



New HC Series User Manual



Shenzhen Absen Optoelectronic Co.,Ltd.

Catalogue

1.	Product Introduction.....	- 6 -
1.1	Product Key Feature	- 6 -
1.2	Product Specifications	- 8 -
1.3	Cabinet dimension figure	- 9 -
1.4	Module dimension figure.....	- 9 -
2.	Product Components.....	- 10 -
2.1	Cabinet Introduction.....	- 10 -
2.2	Product Component Drawing.....	- 10 -
2.2.1	Mounting frame: used for wall mounting, including single and double frames	- 10 -
2.2.2	Connector plates and bolts are used for installations with steel structure.....	- 10 -
2.2.3	Flatness adjusting screw	- 11 -
2.2.4	Wire	- 11 -
2.2.5	Standard packaging:.....	- 11 -
3.	Product Installation	- 12 -
3.1	Mounting Frame Installation.....	- 12 -
3.2	Connecting Plate Installation	- 13 -
3.3	Flatness adjustment mechanism	- 15 -
3.3.1	Three-axis and six-way adjustment(Cabinet).....	- 15 -
3.3.2	Three-axis and six-way adjustment(Module)	- 15 -
4.	Product Cabling.....	- 16 -
4.1	Power Supply Wiring.....	- 16 -
4.2	Signal Cable Wiring	- 17 -
4.3	Schematic diagram of system connection topology	- 19 -
4.4	Power-on test.....	- 19 -
5.	Maintenance	- 20 -
5.1	Preparation Tools	- 20 -
5.2	Maintenance Instructions	- 20 -
5.2.1	Module Maintenance	- 20 -
5.2.2	HUB board/Receiving card/Power supply maintenance	- 21 -
6.	Common faults and troubleshooting	- 23 -

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 electrical 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 °C.



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.



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



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: 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.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de la classe A est conforme a la norme NMB-003 du Canada.

1. Product Introduction

The new HC series products are high-definition and small pitch LED display screens specially developed for control room. The size of the cabinet is 600x337.5mm, it is designed in a ratio of 27-inch 16:9, and the main pixel pitches are P1.8, P1.5, P1.2, P0.9, which can better display the image details.

The products are primarily used in the field of professional control rooms, meeting room, high-end business display.



1.1 Product Key Feature

- The new HC series has 5 products: HC0.9 Pro II, HC1.2 Pro II, HC1.2 II, HC1.5 II, HC1.8 II. HC1.2 II, HC1.5 II, HC1.8 II adopt the 3-in-1 SMD surface patch technology and common anode design, and HC0.9 Pro II, HC1.2 Pro II adopt the 4in1 integrated encapsulation and HBB energy-saving technology design.
- Advantages of 4 in 1 integrated encapsulation:
 1. Better air tightness, which can improve the moisture resistance of products;
 2. 4in1 pixel integration technology reduces solder points by 50%, and the stability of product is better;
 3. The adhesive force of the lamp is enhanced, the anti-collision capability is improved by about 2.5 times, and the Probability of knocking off the lamp is greatly reduced;
 4. Compared with SMD, 4 in 1 can make the flatness effect of the product better.
- HC0.9 Pro II and HC1.2 Pro II adopt HBB energy-saving technology, which can control the voltage of the drive chip more accurately, reduce the power consumption of the product by 20%, and enhance the heat dissipation performance and high contrast ratio.
- The cabinet is integrally formed by die casting and made of aluminum alloy, which has the characteristics of high precision, good flatness, difficult deformation, good heat dissipation, etc.
- The cabinet adopts honeycomb design, and have hidden wire cover design. The whole is beautiful and the integration effect is excellent after splicing.
- The cabinet is designed in a ratio of 27 inches 16:9, and can be seamlessly spliced into FHD/4K/8K display screen. FHD adopts HC1.5 II cabinet arrangement 5x5(135

inches),HC1.2 II/HC1.2 Pro II cabinet arrangement 4x4(108 inches) and HC0.9 Pro II cabinet arrangement 3 x 3 (81 inches).

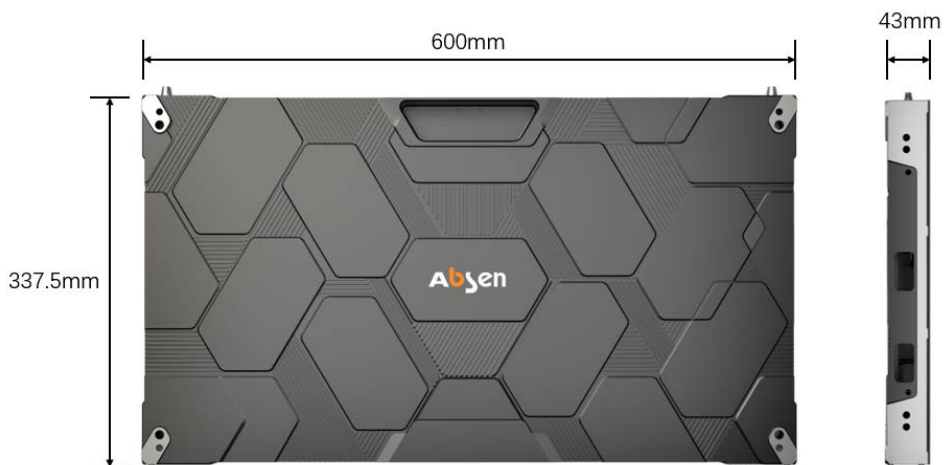
- Floating connectors are used between the module and the HUB, which can realize fine adjustment of the splicing gap after assembly to ensure no bright and dark lines.
- The magnetic attraction module is wirelessly connected, and the module can be assembled and disassembled without screwing or detaching wires, thus being quick and convenient.
- New HC series supports backup of dual power supplies and dual receiving cards. MTBF \geq 5000H, meeting the requirement of 7*24 hours. The product has strong anti-interference capability, high reliability and stability, low radiation, safety and stability.
- The product satisfies IEC TR62778-2014 Blue Light Hazard and EN62471: 2008 Photobiological Safety Test, does not damage eyes and is not fatigued after long-term viewing.
- The cabinet and power supply have no fan design, and the quiet technology of < 25db creates a comfortable working environment.
- New HC series supports full front maintenance, module, power supply, receiving card and HUB can be maintained from the front.
- High gray scale, high refresh, high gray in the low light, high contrast, no ghosting and caterpillar phenomenon, showing excellent display effect.
- Support Absen new generation point-by-point correction technology (A5C+), with more uniform and better picture. The module has its own correction data memory, and the replacement module directly and automatically imports correction data.
- Black Screen Automatic Energy Saving Technology: Black screen and some black screen images automatically enter Energy Saving Mode for high efficiency and saving energy.
- Support fixed installation mode,, quick and flexible installation.

1.2 Product Specifications

Parameter		HC0.9 Pro II	HC1.2 Pro II	HC1.2 II	HC1.5 II	HC1.8 II
Physical Parameter	LED Type	IMD 4in1	IMD 4in1	SMD1010	SMD1212	SMD1515
	Pixel Pitch (mm)	0.93	1.25	1.25	1.56	1.87
	Panel Dimensions (WxHxD)/(mm)	600x337.5x43				
	Pixel Per Panel	640x360	480x270	480x270	384x216	320x180
	Panel Weight (kg)	4.5				
	Panel Material	Al Die-Casting				
	Module Dimensions (WxH)/(mm)	150 x337.5				
Optoelectronic Parameter	Brightness (nit)	600				
	Refresh Rate (Hz)	3840				
	gray scale(bit)	14				
	Contrast Ratio	4500:1	5000:1	3500:1	3500:1	3100:1
	Color Temperature(K)	6500				
	Viewing Angle (H/V) (°)	155/155	160/120	150/150	160/160	160/160
	Driving Type	1/60	1/46	1/45	1/48	1/45
	AC Operating Voltage (V)	100~240				
	Power Consumption (Max./Avg.)(W/m ²)	620/205	510/170	385/130	345/115	370/125
Application Parameter	Storage Temperature (°C)	-40~+60				
	Operating Temperature (°C)	-10~+40				
	Storage Humidity (RH)	10%~85%				
	Operating Humidity (RH)	10%~80%				
	IP Rating (Front/Rear)	IP40/IP21				
	Module Maintenance	Front				
	PSU & Others Maintenance	Front				
	Panel Installation Type	Fixed				
	Certificate	FCC,CE etc.				

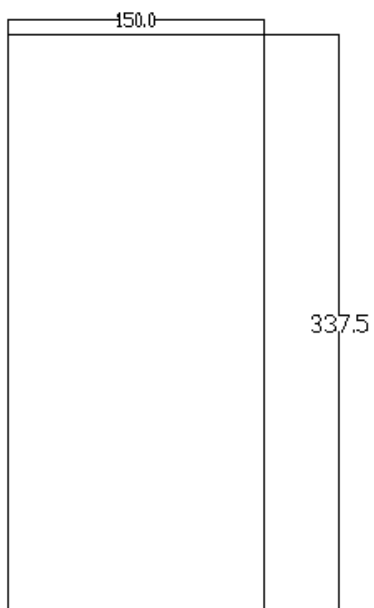
Remark: Power consumption tolerance: $\pm 15\%$, according to the actual situation.

1.3 Cabinet dimension figure



1.4 Module dimension figure

Unit: mm



2. Product Components

2.1 Cabinet Introduction

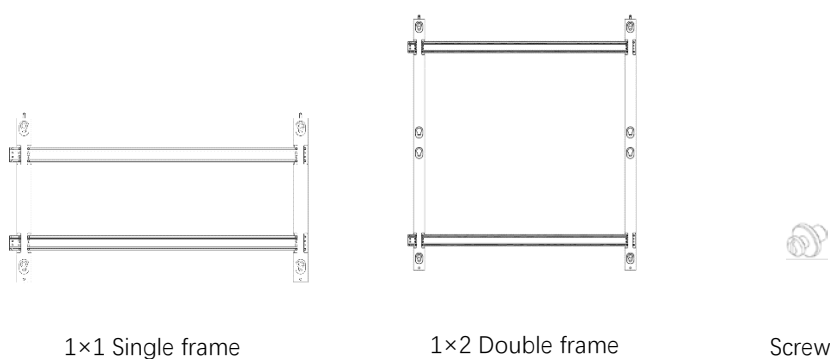


Power port connection mode: The input end of the power cable is connected to the PWR IN interface, and the output end is connected to the PWR OUT interface;

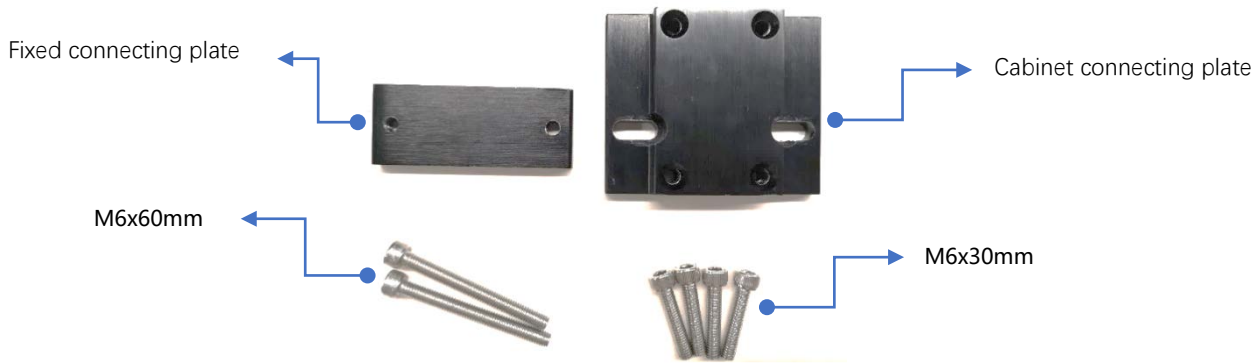
Signal port connection mode: Single card version, connect the signal line to Master port; Dual card version (backup) : Master port is the main card signal cable port, and Slave port is the backup signal cable port.

2.2 Product Component Drawing

2.2.1 Mounting frame: used for wall mounting, including single and double frames



2.2.2 Connector plates and bolts are used for installations with steel structure.



2.2.3 Flatness adjusting screw

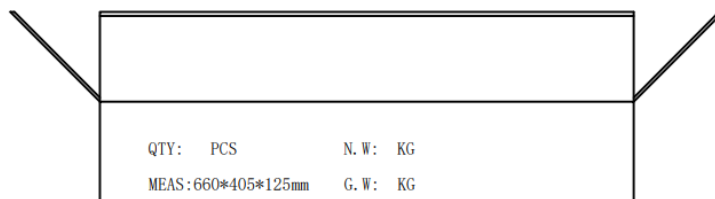


2.2.4 Wire

Item	Figure
Connecting network cable (left and right) Note: It is used when connecting the left and right cabinets.	
Main power cable	
T-shaped power cable Note: It is used when connecting the left and right cabinets.	
Note: The network cable and power cable for the upper and lower connection cabinets are included in the cabinet.	

2.2.5 Standard packaging:

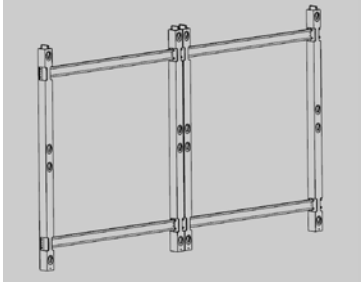



Carton packing, modules are assembled on cabinet and package together in carton
 Package dimensions: 660×405×125 mm.



3. Product Installation

Installation type Supports mounting or steel structure.

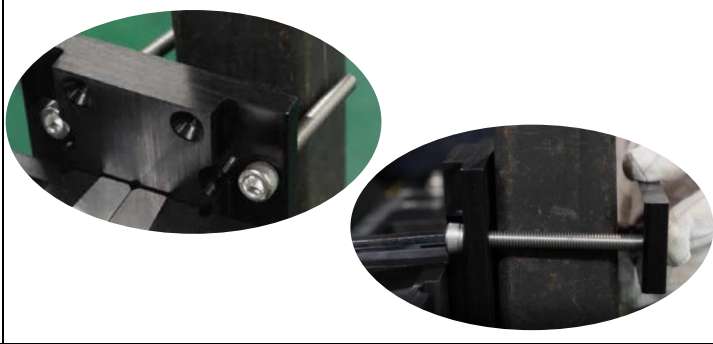
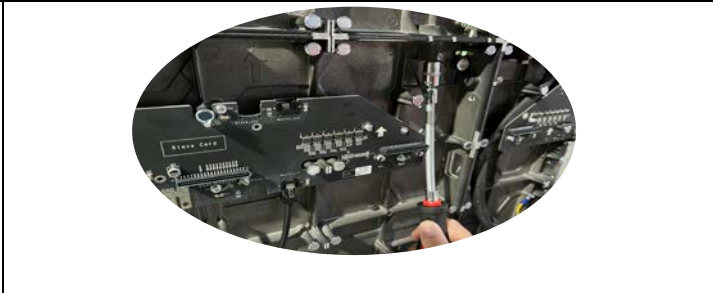


3.1 Mounting Frame Installation

Step	Diagram
<p>Step 1: Use M6 tapping screws or M6 expansion screws to fix the hanging plate on the flat wall.</p>	<p>Take the 1×2 double frame as an example</p> 
<p>Step 2: Install the screws in the mounting holes on the back of the cabinet. Install 4 screws per cabinet.</p>	
<p>Step 3: Install the cabinet (without module) on the frame: install it layer by layer from bottom to top.</p> <p>Note: The left and right sides and the upper and lower sides of the cabinet are fixed with locking screws.</p>	 

<p>Step 4: After all the cabinets assembled, connect all the power and data cables.</p>	
<p>Step 5: The installation module should be installed according to the corresponding number of the module and the cabinet. From the front view, module XX-1 is installed on the leftmost side of the cabinet, and module XX-4 is installed on the rightmost side of the cabinet. (Note: "XX" represents for cabinet number).</p>	

3.2 Connecting Plate Installation

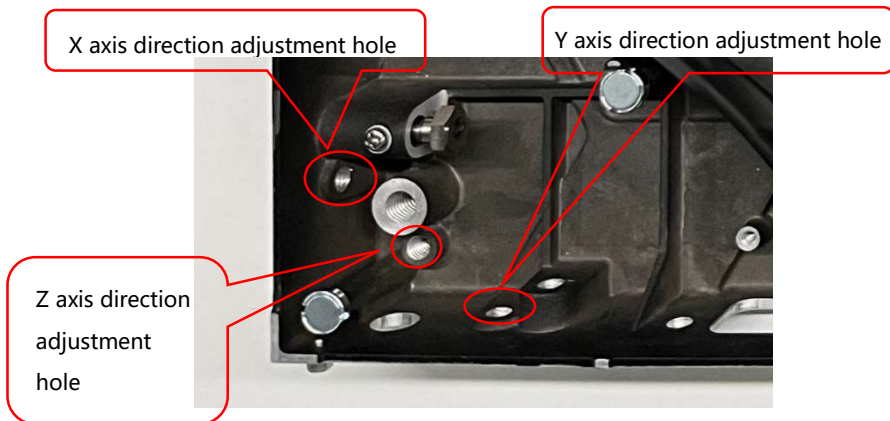
Step	Diagram
<p>Step 1: Remove the cabinet from the packaging and remove the anti-knock screws that need to be installed in the bottom row of the whole screen. The anti-knock screws are at the bottom of the cabinet, 4 for each cabinet.</p>	
<p>Step 2: Install the first row of boxes, lock the screws between the left and right sides of the box, and use M6×30mm hexagon socket head cap screws to lock from the front side through the front mounting holes of the box into the screw</p>	

<p>holes of the box connecting piece on the back side.</p>	
<p>Step 3: The M6*60mm screws through the cabinet connecting plate, and connected with the fixed connecting plate.</p>	
<p>Step 4: Install the second layer of cabinet, and lock the screws between the upper and lower cabinet. (Tighten the screws using the soft sleeve tool)</p>	
<p>Step 5: Lock the cabinet with M6*30mm to the cabinet connecting plate.</p>	
<p>Step 6: Repeat the preceding steps to install the next cabinet.</p>	
<p>Step 7: Install cable and module</p>	

3.3 Flatness adjustment mechanism

3.3.1 Three-axis and six-way adjustment(Cabinet)

When the stitching between the cabinets is not smooth and needs to be adjusted, the position can be fine-tuned by the flatness adjustment screw. The positions of adjusting screws are designed on the bottom (2 pcs), side (2 pcs) and back (4 pcs) of each cabinet (red circle in the following picture). Use flatness adjustment screw and 3mm L-shaped hexagon adjustable wrench to fine tune the cabinet position.



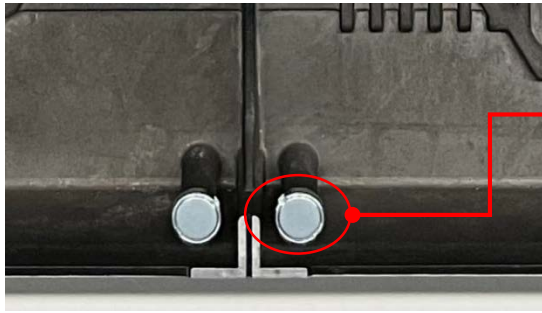
Local view



Flatness adjusting screw

3.3.2 Three-axis and six-way adjustment(Module)

When there is unflatness between the modules and needs to be adjusted, the magnet adjustment tool can be used to adjust the height of the magnet on the cabinet to achieve the flatness of the Z axis, and slightly move the modules by hand to achieve fine adjustment of the X/Y axis position.



Z axis adjustment can be realized by adjusting the height of the magnet on the cabinet with a special magnet adjustment tool.



The floating connector between the module and the HUB enables the module to be fine-tuned on the X/Y axis.

4. Product Cabling

Preparation before cabling

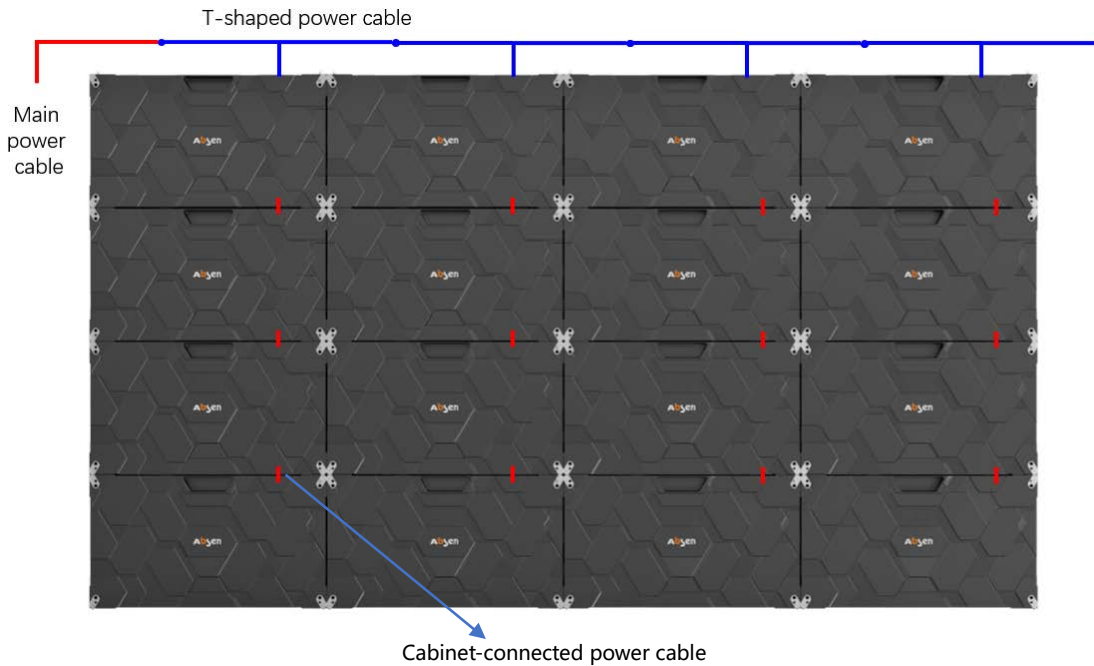
Before applying power and signal source to the screen, please check power and data cables connections carefully and make sure they are wired correctly. Use a multimeter to test the L, N and PE lines in AC power input port and make sure the three lines are not short-circuited.

Power cable connection instructions: Please calculate and select the appropriate model of distribution cabinet or socket according to the maximum power consumption. Please consult your electrician or distribution cabinet manufacturer for specific selection scheme. The input voltage of the cabinet is 100-240V/AC. The 3×2.5 mm² power cable is used from the distribution box to 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 cannot confirm).

4.1 Power Supply Wiring

Taking a [4x4] HC1.2 II cabinet for example, data and power wiring schematics are shown below:

The total power of 16 HC1.2 II cabinets is $16 \times 0.6 \times 0.3375 \times 385W = 1.25kW$. First, connect the cabinets in series with connecting power lines, and the 3×2.5 mm² power cable is used for connecting from the cabinet of top layer to the distribution box.



NOTE: THE POWER CABLE FOR CONNECTING THE CABINETS BETWEEN UPPER AND LOWER IS PROVIDED INSIDE THE CABINET. IT IS RECOMMENDED THAT THE MAIN POWER CABLE BE ROUTED FROM THE TOP. WHEN THE INPUT VOLTAGE IS 220V, EACH 3×2.5 MM² POWER CABLE CAN CARRY UP TO 24 CABINETS. WHEN THE INPUT VOLTAGE IS 110V, EACH POWER CABLE CAN CARRY UP TO 12 CABINETS.

Model name	Standard cabinet size	Power consumption (Max)	Number of cabinets with load for power cable (220V)	Number of cabinets with load for power cable (110V)
HC0.9 Pro II	600×337.5mm	620 W/m ²	20	10
HC1.2 Pro II		510 W/m ²	22	11
HC1.2 II		385 W/m ²	24	12
HC1.5 II		345 W/m ²	26	13
HC1.8 II		370 W/m ²	24	12

4.2 Signal Cable Wiring

The signal cable of standard version uses RJ45 CAT5 network cable, and the network cable interface of the cabinet can be used for input and output. Please calculate the resolution according to the pixels of each cabinet and connect the signal cables according to the loading range of the sending card.

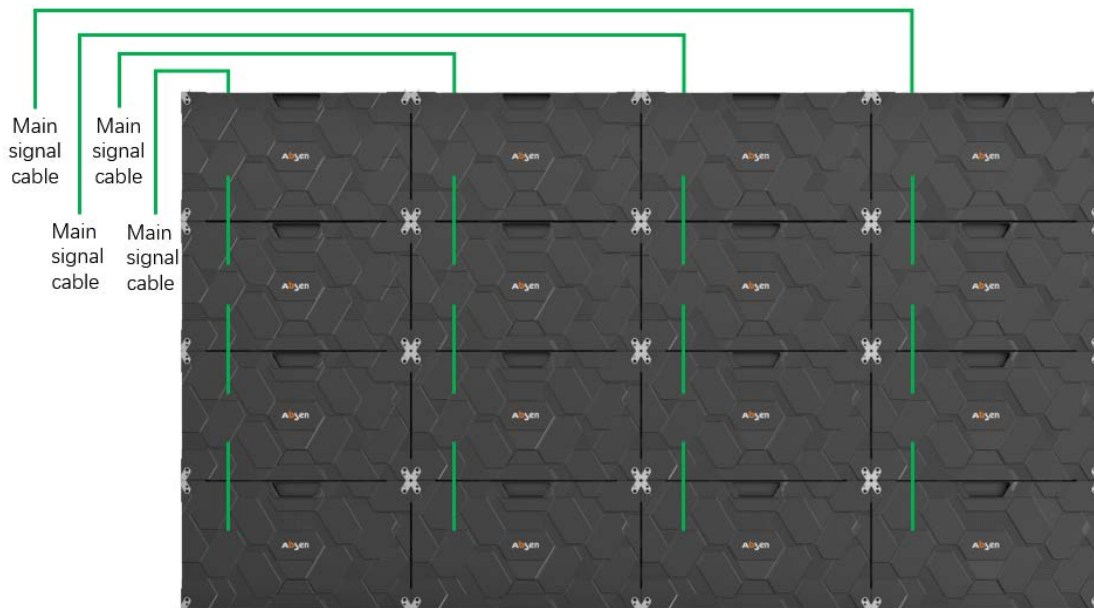
When the cabinet is single-card version, "Master" port is in use and "Slave" port is vacant. When the cabinet is dual-card version, If signal backup is required, "Master" port is the signal

network port on the main card and "Slave" port is the signal network port on the backup card.

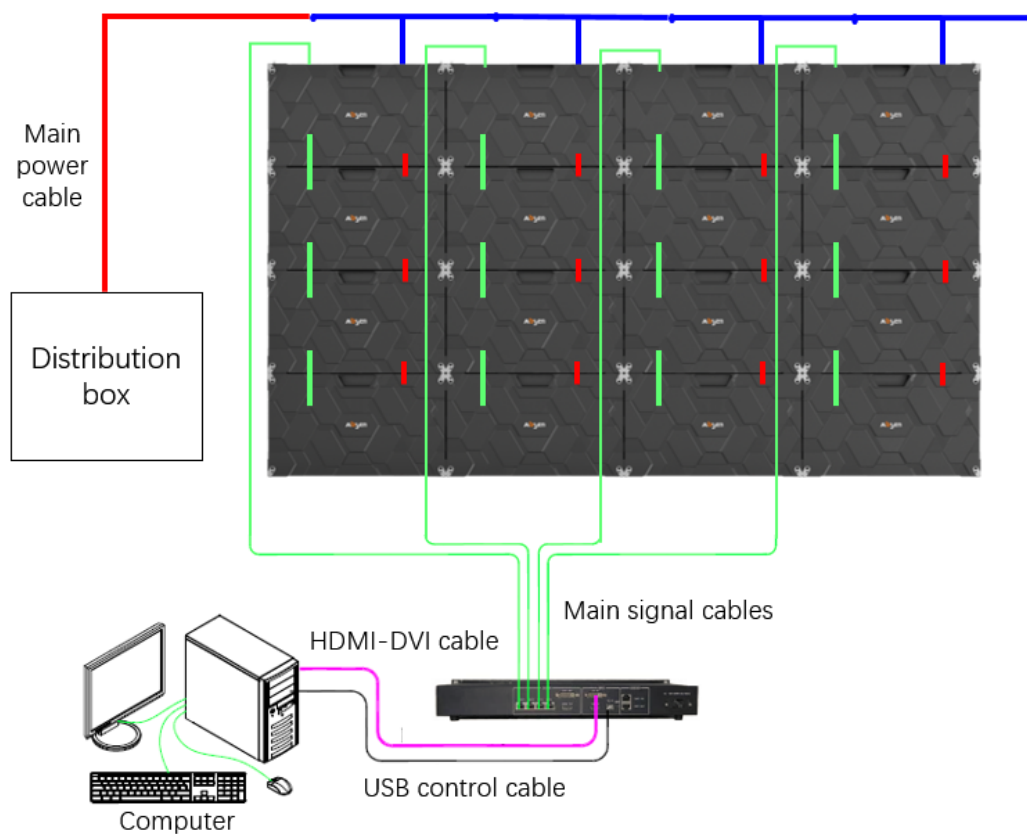
Note: The range of loaded pixels of each net port cannot exceed 655360 points.

Take the single power/single receiving card version as an example:

Model name	Standard cabinet size	Cabinet resolution	Number of cabinets with load for single network cable	Remark
HC0.9 Pro II	600×337.5mm	640x360	Cabinets≤2	To calculate the maximum number of cabinets carried by a single network cable, calculate the number of cabinets in the rectangular area carried by the network cable
HC1.2 Pro II		480x270	Cabinets≤5	
HC1.2 II		480x270	Cabinets≤5	
HC1.5 II		384x216	Cabinets≤7	
HC1.8 II		320×180	Cabinets≤11	



4.3 Schematic diagram of system connection topology



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, media player, etc. and one or more sending box to receive and feed the source to it.

4.4 Power-on test




After the cabinet connection is completed, please use a multimeter to measure whether there is short circuit at the AC input (L/N/PE) and DC output (VCC/GND) of the power supply. If a short circuit is found, please check the circuit carefully. After ensuring the cable is normal, switch on the power to electrify the cabinets to work.

Note: Please refer to the software user manual for software operation.

5. Maintenance

5.1 Preparation Tools

Preparation tools include: module front service tool, cross screwdriver, multimeter, etc.




	Tools type	function	Diagram (reference)
Maintenance Tool List	Module front service tool	Installation and removal LED module	
	PH2 cross screwdriver	Installation and removal HUB, receiving card, power supply	
	multimeter	Measure power cables and distribution boxes	

5.2 Maintenance Instructions

5.2.1 Module Maintenance

Put the front service tool onto the surface of the module, then press the button of the tool to suck out the module, hold the module by hand and release the button.

Take HC1.2 II as an example:

Diagram			
Step	① Locate the fault module and place the vacuum maintenance tool in the middle area of the fault module.	② After turning on the switch, continue for 3-5 seconds, pull the suction tool out forcefully to remove the module.	③ Install the new module in the upward direction and gently onto the cabinet.

Notice	<p>1. The front maintenance tool should be placed in the middle of a single module and should not cross over to adjacent modules;</p> <p>2. When removing a module from the screen body, hold the module with your hand to prevent the module from falling due to low power or accidental startup of the maintenance tool.</p>
--------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

5.2.2 HUB board/Receiving card/Power supply maintenance

Remove the modules on the faulty cabinet using a maintenance tool, and then use a screwdriver to remove and replace the screws on the conversion board.

HUB Maintenance Procedure	Diagram
<p>❶ Remove all modules on the faulty cabinet using a vacuum maintenance tool.</p>	
<p>❷ Use a PH2 cross screwdriver to remove the screws from the HUB.</p>	
Receiving card Maintenance Procedure	Diagram
<p>Using a PH2 Phillips screwdriver, remove the HUB board receiver card on the back of the HUB board, remove the 2 screws of the receiver card and replace the faulty receiver card.</p>	
Power supply Maintenance Procedure	Diagram

① Use the PH2 cross screwdriver to remove the screws that fixes the power supply, and then take out the power supply.



Maintenance instructions: If you cannot determine the cause of the fault or do not understand how to replace the spare parts, please contact Absen!

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 scrambled 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.

All rights reserved by Shenzhen Absen Optoelectronic Co., Ltd.

Shenzhen Absen Optoelectronic Co., Ltd. reserves the rights to modify contents without any further notice.



Shenzhen Absen Optoelectronic Co., Ltd.
 18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen 518129, P.R.China
 T: +86-755-89747399 E: absen@absen.com
 F: +86-755-89747599 W: www.absen.com

Absen Inc.
 7120 Lake Ellenor Drive, Orlando, FL 32809, USA
 T: +1-407-203-8870 E: info@usabsen.com
 F: +1-407-203-8873 W: www.usabsen.com

Absen GmbH
 Eisenstraße 5, 65428 Russelsheim a.M., Germany
 T: +49 (0) 6142 78935-0 E: europe@absen.com
 F: +49 (0) 6142 78935-29 W: www.absen-europe.com