PL V2 Series
User manual

Shenzhen Absen Optoelectronic Co.,Ltd.

Catalogue

Safety Information

WARNING!

Please read the safety measures listed in this section carefully before installing, powering on, operating, or doing maintenance on this product.

The following marks on the product and in this manual indicate important safety measures.

WARNING!
Safety risk! Might cause equipment damage or safety risk.

WARNING!
Please read the manual before operating.

WARNING!
Dangerous voltage! Might cause equipment damage or electric shock.

WARNING!
Hot surface! Do not touch.

WARNING!
Flammable!

WARNING!
Possible damage to eyes.

WARNING: Be sure to understand and follow all safety guidelines, safety instructions, warnings and precautions listed in this manual.
This product is for professional use only!
This product may result in serious injury or death due to fire hazard, electric shock, and crushing hazard.

Please read this manual carefully before installing, powering up, operating and maintenance of this product.
Follow safety instructions in this manual and on the product. If you have any questions, please seek help from Absen.

Beware of Electric Shock!
• To prevent electric shock the device must be properly grounded during installation, Do not ignore using the grounding plug, or else there is a risk of electric shock.
• During a lightning storm, please disconnect the device's power supply, or provide other suitable lightning protection. If the equipment is not in use for a long   time, please unplug the power cord.
• When performing any installation or maintenance work (e.g. removing the fuses, etc.,) make sure to turn off the master switch.
• Disconnect AC power when the product is not in use, or before disassembling, or installing the product.
• The AC power used in this product must comply with local building and electric codes, and should be equipped with overload and ground fault protection.
• The main power switch should be installed at a location near the product and should be

clearly visible and easily reached. This way in case of any failure the power can be promptly disconnected.

• Before using this product check all electrical distribution equipment, cables and all connected devices, and make sure all meet current requirements.

• Use appropriate power cords. Please select the appropriate power cord according to the required power and current capacity, and ensure the power cord is not damaged, aged or wet. If any overheating occurs, replace power cord immediately.

• For any other questions, please consult a professional.

Beware of Fire!

• Use a circuit breaker or fuse protection to avoid fire caused by power supply cables overloading.

• Maintain good ventilation around the display screen, controller, power supply and other devices, and keep a minimum 0.1 meter gap with other objects.

• Do not stick or hang anything on the screen.

• Do not modify the product, do not add or remove parts.

• Do not use the product in case ambient temperature is over 55 ℃.

Beware of Injury!

• Warning: Wear a helmet to avoid injury.

• Ensure any structures used to support, fix and connect the equipment can withstand at least 10 times the weight of all the equipment.

• When stacking products, please hold products firmly to prevent tipping or falling.

• Ensure all components and steel frames are securely installed.

• When installing, repairing, or moving the product, ensure the working area is free of obstacles, and ensure the working platform is securely and stably fixed.

• In the absence of proper eye protection, please do not look directly at the lit screen from within a 1 meter distance.

• Do not use any optical devices that have converging functions to look at the screen to avoid burning the eyes.

Product Disposal

• Any component that has a recycling bin label can be recycled.

• For more information on collecting, reusing and recycling, please contact the local or regional waste management unit.

• Please contact us directly for detailed environmental performance information.

WARNING: Beware of suspended loads.

LED lamps used in the module are sensitive and can be damaged by ESD (electrostatic discharge). To prevent damage to LED lamps, do not touch when the device is running or switched off.

WARNING: The manufacturer shall not bear any responsibility for any incorrect, inappropriate, irresponsible or unsafe system installation.

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

1．Product Introduction

The PL V2 series display is specially designed for stage rental use. It is mainly used in rental applications for large concerts, shows, auto shows, business activities, etc., as a medium for video broadcast, information release, and so on.

The PL V2 series have a full range of pixel pitch for stage display including 1.9,2.5, 2.9, 3.9 and 4.8mm, among which P2.9，P3.9 & P4.8 have outdoor version. The products include curve version(PL2.5 Pro & PL2.9) .

The PL series uses die-casting aluminum structure with modern cabinet, featuring excellent flatness, high quality cabinet and module finish, and high structural strength.

Indoor: PL1.9 V2/PL2.5 XR V2/PL2.5 Pro V2/
PL2.5 Plus V2/PL2.9 V2/PL3.9 V2
Outdoor: PL2.9 Pro V2/PL3.9 Pro V2/
PL3.9W Plus V2/PL4.8 Pro V2/PL4.8W Plus V2

Indoor: PL2.9 Plus V2/PL3.9 Plus V2
Outdoor: PL2.9 Pro V2/PL3.9 Pro V2/PL3.9
W Plus V2/PL4.8 Pro V2/PL4.8W Plus V2

Curve Products (ALL Products)

1.1   Product Main Features

• PL V2 series include curve version, which can provide an excellent effect of screen splicing.

• PL2.5 Pro V2's brightness can reach up to 1500nit after calibration which can maintain excellent display performance in brighter environment. It supports the latest HDR10 standard & 16bit grayscale, enabling PL2.5 Pro V2 to deliver a higher dynamic range with pure whites, deeper blacks and a wider color gamut.

• The whole PL V2 series supports 3840Hz refresh rate, bringing outstanding effect on camera, which significantly improves customers' satisfaction.

• With HBB technology, the brightness of PL3.9 Pro V2 and PL4.8 Pro V2 can reach 4000nit. Moreover, ultra-high contrast and distinct color layers ensure excellent visual outdoor effects.
• The curved version supports any increment of curve from -7.5 convex to +10 concave, giving user unlimited flexibility in design and operation.

• Advanced locking system with safety mechanism enables one-man installation.

 Modular design supports modules and power boxes fast maintenance. ALL cabinet can be customized to support HUB and PCB front maintenance.

1.2　Product Specifications

PL V2　indoor products:

Parameters		PL1.9 Plus V2	PL2.5 XR V2	PL2.5 Pro V2	PL2.5 Plus V2	PL2.9 Plus V2	PL3.9 Plus V2
Physical Parameters	LED Type	SMD1212	SMD1515	SMD1515	SMD1515	SMD2121	SMD2121
	Pixel Pitch (mm)	1.95	2.5	2.5	2.5	2.97	3.9
	Cabinet Pixels	256×256	200×200	200×200	200×200	168×168 168×336	128×128 128×256
	Pixel Density (Pixels / m²)	262144	160000	160000	160000	112896	65536
	Module size (L × W)/(mm)	250×250					
	Panel size (L × W × H)/(mm)	500×500×78	500×500×78	500×500×78	500×500×78	500×500×78 500×1000×78	500×500×78 500×1000×78
	Cabinet Material	Die-cast Aluminum					
	Cabinet Weight (kg /Cabinet)	7.5	7.5	7.5	7.5	7.5/12	7.5/12
	Grayscale	14	16	16	14	14	14
	Refresh Rate (Hz)	3840	7680	3840(B/N)	3840		
	Drive Mode	1/16	1/8	1/20	1/20	1/21	1/16
	Signal Transmission Distance (m)	UTP cable: < 100 m; Single-mode fiber: < 10 km					
Optical Parameters	Brightness (nit)	1000	1500	1500	1000	1000	1000
	Viewing Angle (H/V)(°)	160/140	160/140	160/140	160/140	140/140	140/140
Electrical Parameters	AC Input Voltage (V)	100~240					
	Power Consumption (Max/Avg.)(W/m²)	700/235	720/240	680/230	580/190	540/180	540/180
Environmental Parameters	Storage Temperature (°C)	-40~+60					
	Working Temperature (°C)	-10~+40					
	Storage Temperature (RH)	10%~90%					
	Working Humidity (RH)	10%~90%					
	Ingress Protection	IP40/IP21					
Leasing Product Installation	Panel Installation Method	Rigging/Stacking					
	Maximum number of hoisted cabinets	20	20	20	10	20/10	20/10

Remark: Power consumption tolerance: ±15%, according to the actual situation.
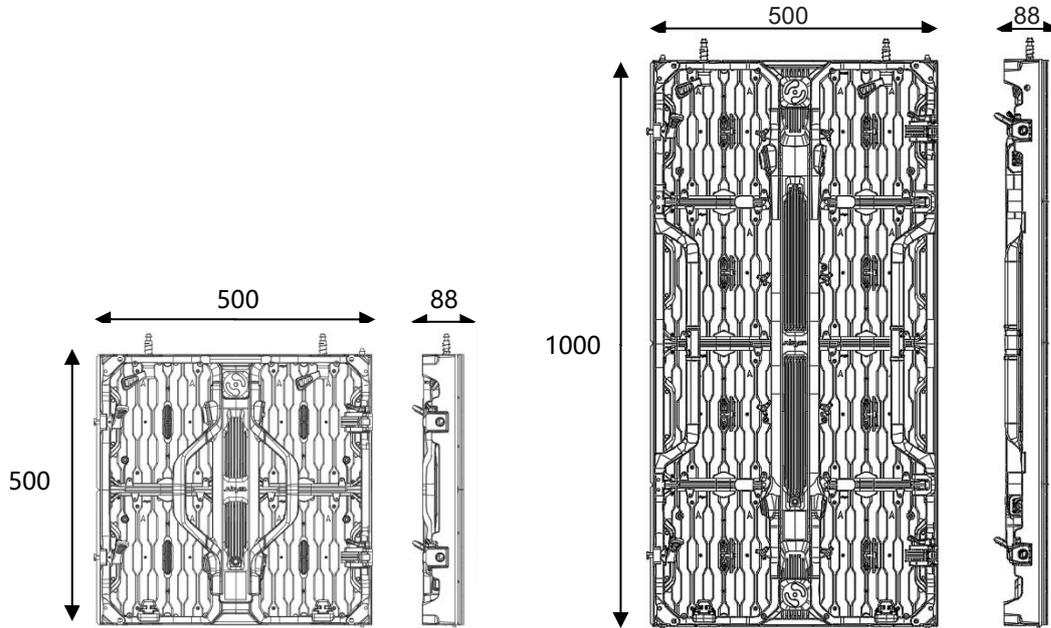
PL V2 outdoor products:

Parameters		PL2.9 Pro V2	PL3.9 Pro V2	PL3.9W Plus V2	PL4.8 Pro V2	PL4.8W Plus V2
Physical Parameters	LED Type	SMD1921 B	SMD1921 B	SMD1921 W	SMD1921 B	SMD1921 W
	Pixel Pitch (mm)	2.9	3.9	3.9	4.8	4.8
	Cabinet Pixels	168×168 168×336	128×128/ 128×256	128×128/ 128×256	104×104/ 104×208	104×104/ 104×208
	Pixel Density (Pixels / m^2)	112896	65536	65536	43264	43264
	Module size (L × W)/(mm)	250×250				
	Panel size (L × W × H)/(mm)	500×500×78 500×1000×78	500×500×78 500×1000×78	500×500×78 500×1000×78	500×500×78 500×1000×78	500×500×78 500×1000×78
	Cabinet Material	Die-cast Aluminum				
	Cabinet Weight (kg/Cabinet)	8/12.5	8/12.5	8/12.5	8/12.5	8/12.5
	Grayscale	14				
	Refresh Rate (Hz)	3840				
	Drive Mode	1/14	1/8	1/8	1/7	1/7
	Signal Transmission Distance (m)	UTP cable: < 100 m; Single-mode fiber: < 10 km				
Optical Parameters	Brightness (nit)	4000	4000	4500	4000	4500
	Viewing Angle (H/V)(°)	140/140	140/140	140/140	140/140	140/140
Electrical Parameters	AC Input Voltage (V)	100~240				
	Power Consumption (Max/Avg.)(W/m^2)	720/240	720/240	600/200	720/240	600/200
Environmental Parameters	Storage Temperature (°C)	-40~+60				
	Working Temperature (°C)	-20~+50				
	Storage Temperature (RH)	10%~90%				
	Working Humidity (RH)	10%~90%				
	Ingress Protection	IP65/IP54				
	Product Life (hrs)	100000				
Leasing Product Installation	Panel Installation Method	Rigging/Stacking				
	Maximum number of hoisted cabinets	20/10	20/10	20/10	20/10	20/10

Remark:
1. Power consumption tolerance: ±15%, according to the actual situation.
2. Only the PL3.9 Pro V2、PL3.9W Plus V2、PL4.8 Pro V2、PL4.8W Plus V2 model's 500*500mm compact cabinet can be customized as a floor tile screen, with pre-reserved screw holes for attaching PC panels. This design is not suitable for heavy-load situations such as vehicle displays. When used as a simple floor tile screen, please add an edging structure around the screen to prevent the PC cover from shifting during intense vibrations
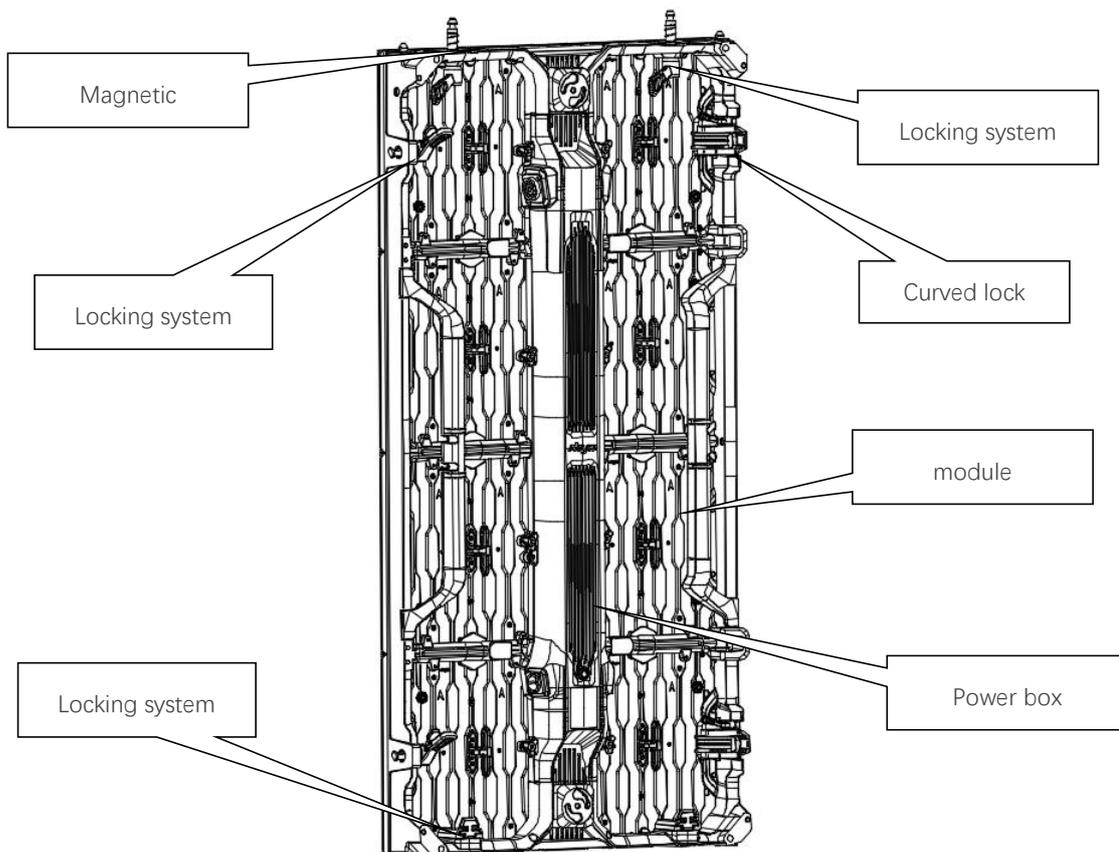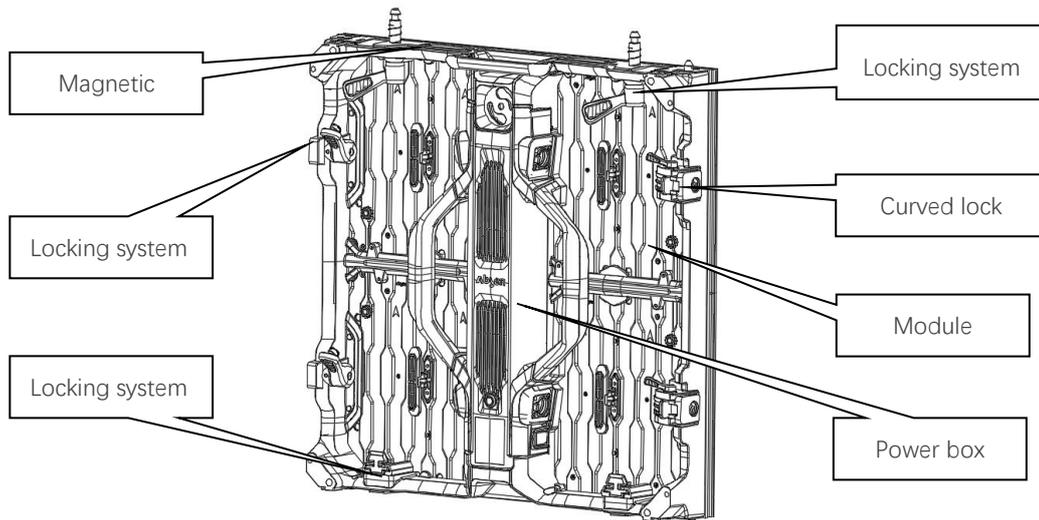
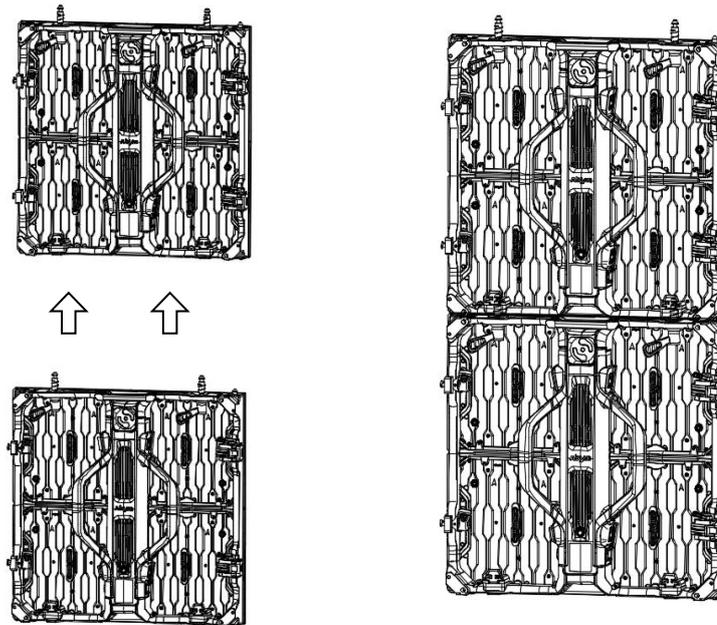## 1.3   Cabinet dimension figure (mm)

Unit: mm

2．Product Components

2.1 Cabinet Introduction

Magnetic

Locking system

Locking system

Locking system

Curved lock

Module

Power box

Magnetic

Locking system

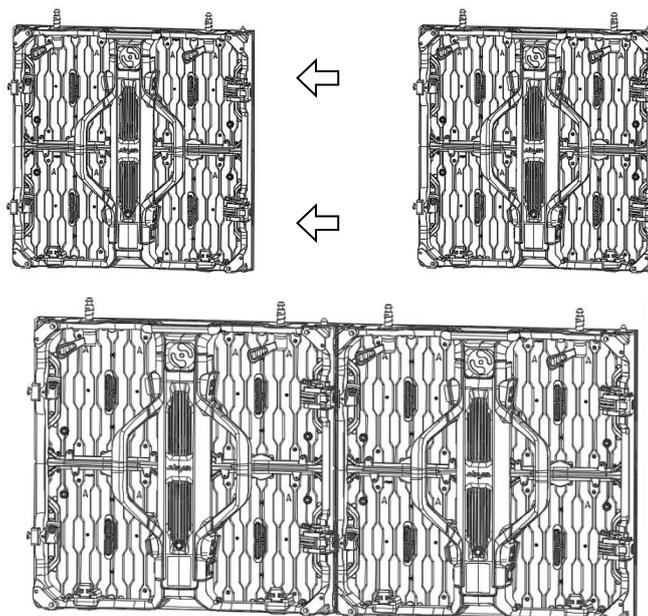Locking system

Locking system

Curved lock

module

Power box

3．Product Installation

The product is suitable for various forms of installation, including rigging and stacking installation. Use the locking system to lock the cabinets during installation. The curved lock can support radian connection from -7.5 ° to +10°.
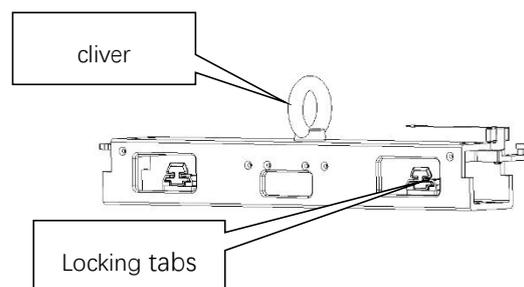
Standard locking:

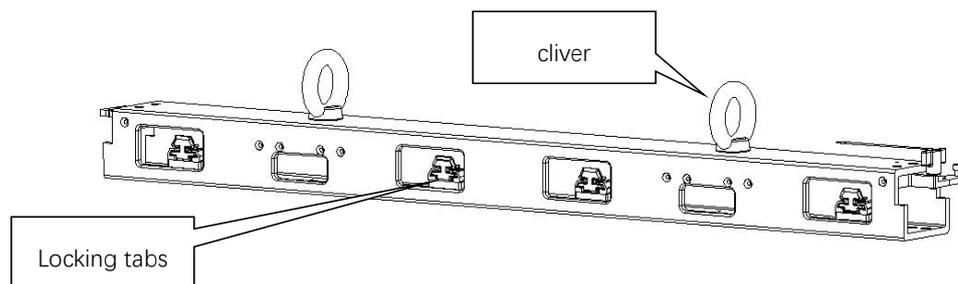Lock up and down

Lock left and right

3.1 Hanging Installation

3.1.1 Hanging bar Illustration

Used for rigging installation, including single, double hanging bar and 90 degree hanging bar.

Single hanging bar

Double hanging bar

3.1.2 Hanging bar installation

Connect cabinets with locking tabs during hanging installation. Hanging bars can load a max number of 20 500×500mm panels and 10 500×1000mm panels.
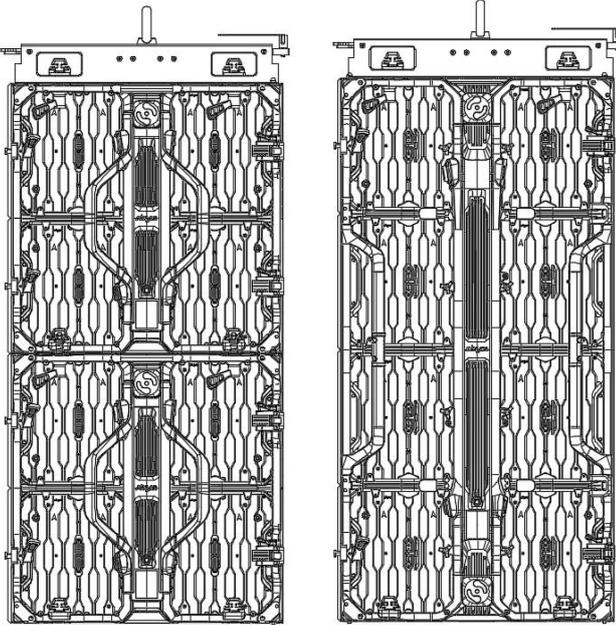
Installation steps:

1. Fix the Hanging Bar on the Truss
2. Align the safe lock on the cabinet with the mounting hole on the hanging beam
3. Press the locking plate on the hanging beam
4. Insert the safe lock on the cabinet up
5. Tighten the safe lock from left to right
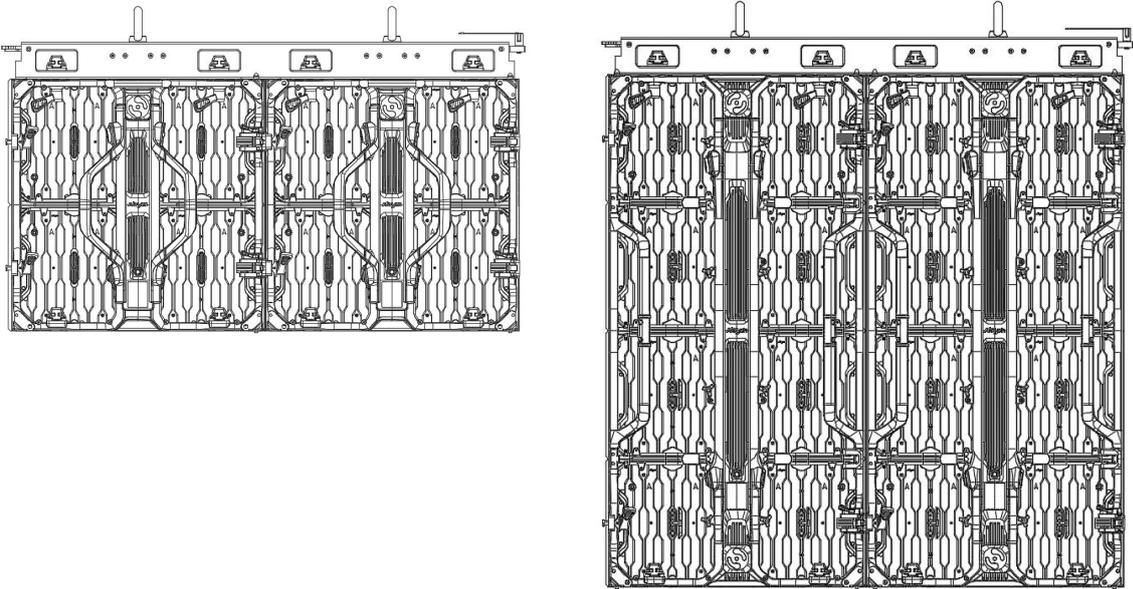6. Tighten the second cabinet, as described above

Note: For detailed installation steps, see the product installation video

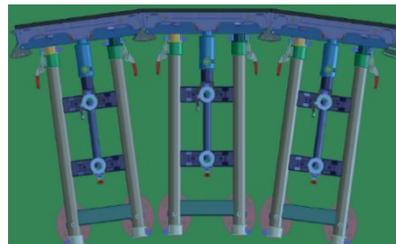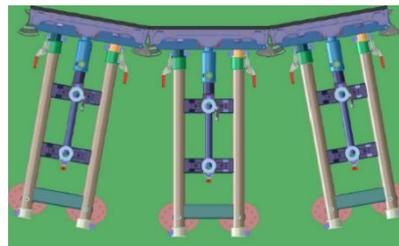| STEP	Graphic
1, Fix the Hanging Bar on the Truss	
2, Align the safe lock on the cabinet with the mounting hole on the hanging beam	
3, Align the left and right cabinet mounting holes	
4, Rise the Hanging bar and install the second line cabinets.	
5, Install the cabinets one by one follow the 4 till finish the installation.	

Single hanging bar

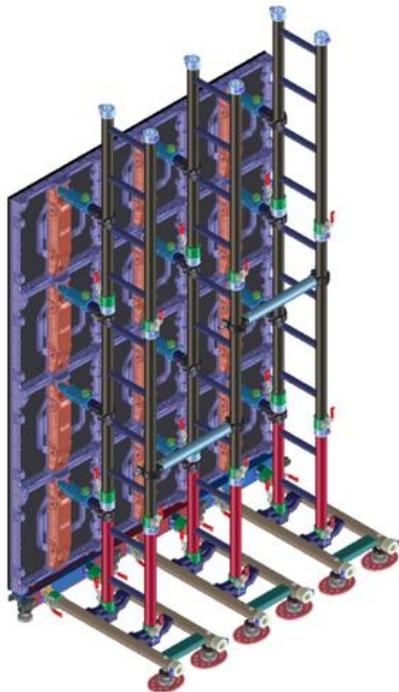**Double hanging bar**

3.2 Stacking Installation

1.The cabinet is equipped with a curved lock which support radian connection from -7.5 ° to +10°.

2. For the installation method of the cabinet, please refer to the installation above.

3.3 Precautions for installing floor tile screens

1、PL V2 series as a floor tile screen before installation, to install 2 M3 fixing screws on the

lower side of the power supply box to ensure that the power supply box will not be loose or fall, the specific installation position is shown in the following figure.

*It's neccessary to place order for screws when PL3.9W Plus V2（500*500mm cabinet）， PL3.9 Pro V2 （500*500mm cabinet），PL4.8W Plus V2(500*500mm cabinet)，PL4.8 Pro V2（500*500mm cabinet) used be floor tile. Each panel need lock 2Pcs screws on power box.
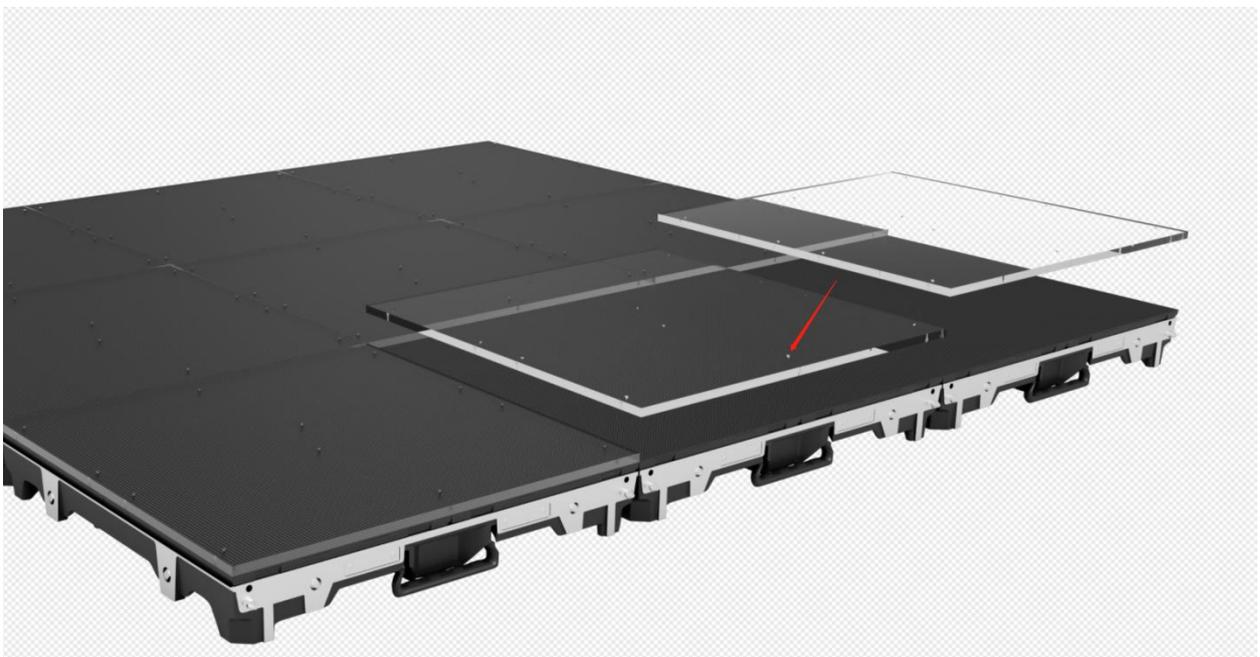

left side

right side

2、 After installing the box and connecting the wires, use 12 M1.6*12mm screws to install the acrylic board on each box.

*Constraint coverage structure around the whole screen is required to prevent the displacement of PC mask during strong vibration. The load capacity is 2000KG/SQM.

4．Product Cabling

4.1 Preparation Before Cabling

Please check carefully if the connection of power and signal circuit is correct before supplying power and signal to the screen. Please make sure that there is no short circuit between the L line, N line and PE line of each cabinet's AC power input by using multimeter.

Power connection instructions: Please calculate and select the appropriate model of distribution box or socket according to the maximum power consumption. Please consult your electrician or distribution cabinet manufacturer for specific selection method. The input voltage of cabinet is 100-240V/AC and 3X2.5mm/sqm power cable is used between distribution box and the cabinet. Please confirm the input voltage, the number of cabinets loaded on each power cable will be different upon different voltages and product models. (Please feel free to contact our after-sales service department if you are not sure).

4.2 Power Supply and Signal Cable Wiring

Cable connection

Name:Power Cable Dimension: 1m Max Current :16A	Name:long Power Cable Dimension: 10m Max Current :16A	Name:Display DATA cable Dimension: 20m	Name:Panle DATA cabel Dimension: 1m

Network cables and power cables of all series are connected by aviation connector, as showed un pictures above:

Note: The connecting cables between the cabinets should pass through the cabinets as much as possible. If the connection method changed, please set the same connection method in the software settings. Please refer to the software for more details.

Operation steps:

1) Load capacity of main power cable and main network cable
2) Checking

After the cabinet wiring is completed, use a multimeter to measure whether there is a short circuit between the AC input (L / N / PE) and DC output (VCC / GND) of the power supply. If so, please check the circuit carefully. Please make sure the circuit is normal

before starting up. To avoid the entire screen being burned due to the wrong working voltage, please pay attention to the working voltage range of the cabinet during use.

3) Turn on screen and check the effect

Play high-definition content after starting up, such as video, text, images, etc. It is suggested to make sure the resolution of the content is in consistent with that of the screen, otherwise the content will be compressed, thus affecting the overall performance.
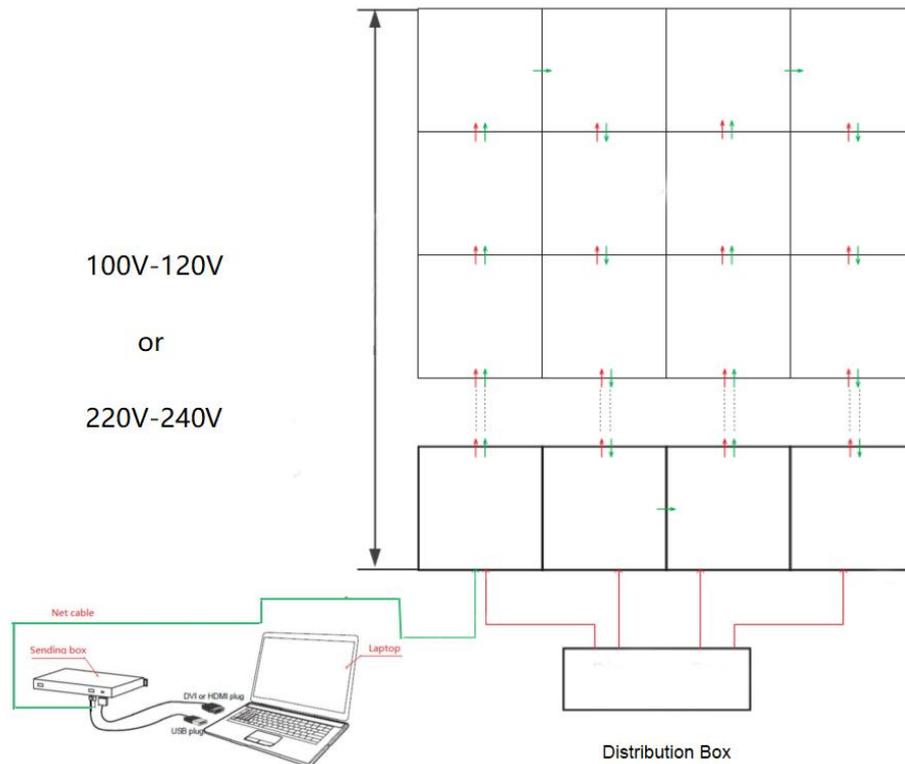
4) For software operation, please refer to the software instruction manual.

Under different cabinet sizes and different input voltages, there are differences in the number of cabinets that wires are able to carry. See the following table for details:

Using environment	Cabinet dimension	Product model	Qty of cabinets（AC220V, 3x2.5mm2）	Qty of cabinets（AC110V, 3x2.5mm2）
Outdoor	500×500	PL2.9 Pro V2	14	7
		PL3.9 Pro V2	14	7
		PL3.9W Plus V2	20	10
		PL4.8 Pro V2	14	7
		PL4.8W Plus V2	20	10
	500×1000	PL2.9 Pro V2	7	4
		PL3.9 Pro V2	7	4
		PL3.9W Plus V2	10	5
		PL4.8 Pro V2	7	4
		PL4.8W Plus V2	10	5
Indoor	500×500	PL1.9 Plus V2	14	7
		PL2.5 XR V2	14	7
		PL2.5 Pro V2	14	7
		PL2.5 Plus V2	20	10
		PL2.9 Plus V2	24	12
		PL3.9 Plus V2	24	12
	500×1000	PL2.9 Plus V2	12	6
		PL3.9 Plus V2	12	6

Please calculate the resolution according to each box pixel and connect the signal line according to the load range of the sending card. No more than 655360 pixels can be loaded on each network port.

4.2.1 Standard Cable Wiring
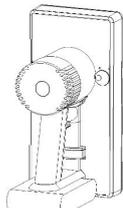

100V-120V

or

220V-240V

Distribution Box

This product cannot store or display video content solely on itself. To perform normal work , the screen requires video source from the output device such as PC, laptop, medi a payer, etc. and one or more sending box to receive and feed the source to it.

5．Maintenance

5.1 Tools for Maintenance

Preparation of maintenance tools:

	Type	Function	Picture
List	Front maintenance tool	Installing and fixing module	

Phillips screwdriver	Installing and disassembling module & power supply & screw on receiving card		
multimeter	Measuring power lines and distribution boxes		
Small Phillips screwdriver	Installing and removing mask		
Spirit level	Measuring structure		
laser spirit level	Measuring installation position		
band tape	Measuring distance of installation hole		

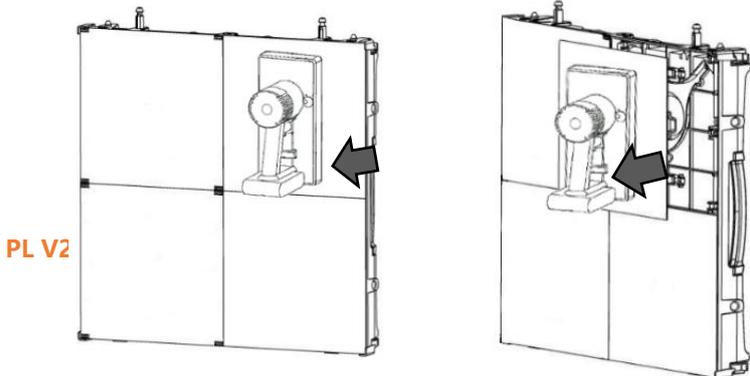# 5.2 Maintenance Instructions

5.2.1 Module Maintenance

The module of PL V2 series support front or rear maintenance.

Module front maintenance
Step1: Attach the vacuum maintenance tool to the module and press the maintenance tool switch for 5 seconds. Pull it vertically and pull the module off the panel.
Step2: Remove the failure module.
Step3: Replace with a good module.

PL V2

Module rear maintenance

Step1: Unload the module safety rope.

Step2: Hold the module handle with your right hand and push it forward.
Remove the failure module.

Step3: Replace with a good module.

Step1   Step2   Step3

5.2.2 Power Box Maintenance

500×500mm cabinet：

Step1: Press the yellow button.

Step2: Take out the low half of the power box.

Step3: Remove the whole power box.

Step4: Replace with new power box.
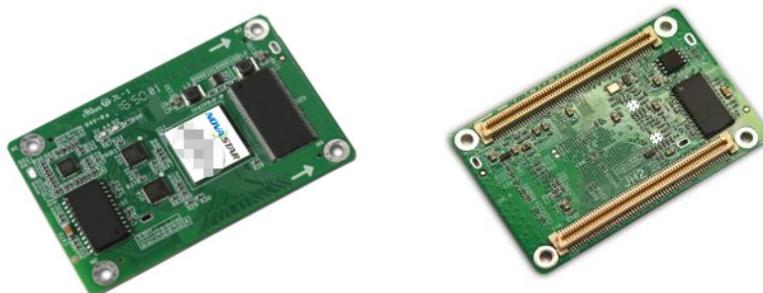
500x1000 cabinets:

Unscrew the loose screw of the power box and remove it for maintenance. (screw position is shown in the circle)

Attention: It is necessary to cut off power supply of cabinets during the maintenance of the power box to avoid electric shock.

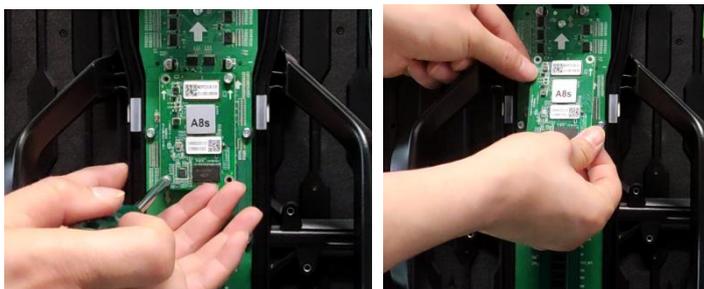**5.2.3 Receiving card, HUB card and Power maintenance**

Receiving card

For example: The A8S receiving card is connected to the Hub board through the card slot. Meanwhile, the Hub board is also connected to the module, power supply and data cable. The Hub board help transit power and data. （A8S/A5Plus Interfaces have similar functions with other types of receiving cards）

All series of products support receiving card, HUB board rear maintenance, and All products' receiving card and HUB board can be customized to support the front maintenance.

Maintenance for receiver card(Rear):

1. Remove the screws of the receiving card (please note the Red frame mark);
2. Unplug the receiving card and replace it;
3. Install a new receiving card on the HUB card, please note that the receiving card direction should correspond to the arrow direction on the HUB card (please note the yellow frame mark);
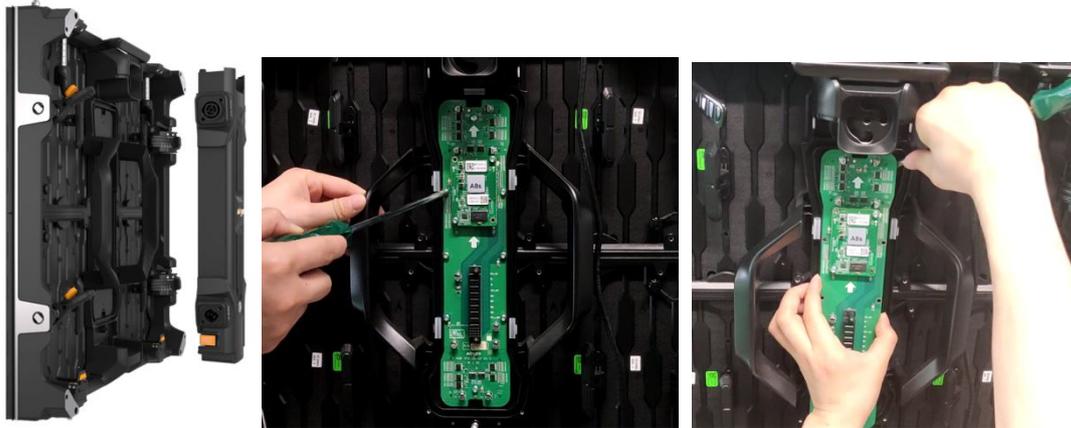4. Install the fixing screws.

Maintenance for the HUB Board (Rear) :
For the maintenance of the HUB board, please refer to the maintenance method of the receiving card. Please remove the fixing screw when maintenance (marked with a red circle).

Maintenance for receiving card (Front)
Step 1: remove the power box and module from the cabinet;
Step 2: remove the screws from the front of the cabinet (red circle position as shown below);
Step 3: hand through the box, take out the HUB board and the receiving card from the back side and replace them if needed. When replace the new receiving card, please note that the receiving card direction should correspond to the arrow direction on the HUB board (please note the yellow border mark in the figure below);
Step 4: install the HUB board back (note the direction of the HUB board and the corresponding screw hole);
Step 5: install the screw;

Step 6: install the power box and module.

Power maintenance

Step 1 Remove the power box

Step 2: Remove the HUB fixing screws using a PH2 Phillips screwdriver

Step 3: Remove the screws fixing the power supply using a PH2 Phillips screwdriver

Step 4: Replace the power supply directly

5.2.4 Flight Case

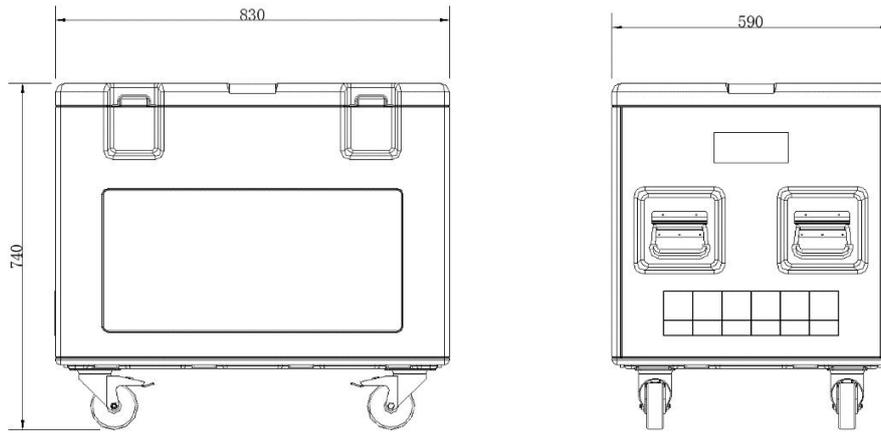Place the LED panels horizontally to prevent SMD damage.

Flight cases are optimised to fit in vehicles for low cost transport. Fully stackable to save space.

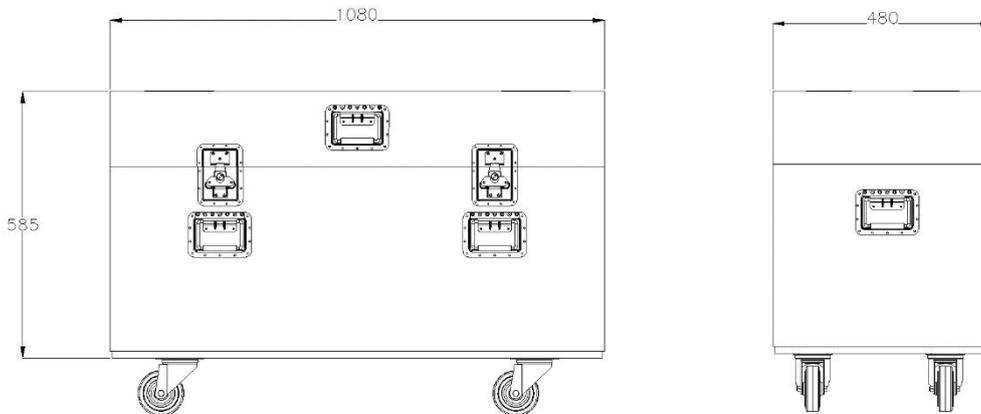PL V2 series flight case has 8in1, 6in1, and 4in1.

8in1 for 500x500mm cabinet package(PL2.9 Plus V2/PL3.9 Plus V2/PL3.9W Plus V2/PL4.8 Plus V2)

6in1 for 500x500mm cabinet package(PL1.9 Plus V2/PL2.5 XR V2/PL2.5 Pro V2/PL2.5 Plus V2/PL2.9 Pro V2/PL3.9 Pro V2/PL4.8 Pro V2)

4in1 for the 500×1000 cabinet package.

8in1 or 6in1 design.

4 in 1 design.

6．Common faults and troubleshooting

No.	Common faults	Solution
1	Some modules are black	1. Check whether the power plug of the corresponding module is tightly inserted;
		2. Check whether the power cable of the corresponding module is burnt out;
		3. Check whether the switch power supply of the corresponding module has no output;
		4. Check whether the flat cable of the corresponding module is malfunctioning;
		5. Replace the flat cable of the corresponding module;
		6. Replace the module;

		7. Replace the receiving card;
		8. Send rcfg file;
2	The whole screen is black	1. Check whether the screen power is on;
		2. Check whether the DVI cable or HDMI cable is loose;
		3. Check whether the main data cable is well inserted;
		4. Check whether the sending card is powered on and whether the running indicator is flashing;
		5. Replace the sending card;
		6, Connecting the computer to an LCD display, check whether there is output on video card;
		7. Update the video card driver;
		8. Replace the computer;
3	Screen show scr ambled image	1. Check whether the power plug of the receiving card is well inserted;
		2. Check whether the power cable of the receiving card is burnt out;
		3. Check whether the power supply has no output;
		4. Check the data cable of the receiving card;
		5. Replace the data cable;
		6. Send the rcfg file;
		7. Upgrade the firmware version of the receiving card;
		8. Replace the receiving card;
4	Chromatic aberration between modules	1. Check whether the module power plug is well plugged;
		3. Check whether the main data cable is well inserted;
		4. Check whether the sending card is powered on and whether the running indicator is flashing;
		4. Replace the module;
		5. Replace the receiving card;
5	All panels display the same content	1. Set the screen connection on software;
		2. Check whether the data port is wrong.
6	No control system detected	1. Check the USB cable;
		2. Check whether the computer USB port is malfunctioning;
		3. Update the USB driver;
		4. Replace the USB cable;
		5. Replace the sending card;
7	No multi-function card detected	1. Check whether the distribution box is in the automatic state;
		2. Check whether the multi-function card is powered;
		3. Replace the power supply of the multi-function card;
		4. Check whether the main data cable is inserted into the wrong data port;
		5. Check whether the sending card data port is

		malfunctioning;
		6. Re-add the multi-function card;
		7. Replace the multi-function card;
		8. Replace the sending card;
8	No full screen display	1. Check whether the setting of the playback window is normal;
		2. Check the output resolution of the video processor;
		3. Check the output window of the video processor;

Check for Power Supply Short Circuit

After completing the cabinet wiring, please use a multimeter to check if there is any short circuit at the AC input power supply (L / N / PE) and DC output terminal (VCC / GND). If there is a short circuit, please carefully investigate the wirings. Make sure all wirings are normal, and only then connect power to operate the unit.

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