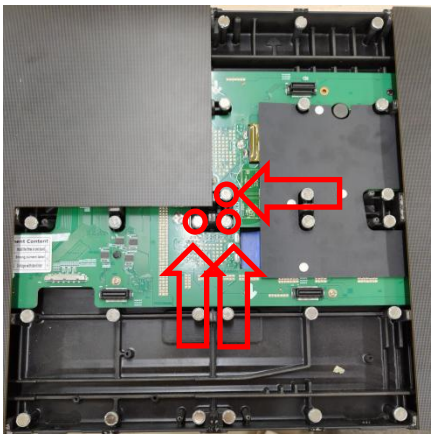


Figure 61

9 Acknowledgements

9.1 General

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The appearance design of this product is subject to further improvement or modification without notice.

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Working with leading Fortune 500 clients on five continents, NanoLumens continues to pioneer visualization solutions.

The company is creating a market where clients can have leading-edge technology, and access to choices that include managed, brilliant content, current information streams and even interactive customer experiences tailored to a specific industry. This innovation is driven by increasing customer

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