PL Lite 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.

1. Product Introduction

PL lite 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.

PL lite series have a full range of pixel pitch for stage display including 2.5, 2.9, 3.9 and 4.8mm, among which P3.9 & P4.8 have outdoor version. There are also curve version and cube version (PL2.5 Lite/PL2.9 Lite/PL3.9 Lite/PL3.9W Lite only).

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

500 X 500 Products
PL2.5 lite/PL2.9 lite/PL3.9 lite/PL3.9W lite/PL4.8W lite

500 X 1000 Products
PL3.9 XL lite/PL3.9W XL lite/PL4.8W XL lite

Cube Products (PL2.5 lite/PL2.9 lite/PL3.9 lite/PL3.9W lite)

1.1 Product Main Features

• PL lite series include curve version, which can provide an excellent effect of screen splicing. PL2.5 lite/PL2.9 lite/PL3.9 lite/PL3.9W lite also have creating cube version, which can provide a variety of creative splicing solutions.

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

• The brightness of PL3.9W lite and PL4.8W lite can reach 4500nit. 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 benefits in fast maintenance of modules and power boxes. Indoor 500×500 cabinet can be customized to support HUB and PCB front maintenance.

1.2 Product Specifications

PL lite indoor products:

Parameters		PL2.5 lite	PL2.9 lite	PL3.9 lite	PL3.9 XL lite
Physical Parameters	LED Type	SMD1515	SMD2121	SMD2121	SMD2121
	Pixel Pitch (mm)	2.5	2.97	3.9	3.9
	Cabinet Pixels	200×200	168×168	128×128	128×256
	Pixel Density (Pixels / m^2)	160000	112896	65536	65536
	Module size (L × W)/(mm)	250×250			
	Panel size (L × W × H)/(mm)	500×500×88	500×500×88	500×500×88	500×1000×88
	Cabinet Material	Die-cast Aluminum			
	Cabinet Weight (kg/Cabinet)	7.6	7.6	8	11.7
	Grayscale	14			
	Refresh Rate (Hz)	3840			
	Drive Mode	1/20	1/28	1/16	1/16
	Signal Transmission Distance (m)	UTP cable: < 100 m; Single-mode fiber: < 10 km			
Optical Parameters	Brightness (nit)	1000			
	Viewing Angle (H/V) (°)	140/140	140/140	140/140	140/140
Electrical Parameters	AC Input Voltage (V)	100~240			
	Power Consumption (Max/Avg.) (W/m^2)	580/190	540/180	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			
	Product Life (hrs)	100000			
Leasing Product Installation	Panel Installation Method	Rigging/Stacking			
	Maximum number of hoisted cabinets	20	20	20	10

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

PL lite outdoor products:

Parameters		PL3.9W lite	PL3.9W XL lite	PL4.8W lite	PL4.8W XL lite
Physical Parameters	LED Type	SMD1921			
	Pixel Pitch (mm)	3.9	3.9	4.8	4.8
	Cabinet Pixels	128×128	128×256	104×104	104×208
	Pixel Density (Pixels / m^2)	65536	65536	43264	43264
	Module size (L × W)/(mm)	250×250			
	Panel size (L × W × H)/(mm)	500×500×88	500×1000×88	500×500×88	500×1000×88
	Cabinet Material	Die-cast Aluminum			
	Cabinet Weight (kg/Cabinet)	7.8	12.6	7.8	12.6
	Grayscale	14			
	Refresh Rate (Hz)	3840			
	Drive Mode	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)	4500			
	Viewing Angle (H/V) (°)	140/120	140/120	140/120	140/120
Electrical Parameters	AC Input Voltage (V)	100~240			
	Power Consumption (Max/Avg.) (W/m^2)	570/190	570/190	570/190	570/190
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

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

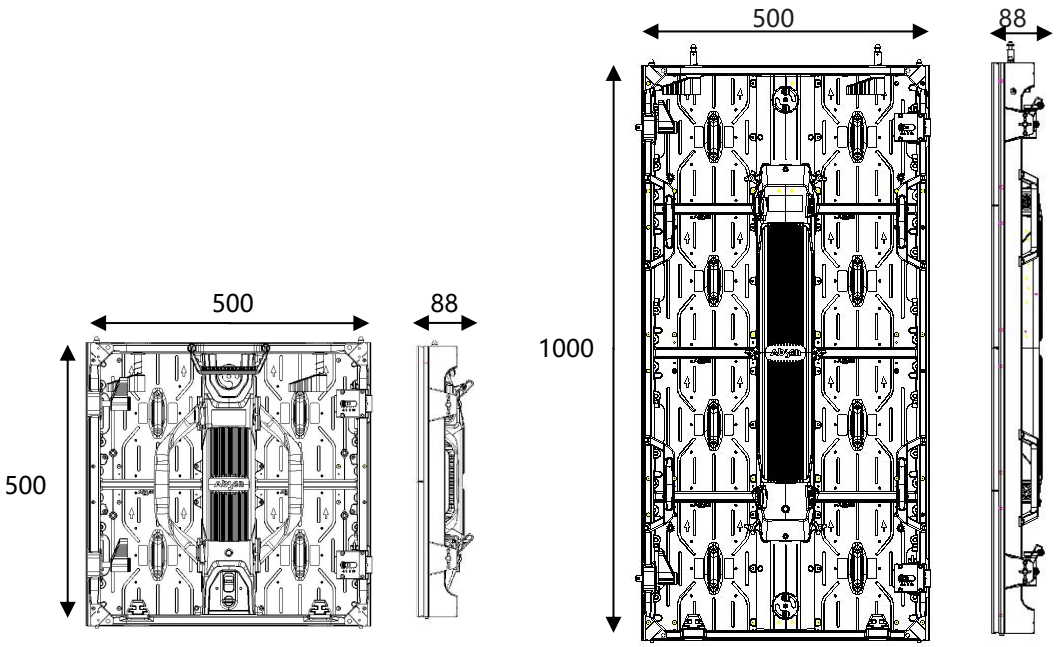
PL lite cube:

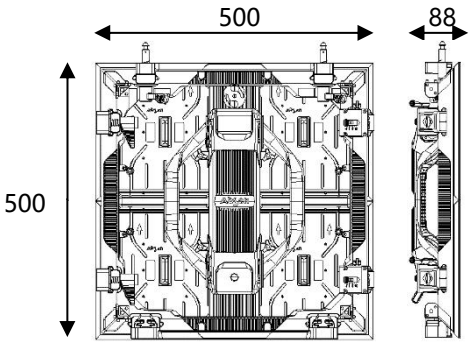
Parameters		Cube			
		PL2.5 lite	**PL2.9 lite**	**PL3.9 lite**	**PL3.9W lite**
Physical Parameters	LED Type	SMD1515	SMD2121	SMD2121	SMD1921
	Pixel Pitch (mm)	2.5	2.97	3.9	4.8
	Cabinet Pixels	200×200	168×168	128×128	128×128
	Pixel Density (Pixels / m^2)	160000	112896	65536	65536
	Module size (L × W)/(mm)	250×250			
	Panel size (L × W × H)/(mm)	500×500×88			
	Cabinet Material	Die-cast Aluminum			
	Cabinet Weight (kg/Cabinet)	7.7	7.7	7.7	7.8
	Grayscale	14			
	Refresh Rate (Hz)	3840			
	Drive Mode	1/20	1/28	1/16	1/8
	Signal Transmission Distance (m)	UTP cable: < 100 m; Single-mode fiber: < 10 km			
Optical Parameters	Brightness (nit)	1000	1000	1000	4500
	Viewing Angle (H/V) (°)	140/140	140/140	140/140	140/120
Electrical Parameters	AC Input Voltage (V)	100~240			
	Power Consumption (Max/Avg.) (W/m^2)	580/190	540/180	540/180	570/190
Environmental Parameters	Storage Temperature (°C)	-40~+60			
	Working Temperature (°C)	-10~+40	-10~+40	-10~+40	-20~+50
	Storage Temperature (RH)	10%~90%			
	Working Humidity (RH)	10%~90%			
	Ingress Protection	IP40/IP21	IP40/IP21	IP40/IP21	IP65/IP54
	Product Life (hrs)	100000			
Leasing Product Installation	Panel Installation Method	Rigging/stacking			
	Maximum number of hoisted cabinets	20			

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

1.3 Cabinet dimension figure (mm)

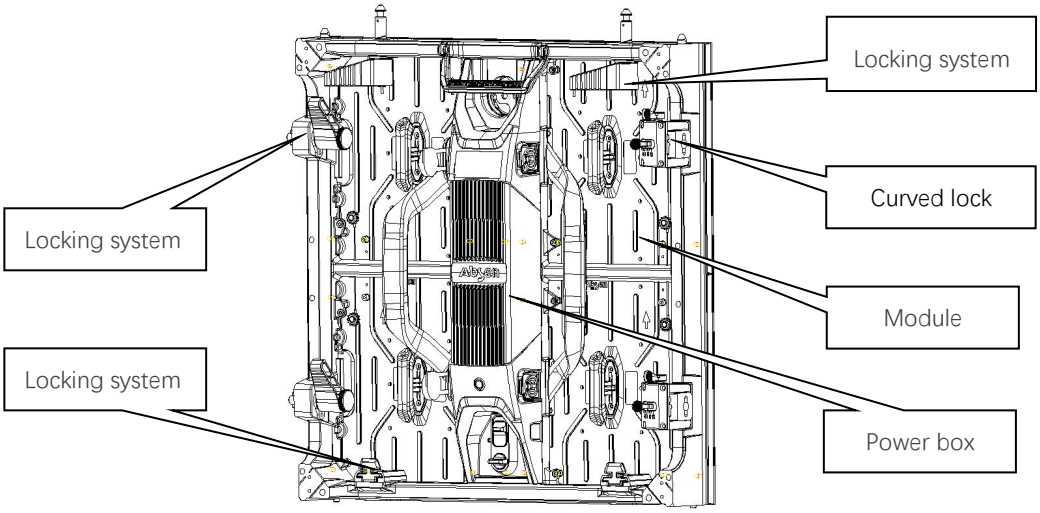
Unit: mm

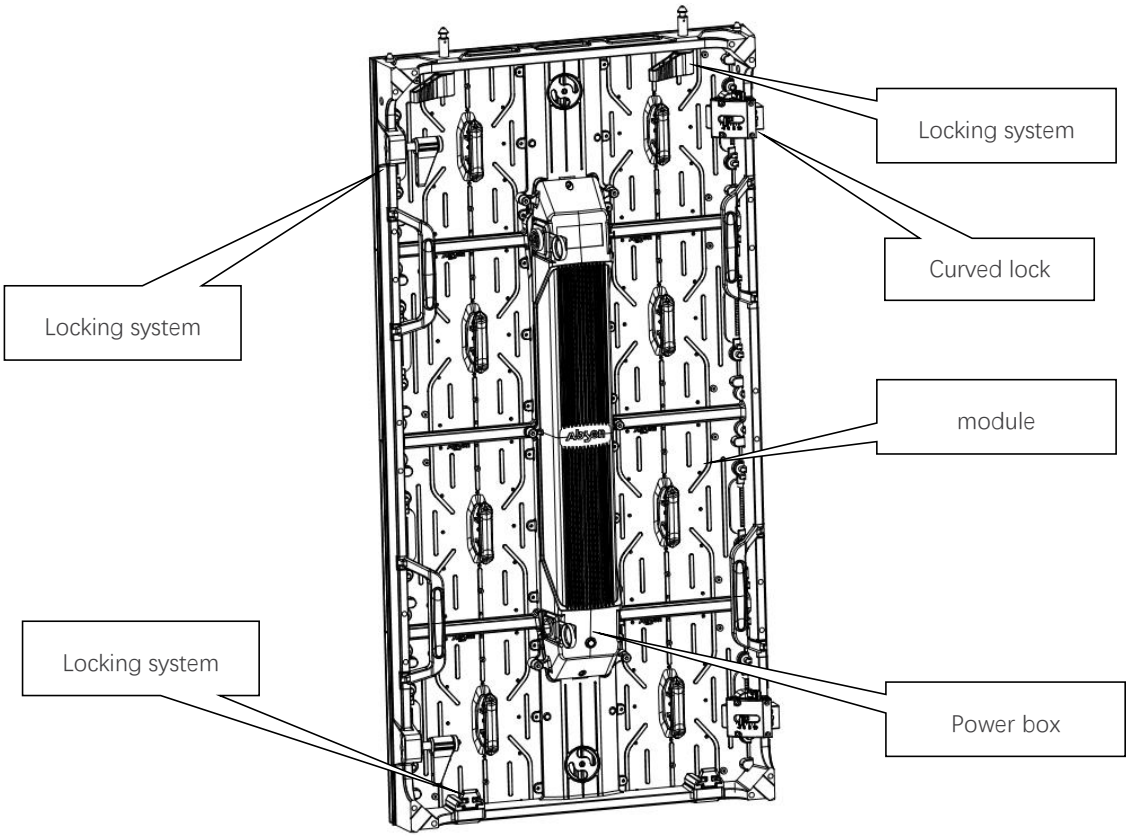


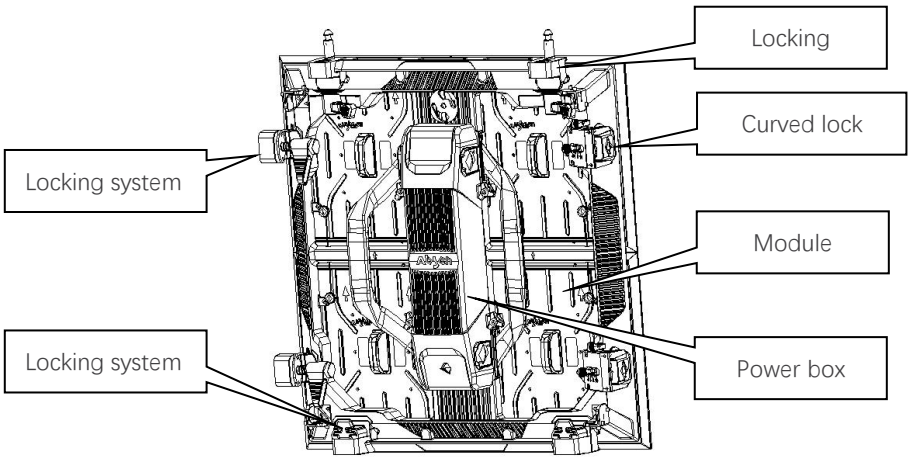


2. Product Components

2.1 Cabinet Introduction



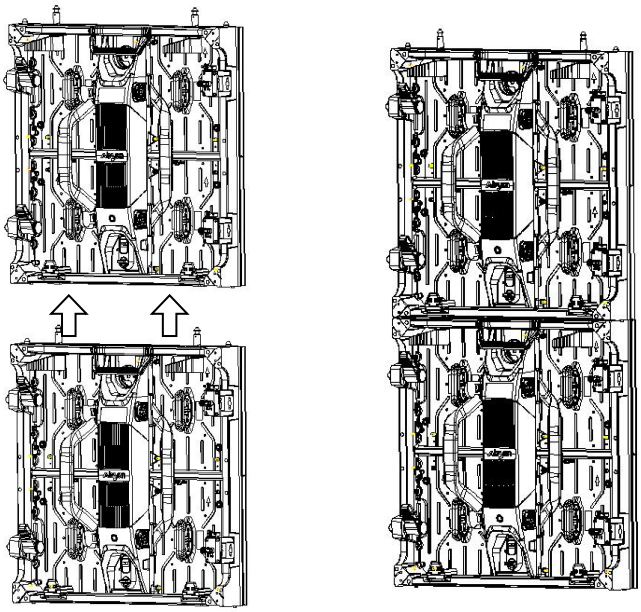




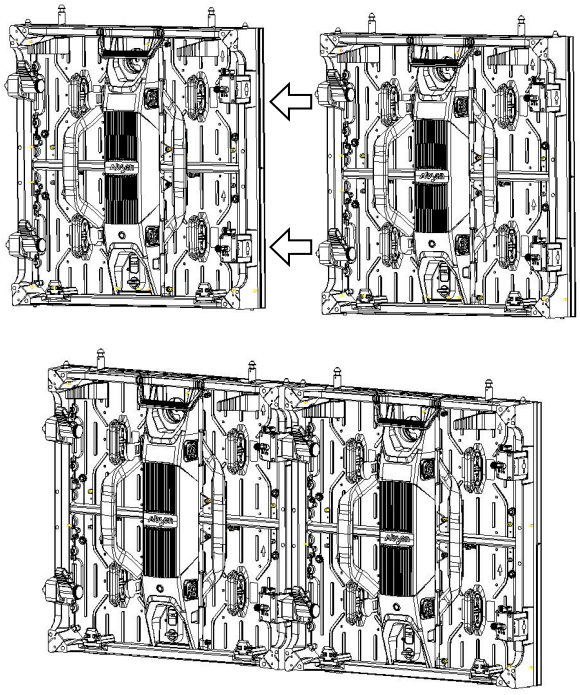
3. Product Installation

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:

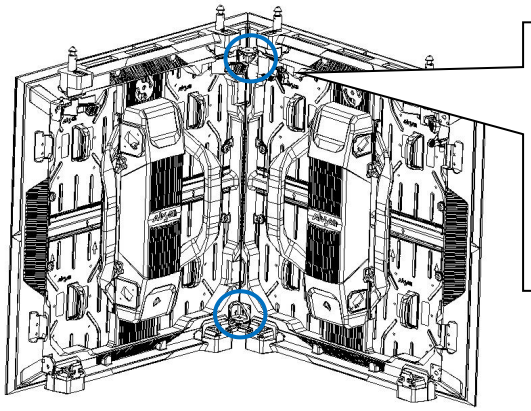


Lock up and down



Lock left and right

90° Corner locking (for cube cabinet):



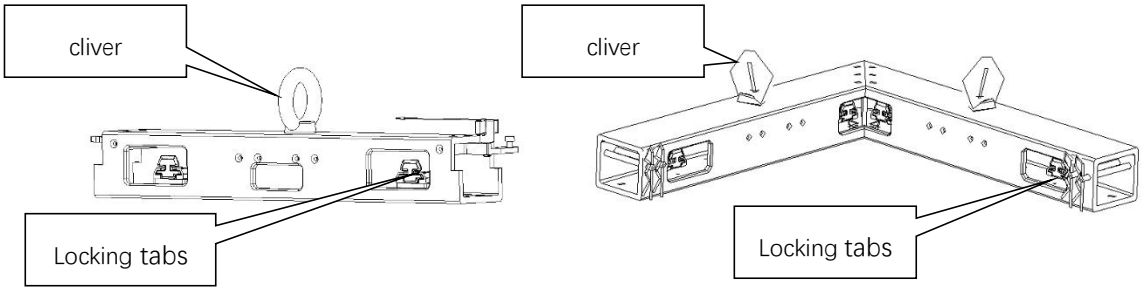
Creating 90° Corner

3.1 Hanging Installation

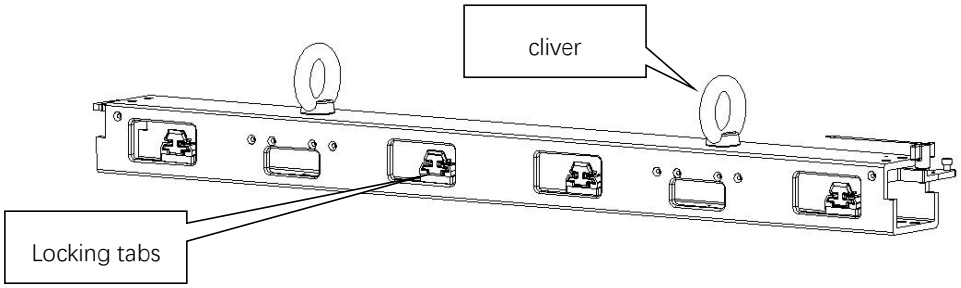
3.1.1 Hanging bar Illustration

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

Single hanging bar **90 degree hanging bar (for creating 90°Corner)**



Double hanging bar



3.1.2 Hanging bar installation

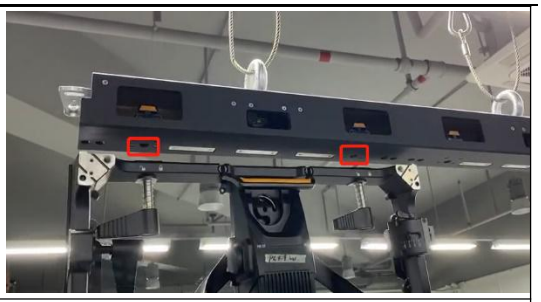
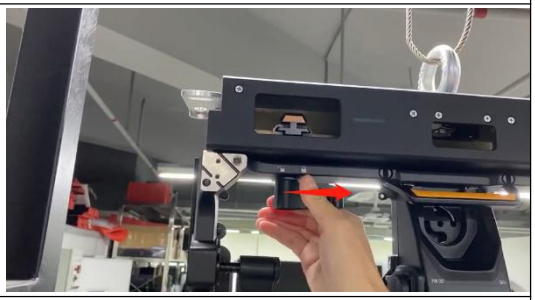
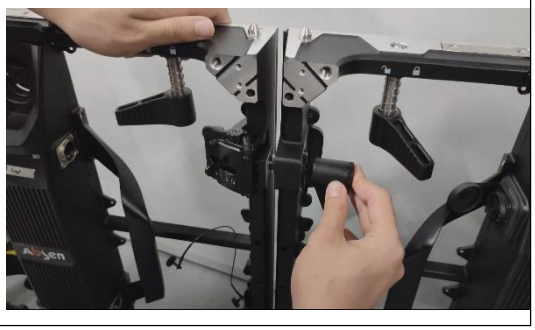
Connect cabinets with locking tabs during hanging installation. Hanging bars can load a max number of 20 500×500mm panels and 10 500×1000mm panels.

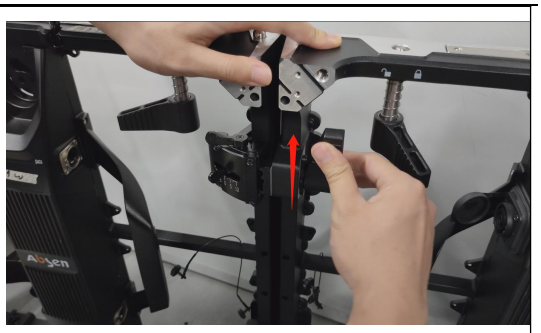
Installation steps:

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

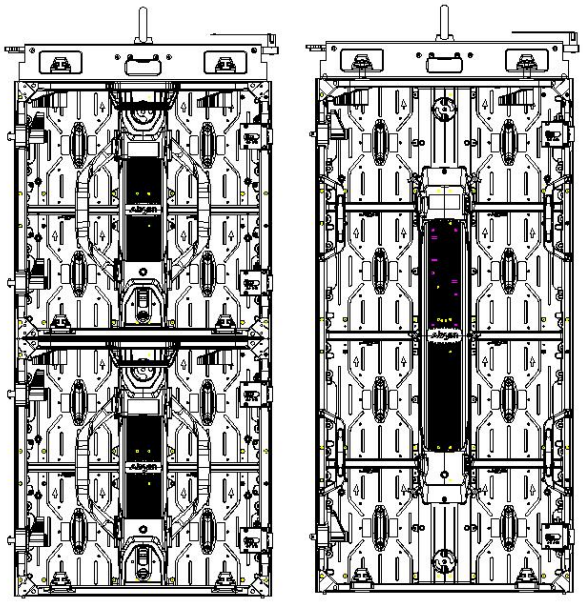
Note: For detailed installation steps, see the product installation video

STEP	Graphic
1, Fix the Hanging Bar on the Truss	

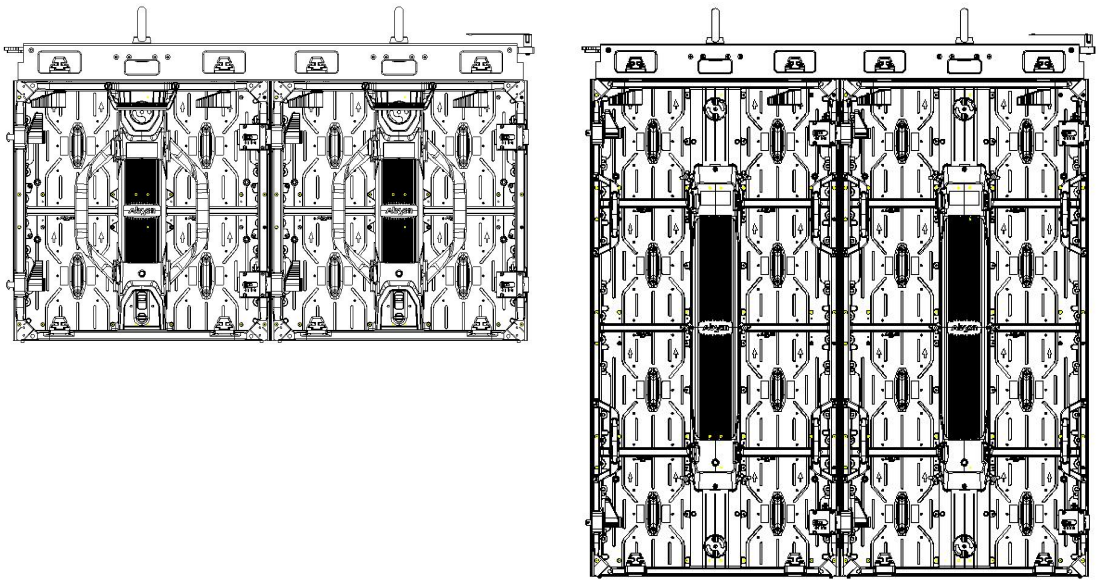
2, Align the safe lock on the cabinet with the mounting hole on the hanging beam	
3, Press the locking plate on the hanging beam	
4, Insert the safe lock on the cabinet up	
5, Tighten the safe lock from left to right	
6, Align the left and right cabinet mounting holes	

7, Lock the left and right cabinet,	
8, Install other cabinets as described above	
9, Install the module	

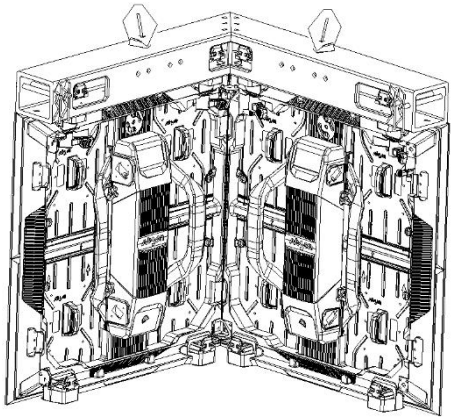
Single hanging bar



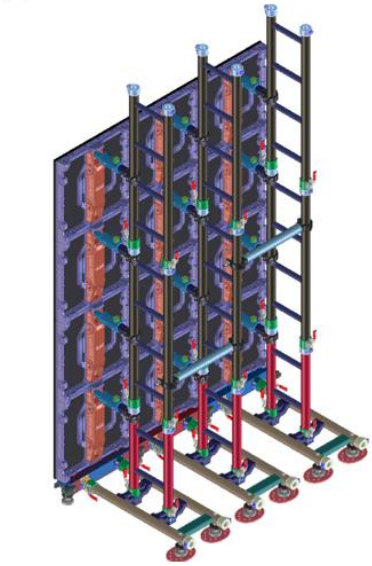
Double hanging bar

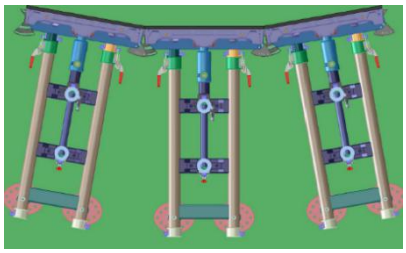


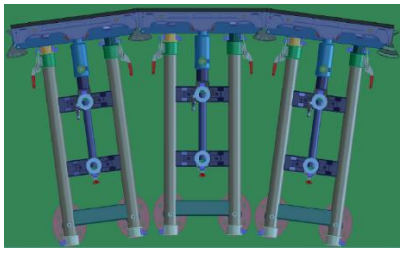
90 degree hanging bar



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.

4. Product Cabling

4.1Preparation Before Cabling

Please check carefully if the connection of power and signal circuit is correct before

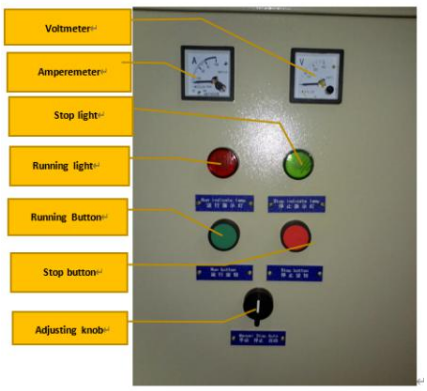
supplying power and signal to the screen. Please make sure that there is no short circuit between the L line, N line and PE line of each cabinet's AC power input by using multimeter.
Power connection instructions: Please calculate and select the appropriate model of distribution box or socket according 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

4.2.1 Product Component Illustration

Distribution box

The distribution box is a low-voltage distribution box composed of switchgear, measuring instruments, protective devices and auxiliary devices, which are assembled in a closed or semi closed metal cabinet or screen, based on the electrical wiring requirements.
During normal operation, the circuit can be switched on or off manually or automatically. The measuring instruments show various parameters; some electrical parameters can be adjusted through the measuring instruments; and they can indicate or send signals in case there is deviation from normal working state.
The components in the power distribution box of the LED display mainly include: main switch, AC contactor, circuit breaker (air switch), arrester (optional), timer, function card, time delay unit, voltage indicator, current indicator, Thermal relay, e.tc
Power capacity: Absen mainly has 15KW, 30KW, 60KW, 90KW, 120KW, 150KW, 180KW distribution boxes.
Control mode: intelligent distribution box, ordinary distribution box.
Installation environment: indoor and outdoor.



Distribution box and main cable selection:

Distribution box specification	15KW	30KW	45KW	60KW
International copper core cable model(mm²)	4*4+1*2.5	4*10+1*6	4*16+1*10	4*25+1*16
Distribution box specification	90KW	120 KW	150 KW	180 KW
International copper core cable model(mm²)	4*50+1*35	4*70+1*35	4*95+1*50	4*120+1*70

Remark:
In the above table, the three-phase voltage is 380V and the single-phase voltage is 220V.
The input of the distribution box is three-phase five-wire system, with a three-phase voltage of 380V. The output is a single-phase voltage of 220V.
4*X+1*X in the table: 4 represents L+L+L+N line, 1 represents PE line, X represents the main cable size; if the single-phase voltage is 110V, then the international copper core cable model must be twice the size.

Power supply

Model	MEGMEET MCP200WS-4.5A	MEGMEET MSP260-4.5
Electrical Characteristics of Input		
Input voltage range	90Vac to 264Vac	90Vac to 264Vac
Normal voltage range	100Vac to 240Vac	100Vac to 240Vac
Frequency range	47Hz-63Hz	47Hz-63Hz
Max input AC current	3.5Amax. at full load condition	3.5Amax. at full load condition
Inrush current (cold state)	80Atyp peak@220Vac	60A typ. peak@230Vac
Efficiency (full load)	88% @220Vac	89%@220Vac
Leakage Current	Less Than 3.5 mA, @ 264Vac input	Less Than 3.5 mA, @ 240Vac input
Normal output power	180W	250W
Electrical Characteristics of Output		
Output Voltage	+4.5V	+4.5V
Rated current	40A	50A

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	Number of cabinets under 220V voltage	Number of cabinets under 110V voltage
Outdoor	500×500	PL3.9W Lite	17	8
		PL4.8W Lite	20	10
	500×1000	PL3.9W XL Lite	8	4
		PL4.8W XL Lite	10	5
Indoor	500×500	PL2.5 Lite	20	10
		PL2.9 Lite	24	12
		PL3.9 Lite	24	12
	500×1000	PL3.9 XL Lite	12	6
	Cube	PL2.5 Lite	20	10
		PL2.9 Lite	24	12
		PL3.9 Lite	24	12
Outdoor		PL3.9W Lite	17	8

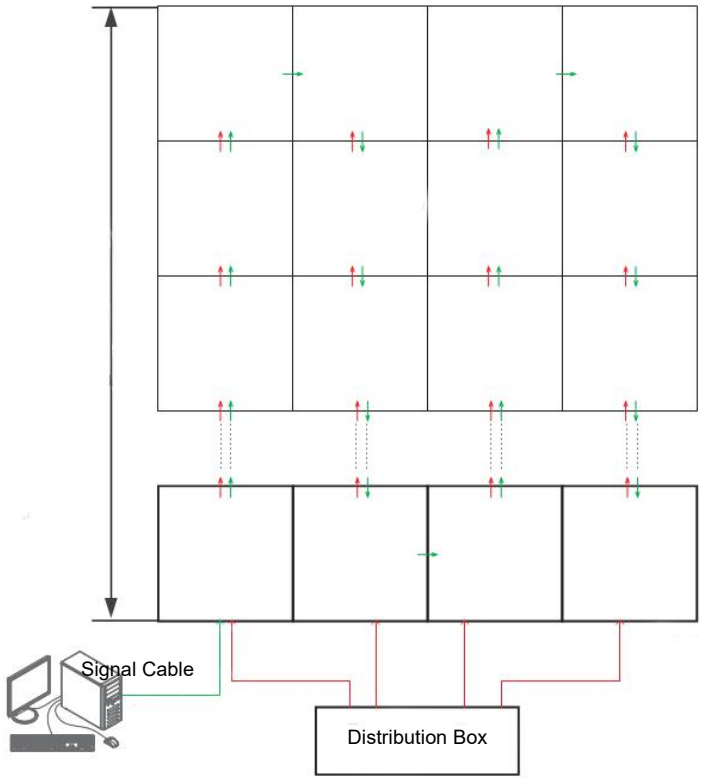
Please calculate the resolution according to each box pixel and connect the signal line according to the load range of the sending card. No more than 655360 pixels can be loaded on each network port.

4.2.2 Standard Cable Wiring

100V-120V

or

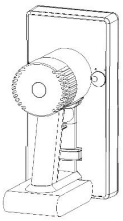
220V-240V



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	

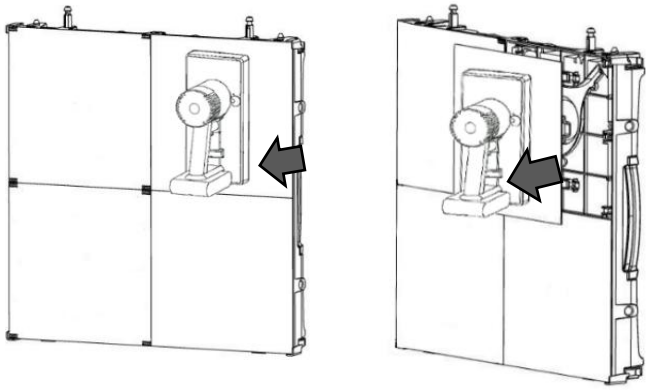
5.2 Maintenance Instructions

5.2.1 Module Maintenance

The module of PL Lite series support front or rear maintenance.
The maintenance mode of modules of PL XL cabinet and cube cabinet are similar to that of 500×500 cabinet, which will not be repeated here.

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.



Module rear maintenance

Step1: Hold the module handle with your right hand and push it forward
Step2: Remove the failure module
Step3: Replace with a good module

5.2.2 Power Box Maintenance

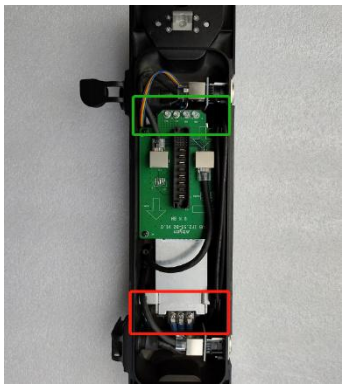
500×500mm cabinet:

Step1: Switch the power box knob to the unlock position

Step2: Buckle the yellow power box up and remove it

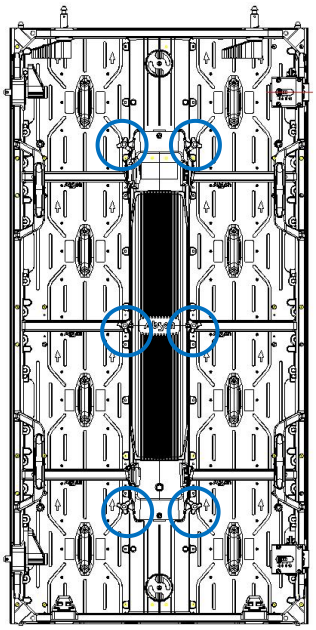
Step3: Remove the fixed screw of power supply

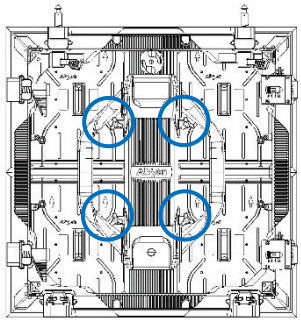
Step4: Replace with new power box



Other 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.

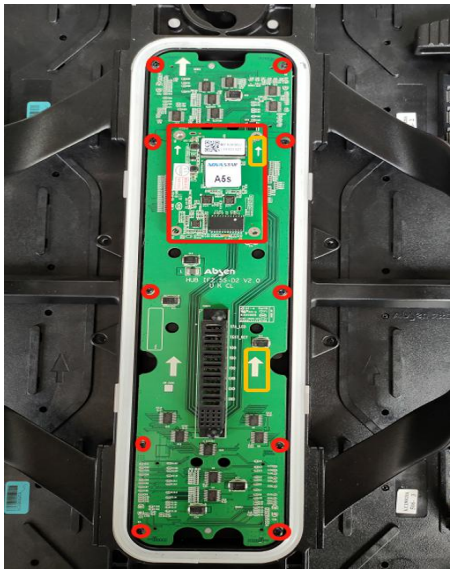
5.2.3 Receiving card and HUB Board Maintenance

Receiving card

For example: The A5S 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. （A7S Interfaces have similar functions with other types of receiving cards）

All series of products support receiving card, HUB board rear maintenance, and indoor products' (500*500 cabinets) receiving card and HUB board can be customized to support the front maintenance.

Maintenance for receiving card(Rear):



1. Remove the screws of the receiving card (please notice the Red frame mark);
2. Unplug the receiving card and replace it;
3. Install a new receiving card on the HUB board, please note that the receiving card direction should correspond to the arrow direction on the HUB board (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)- Indoor products (500*500 cabinets) can be customized

Step 1: remove the power box and module from the cabinet;

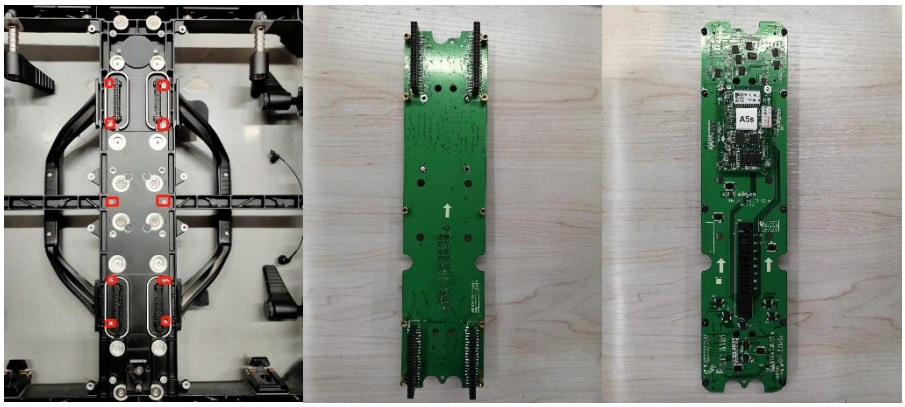
Step 2: remove the screws from the front of the cabinet (red circle position as shown below);

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.

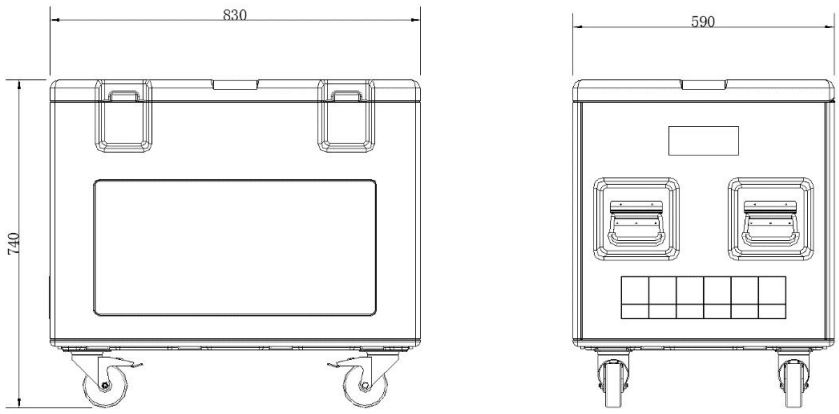


5.2.4 Flight Case

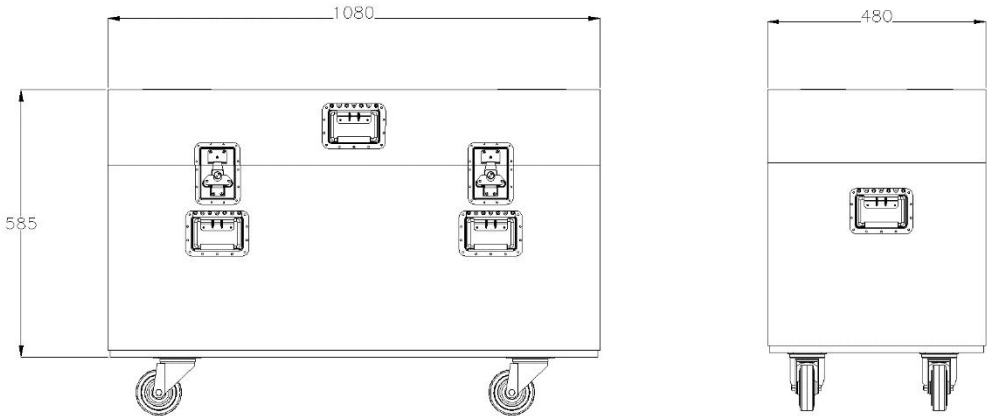
Place the LED panels horizontally to prevent SMD damage.

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

PL Lite series flight case has 6in1 and 4in1. 6 in 1 is suitable for the 500×500 cabinet and 4 in 1 is designed for the 500×1000 cabinet.



6 in 1 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 s crambled imag e	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;
		2. Replace the flat cable;
		3. Replace the power supply;
		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;

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