

VDS Series

Indoor Fine Pixel Pitch COB Display

Product Installation Manual



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Revision History

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1 Product Overview

VDS series FPP COB series products are newly designed common-cathode-driven FPP display products, which are widely used in indoor security monitoring, exhibition and display, business and education fields and so on.



VDS Appearance

The VDS series is a full front-maintenance product that supports both front and rear mounting. The features of the VDS series are as follows:

- Fully flip-chip COB common cathode driver LEDs are used;
- Three-in-one integrated design of power supply, receiver card and signal distribution HUB;
- Dual-voltage common-cathode drive energy-saving design;
- Black screen energy saving design, black screen power consumption \leq 3W/cabinet;
- Optional configuration of dual card and dual power backup design;
- Die-cast chassis are available with 45° cut edge and right-angle assembly design;
- Optional 5G receive driver design;

1.1. Technical Parameters

		VDS007	VDS009	VDS012	VDS015
Module Composition	pixel structure	Fully Flip-Chip COB			
	Pixel Pitch (mm)	0.78	0.9375	1.25	1.56
	Module Resolution (W×H)	192×216	160×180	120×135	96×108
	Module size (mm) (W×H)	150×168.75			
Cabinet Composition	Module composition (W×H)	4×2			
	Resolution (W x H)	768×432	640×360	480×270	384×216
	Dimension (mm) (W×H×D)	600×337.5×43.5			
	Size (m ²)	0.2025			
	Weight (kg/m ²)	25			
	Pixel Density (点/m ²)	1638400	1137777	640000	409600
	Flatness (mm)	≤0.1			
Optical parameter	Brightness calibration	Yes			
	Color calibration	Yes			
	Brightness (nits) (Calibrated)	600 (std)			
	Color temperature (K)	3000—10000 adjustable			
	Horizontal VA (°)	170			
	Vertical VA (°)	170			
	Brightness uniformity after calibration	≥97%			
	Color uniformity after calibration	±0.003Cx,Cy			
	Contrast	10000:1&20000:1			
Power	Max power consumption (W/m ²)	425 & 550	375 & 530	325 & 510	325 & 510
	Avr power consumption (W/m ²)	200 & 280	175 & 265	160 & 260	160 & 260
	Power line	AC100~240V (50/60Hz)			
Processing	Driver mode	Common cathode CCD			
	Frame rate (Hz)	50&60	50&60	50&60	50&60
	Refresh rate (Hz)	3840	3840	3840	3840
Others	Typical lifetime (hrs)	100,000	100,000	100,000	100,000
	LED front IP、 ruggedness	IP54 / 4H			
	Working temperature (°C)	30	30	30	30
	Storage temperature (°C)	40	40	40	40
	Working humidity (RH)	10 -- 90% frost-free	10 -- 90% frost-free	10 -- 90% frost-free	10 -- 90% frost-free
	Storage humidity (RH)	10 -- 95% frost-free	10 -- 95% frost-free	10 -- 95% frost-free	10 -- 95% frost-free

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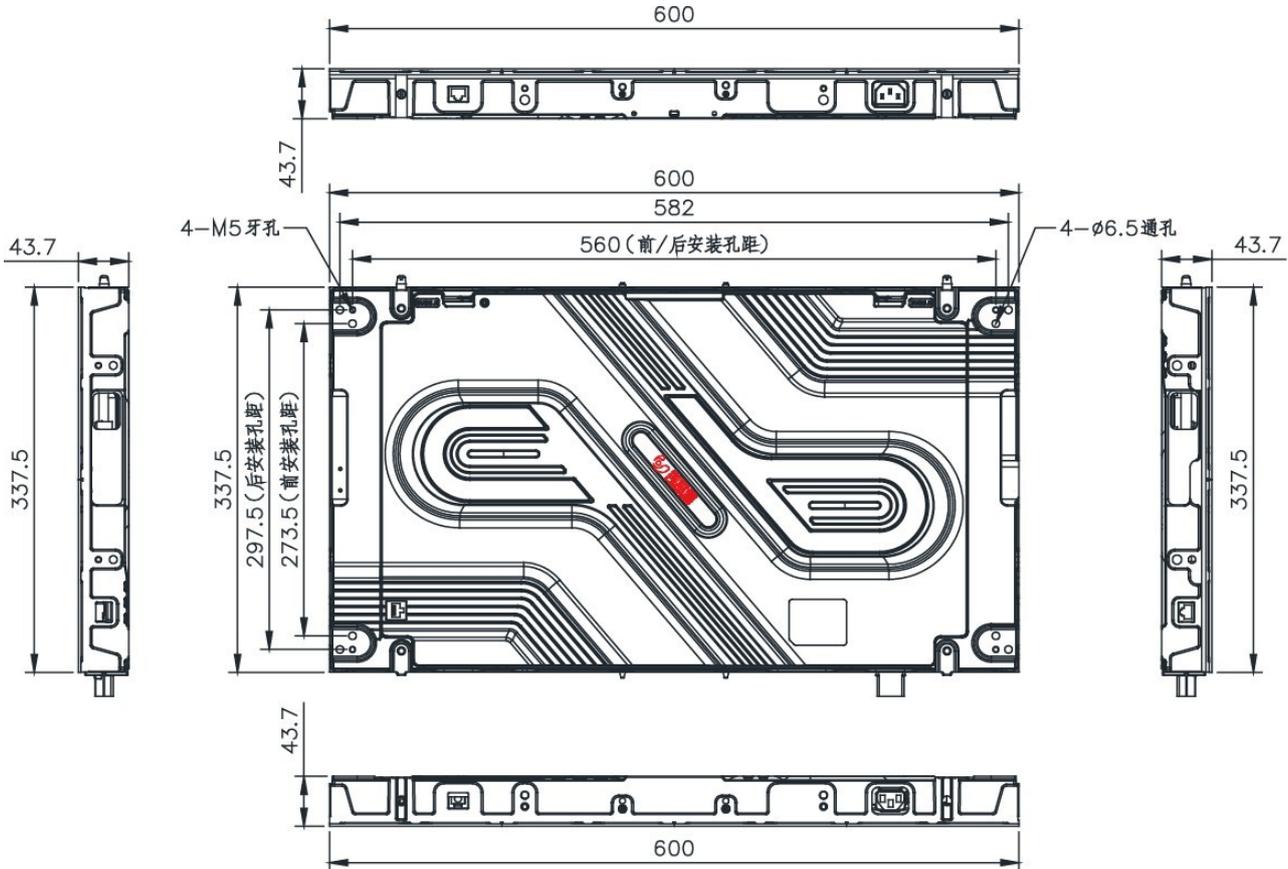
Note

Power consumption is a corrected maximum power consumption parameter and is not used as a distribution parameter. The electrical parameters have a tolerance of $\pm 10\%$ according to the certificate.

Series of products standard shipment, refresh 2400HZ; maximum refresh 3840HZ. There is a difference in the grayscale level of products with different scanning methods at the same refresh setting moment. Specifically, we can consult the R&D to customize the refresh and other parameters according to the customer's needs. VDS products using A8S and higher configurations can be Enable picture quality engine requirements, custom grayscale correction and grayscale 18bit requirements.

1.2. Functional Analysis of Display Unit Structure

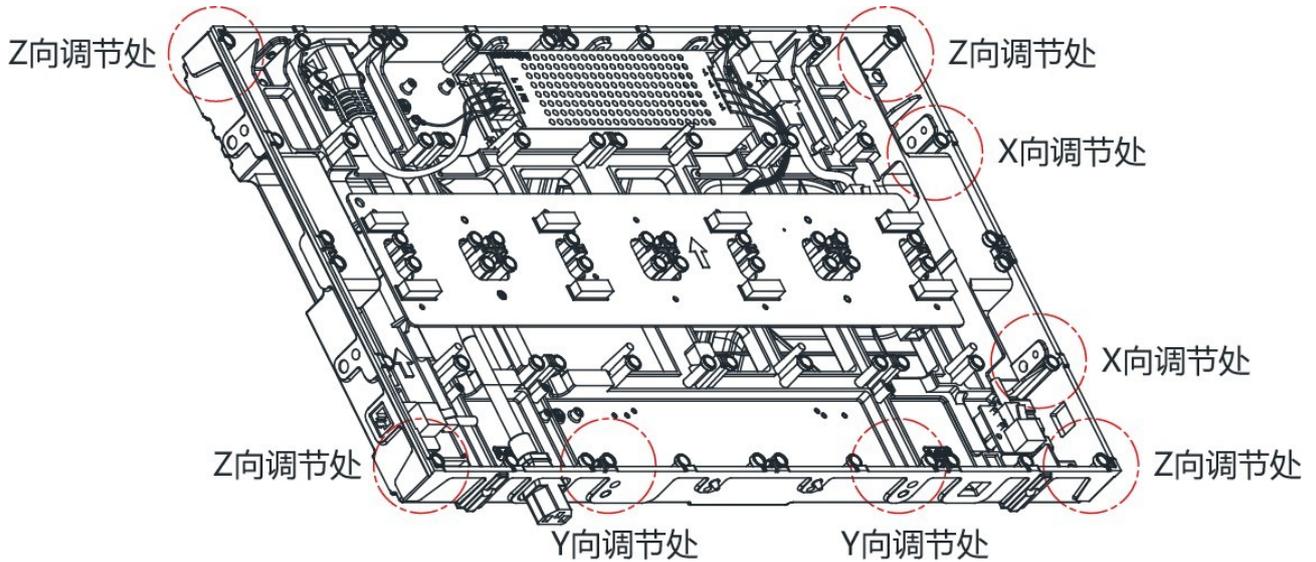
■ Display Unit Dimensions (Unit: mm)



As shown in the figure, there are front and rear mounting holes for the display unit box, the front mounting is standardized with M5×12mm hexagon socket head cap screws; the rear mounting is divided into two ways: the connecting plate is standardized with M5x12mm hexagon socket head cap screws without spanning the rod, and the connecting plate is standardized with M5x12mm hexagonal socket head cap screws without spanning the rod, and the size of the rod should be added on top of the length of the connecting plate without spanning the rod, and the screws of this kind of mounting are provided by the engineers or submitted by the engineers and provided by the factory. The installation screws for this type of installation should be provided by the engineers themselves or the factory will provide the screws on behalf of the engineers when they submit the screws.

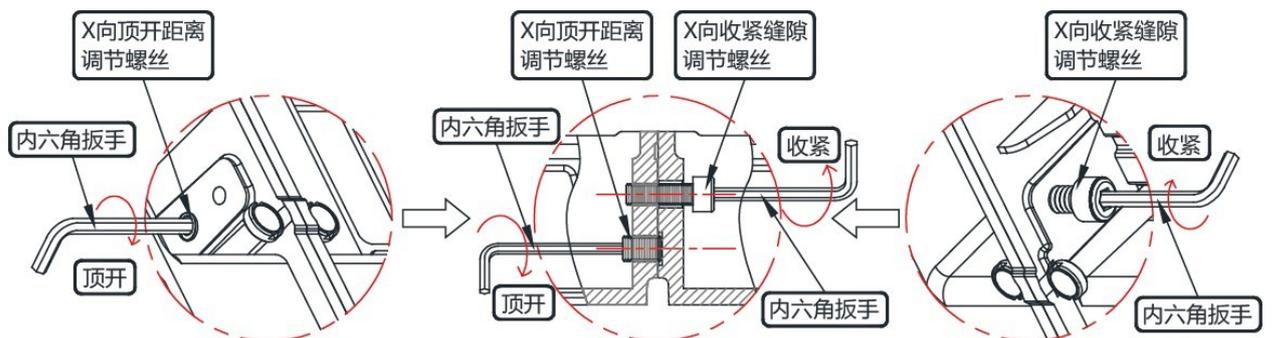
■ Six-way adjustment function introduction

As shown in the figure below, the red coils are at the adjustments for each direction of the six-way function.



Using the six-way adjustment function during installation can effectively improve the installation accuracy of the LED screen; the following is a detailed description of the six-way adjustment:

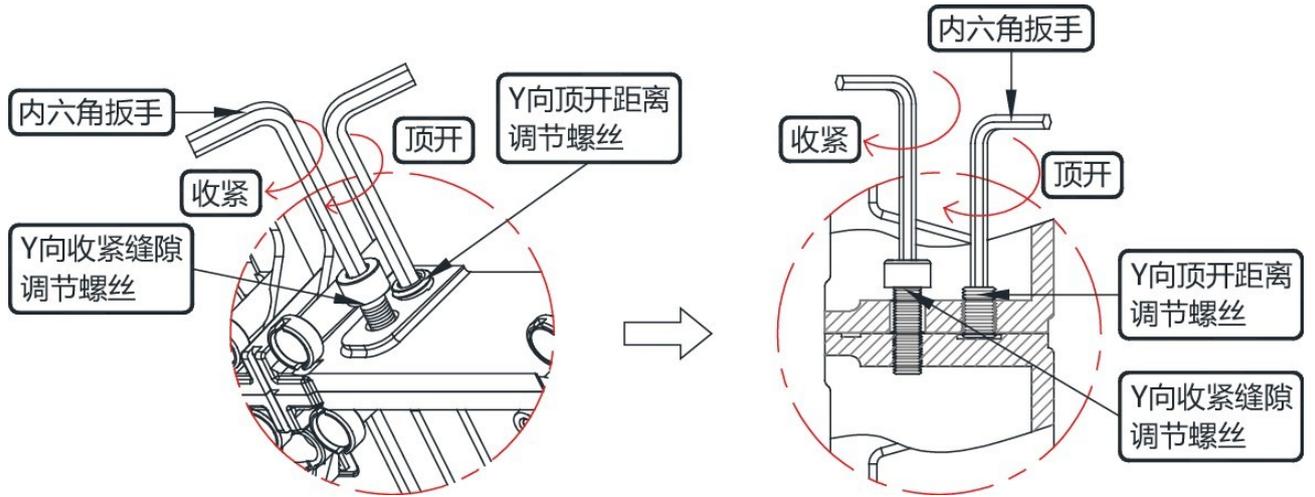
The right side of the display unit has a M5×35mm cylindrical head screw and a M6 hexagonal socket head screw at the top and bottom. These two screws are X-direction adjusting screws and the X-direction adjusting screws are mainly used to solve the gap adjustment between the left and right side of each display unit in the process of the installation of the display, and the specific adjusting method is shown in the figure below;



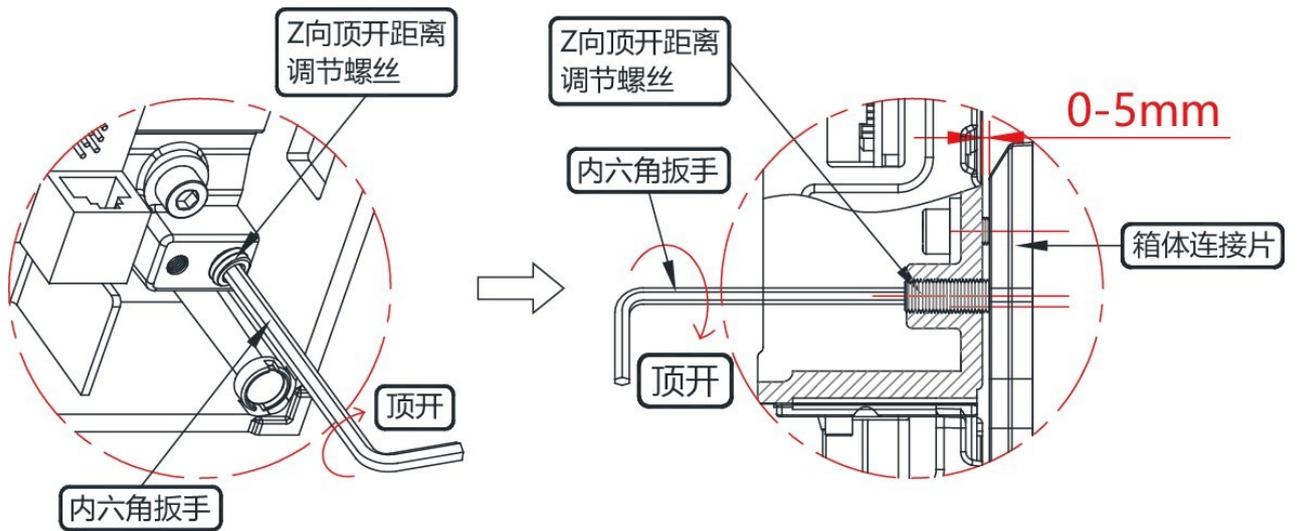
② Y-direction adjustment, there is an M5 * 35mm round head screw and an M6 inner hexagon kilometer screw on the left and right sides of the display unit. These two kinds of screws are Y-direction adjustment screws. The Y-direction adjustment function mainly solves the problem of the installation process of the display screen. The gap adjustment between the upper and lower display units is shown in the figure below for the specific adjustment method;

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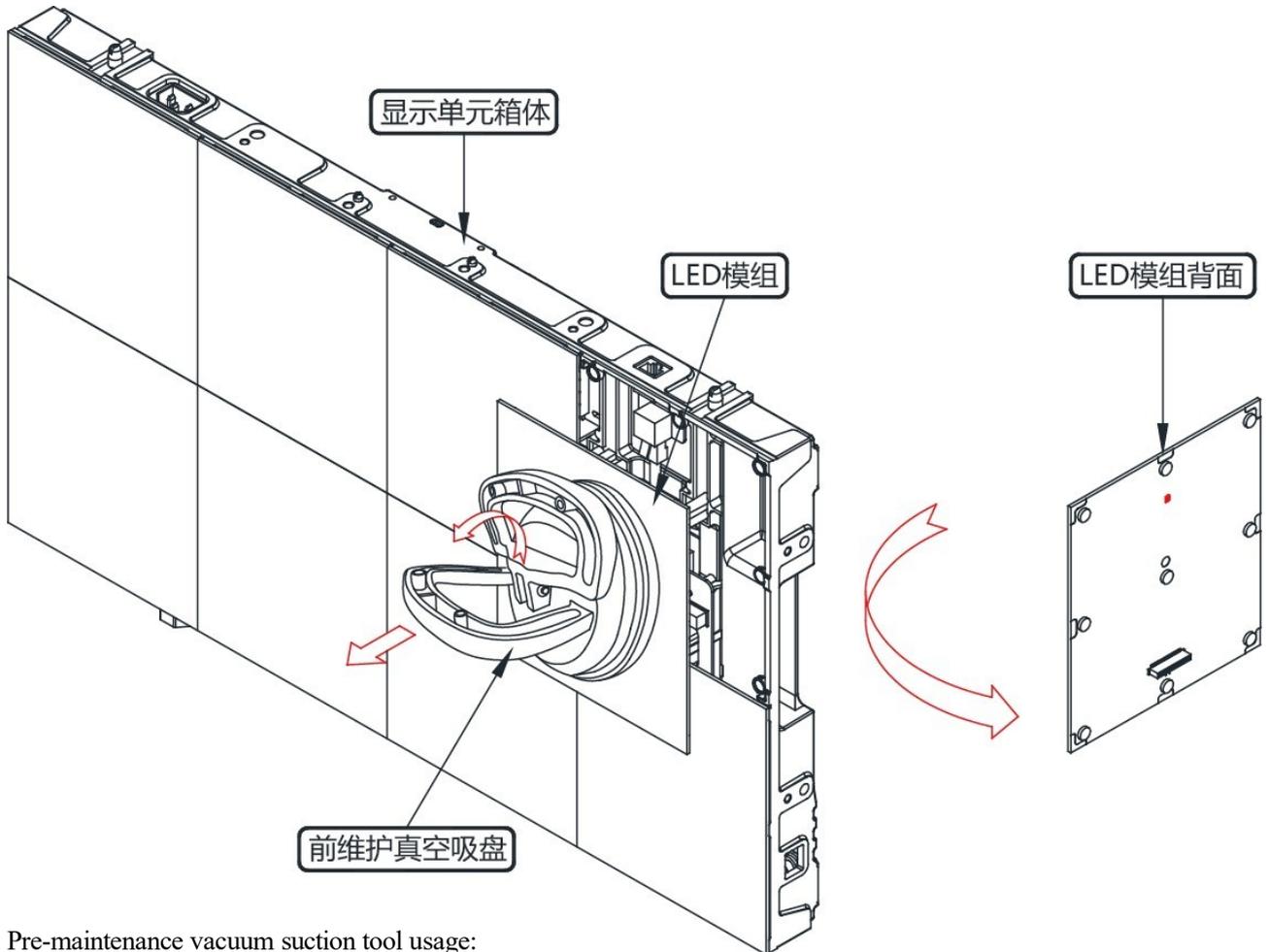


③ Z-adjustment, box mounting holes 4 corners of the Z-adjustment function, this function can adjust the display due to the installation environment caused by the problem of unevenness between the unit box, the adjustment range of 0-5mm between the specific adjustment method, see the following chart.



1.3. Product Maintenance Methods

This product is a full pre-maintenance product, and the following are the detailed operating procedures for pre-maintenance:



Pre-maintenance vacuum suction tool usage:

① As shown in the following figure, use the VDS pre-maintenance vacuum tool to remove the LED module from the front of the display unit case, After removing the LED module, you can see the power supply and driver board inside the case, and you can use a Phillips screwdriver to remove the corresponding components that need to be overhauled for overhauling, and turn over the back of the module for overhauling the electronic components on the back of the module; see the following figure for specific operation:

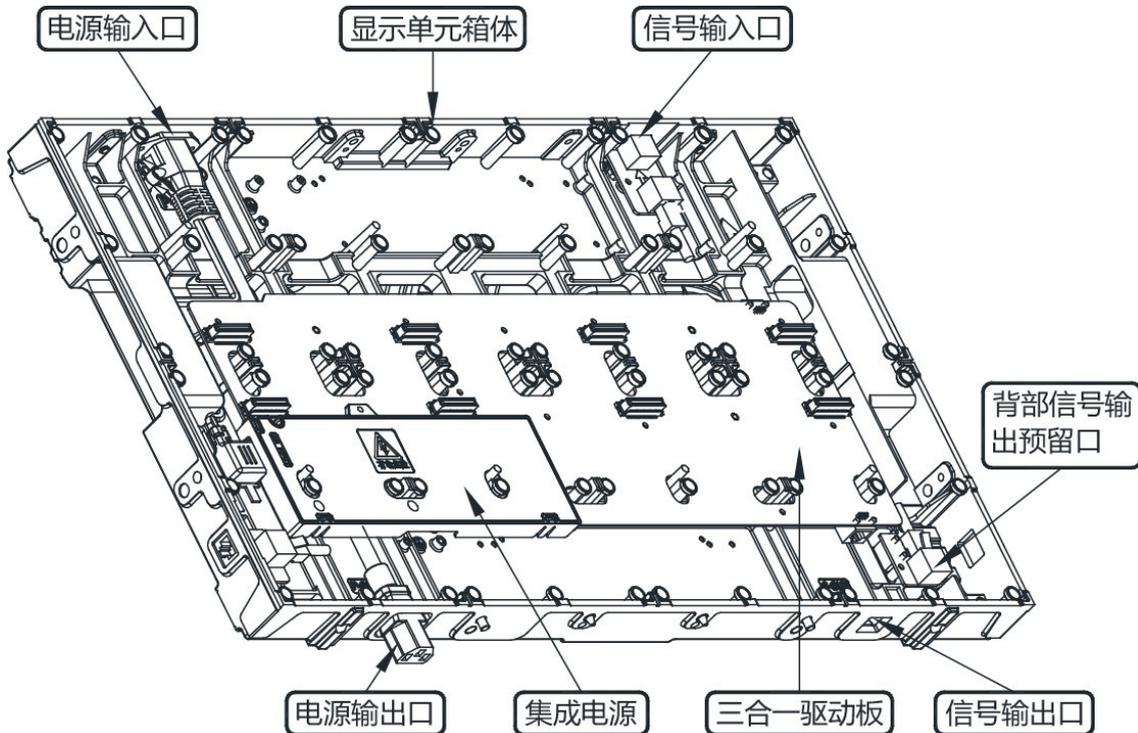
1. Attach the vacuum tool to the front of the LED module;
2. As shown in the above figure, pull the movable handle to the fixed handle, at this time, the vacuum suction cup has already firmly sucked the LED module, hold the handle and pull it outward to remove the LED module;
3. Reverse the handle to release the removed LED module.

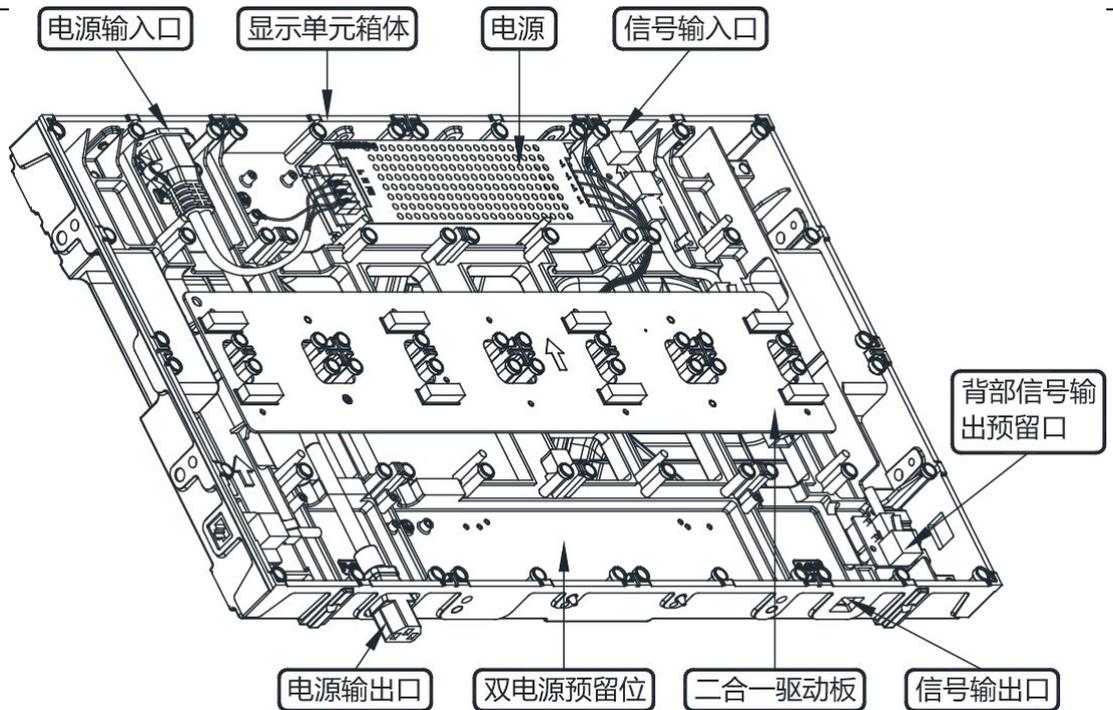
② LED module flatness adjustment in the unit box, if there is unevenness between LED modules in the unit box, use VDS quill magnet adjustment tool to adjust the height of the magnetic column in the unit box to solve the problem, the magnetic column can be adjusted within the range of 0-1mm, the specific operation is shown in the following figure:



③ This product driver board has three-in-one and two-in-one two kinds, three-in-one for the default standard, two-in-one optional single / dual power supply and single / dual signal, the specific function see the following chart.

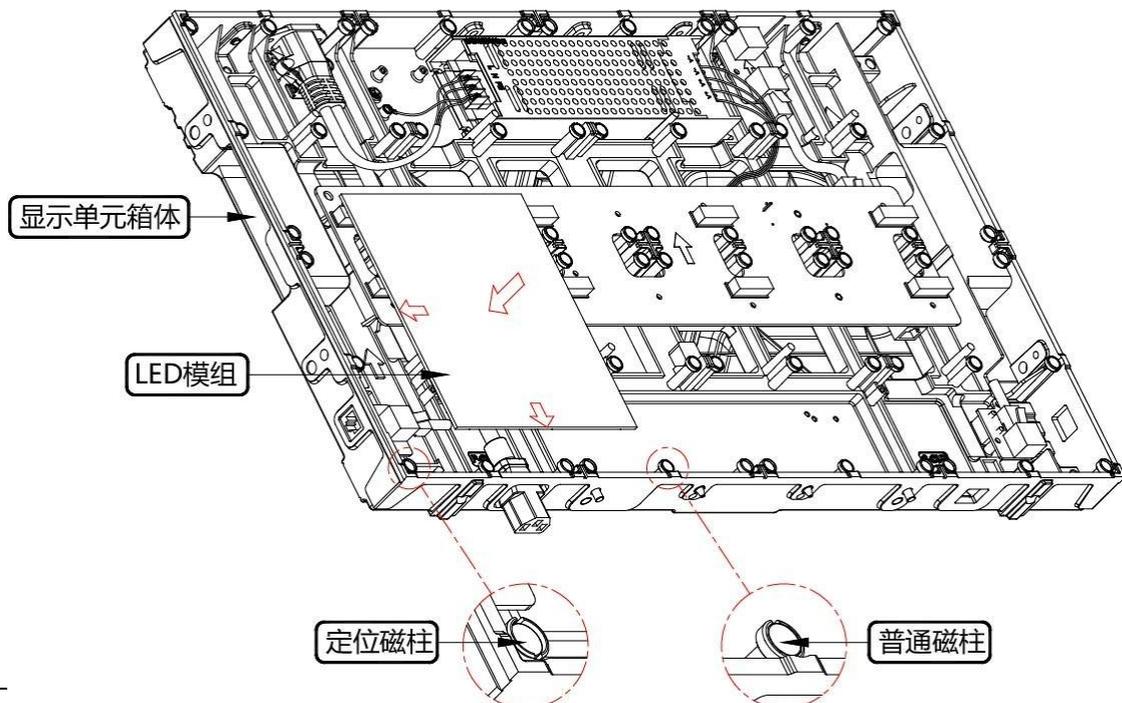
Three-in-one configuration product internal structure diagram





2-in-1 Configuration Product Internal Structure Diagram

④ After the maintenance of the product is finished, the LED modules should be installed back according to the following figure, the module installation rule is left-right or right-left, and the installation should be positioned from the corner position, see the following figure. (Special Note: Non-professionals are prohibited from dismantling the LED display unit for maintenance or changing the internal wiring, which may result in serious consequences such as damage to the product and potential safety hazards!)



2 Control systems

1.1. receiver card

The physical appearance of the receiver card is shown below:



Model:

The Age of Refinement III

1G: Receiver Card X700-I / Triplex

5G: LSA5GE Leader 5G

1.2. Interface Description

Indicator light	color	state of affairs	clarification
Operation Indicator Light	green	Blinks 1 time at 1s intervals	The receiver card works normally, the network cable is connected normally, and there is a video source input
		Blinks 1 time at 3s intervals	Abnormal network cable connection
		Blinks 3 times at 0.5s intervals	Normal network cable connection, no video input source
		Blinks 1 time at 0.2s interval	Failed to load the application area program and enter the backup program working state
		Blinks 8 times at 0.5s intervals	Redundancy switchover occurs on the network interface and loopback takes effect
Power indicator	red (color)	Ever Bright	Power input normal

1.3. screen controller



indicator light

RUN	Device operation indicator, slow blinking when no video source (frequency is on for 2 seconds, off for two seconds).
	Blinks normally when there is video source input (about two blinks per second).
	The receiver card flashes fast when it displays the power-up screen.
	Breathing blinks when redundancy occurs with a net port.
STATUS	Equipment operation indicator two, normal operation is always on, breathing blinking when authorized.



interface panel

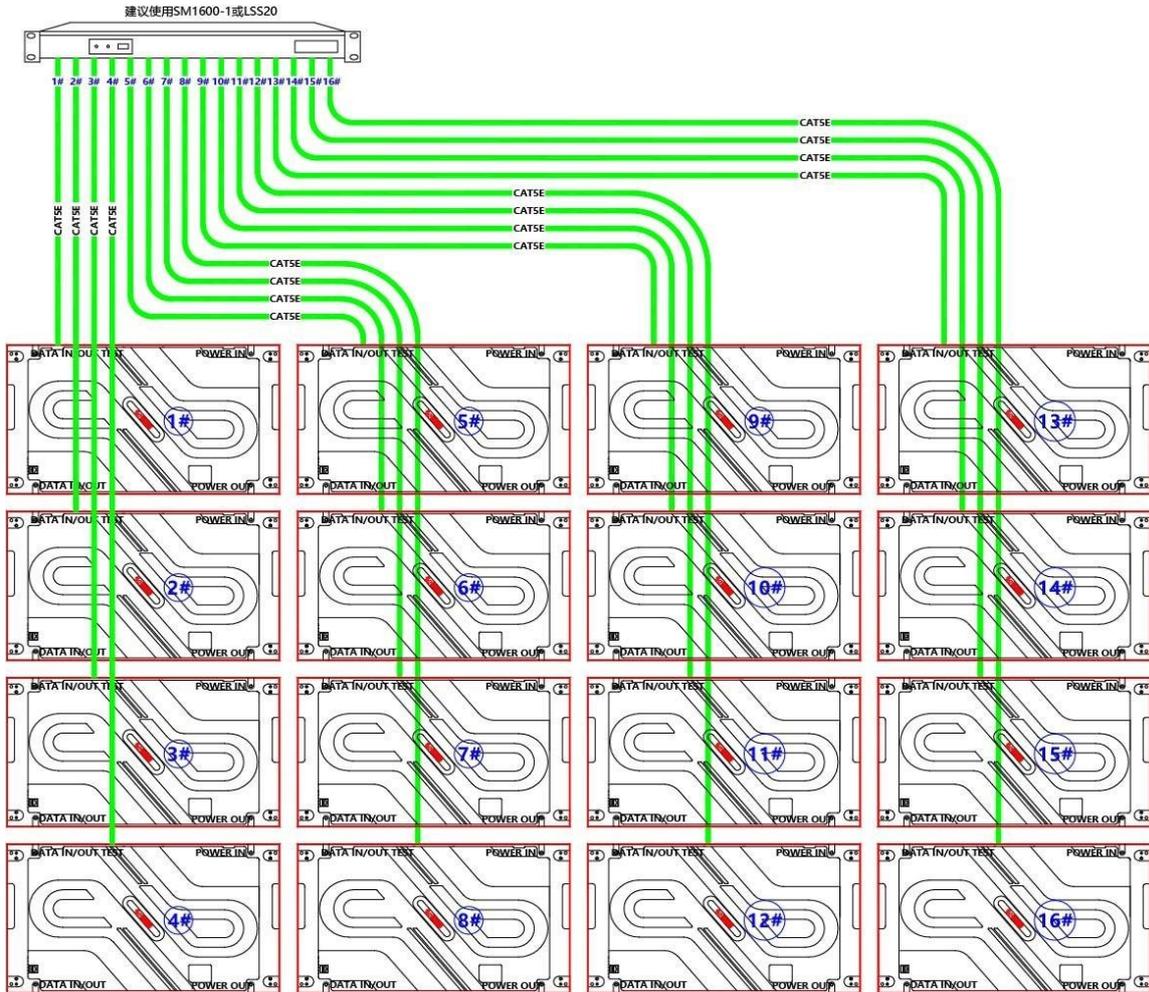
input source	AUDIO Audio Input Connector
	DVI IN DVI Input Connector
	HDMI IN HDMI input connector
indicator light	Same as front panel
output interface	OUT1-4 4-way network port outputs
control interface	USB to Computer, USB Control Interface
	UART IN, OUT Cascade Inputs and Outputs
Functional interface	LIGHT SENSOR
electric power source	AC-100-240V-50/60HZ AC Power Interface

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1.4. Example Single Signal Alignment Schematic:

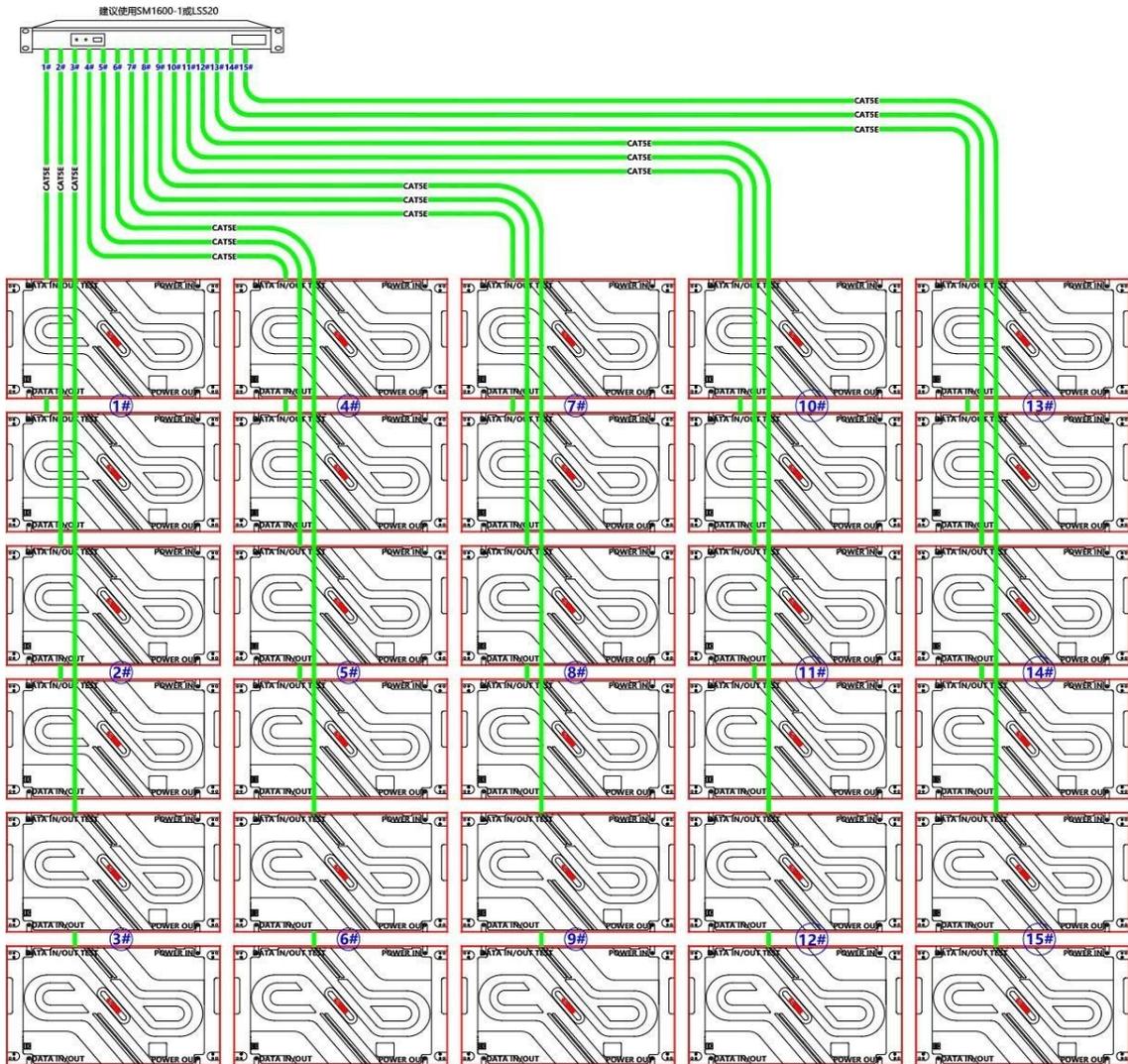
Example 1: VDS007 (one box, two cards) a single unit box resolution of 768X432, the conventional program: a network cable with a maximum of 1 box loaded

(Rectangle), support for top and bottom overline, using 4K sender card as an example, 4K area arrangement: 4 * 4, the total resolution of 3072x1748, see the figure below:



VDS007 Single Signal Alignment Schematic

Example 2: VDS009 (one box, one card) single unit box resolution of 640X360, conventional solution: one cable with a maximum of 2 boxes (Rectangle), support for top and bottom over the line, using the 4K sending card as an example, 4K area arrangement: 5 * 6, the total resolution of 3200x2160, see the figure below:



VDS009 Single Signal Alignment Schematic

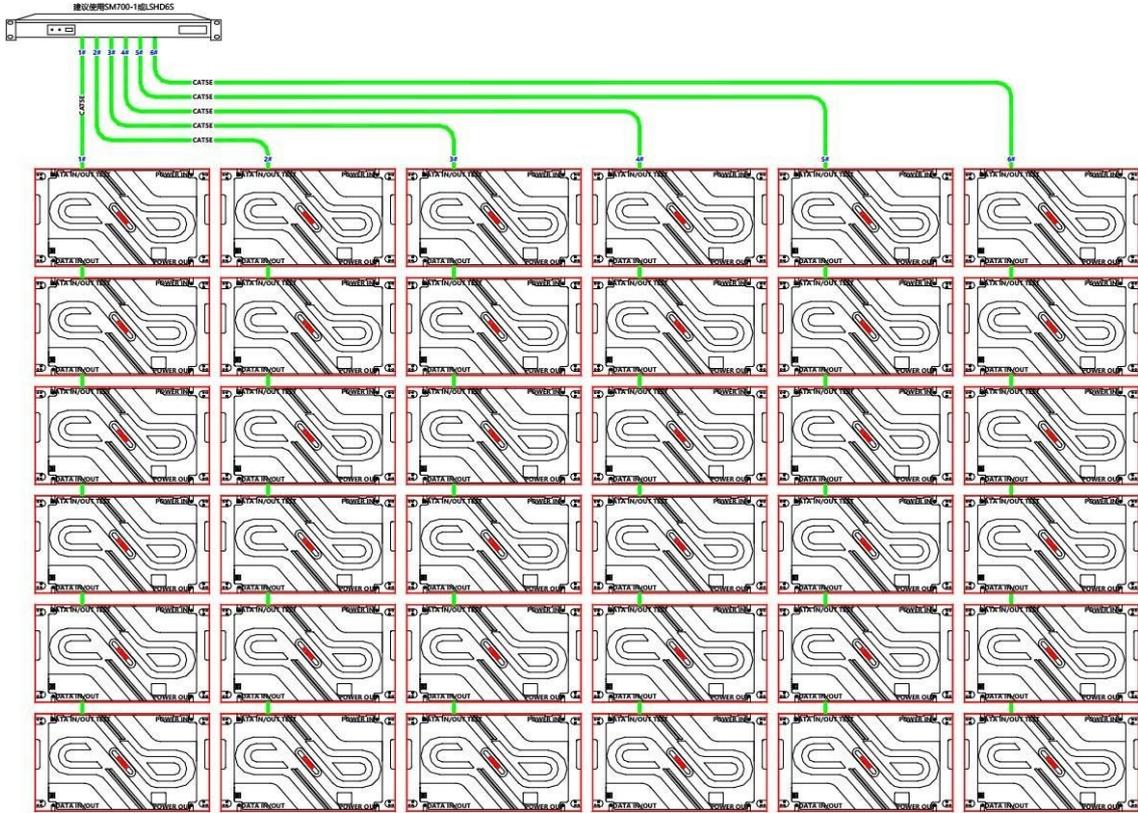
Example 4: VDS015 (one box, one card) a single unit box resolution of 384 * 216, the conventional program: a network cable with up to 7 boxes (rectangular), support for the upper and lower over the line, the use of 2K sending card, for example, the 4K region is arranged as follows: 5 * 5, the total resolution of 1920 * 1080, see the figure below:



VDS015 Single Signal Alignment Schematic

Example 5: VDS018 (one box, one card) single unit box resolution of 320 * 180, the conventional program: a network cable with a maximum of 11 boxes

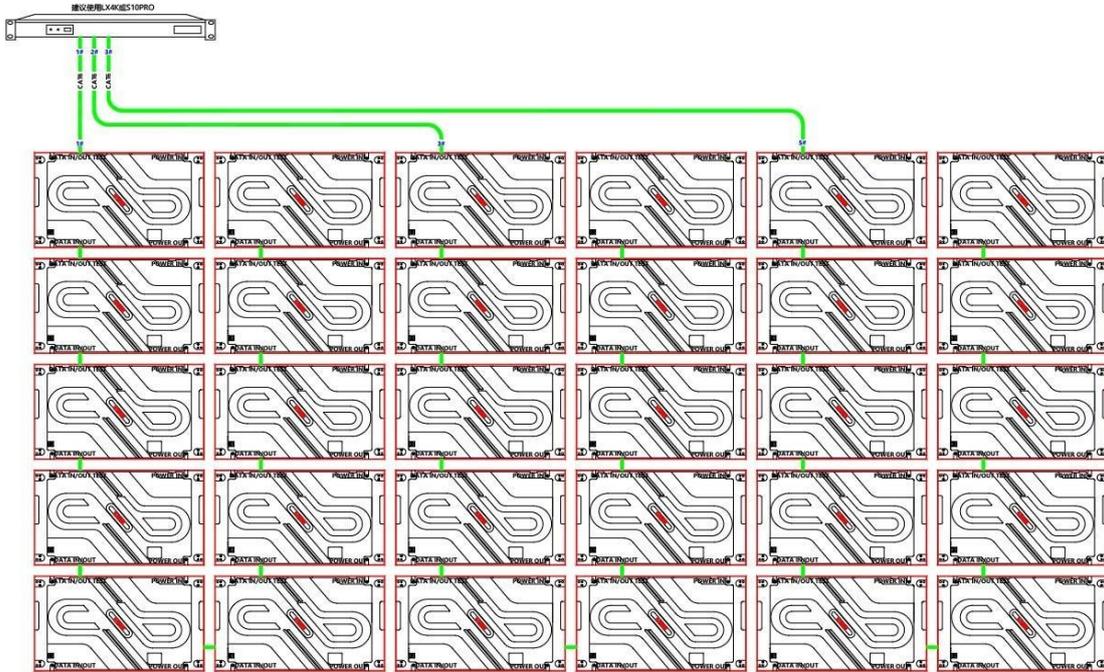
(Rectangle), support the top and bottom of the line, using the 2K sending card as an example, 4K area arrangement: 6 * 6, the total resolution of



1920 * 1080, see the figure below:

VDS018 Single Signal Alignment Schematic

Example 2: VDS009 (one box, one card) Single unit box with a resolution of 640x360, 5G scheme: Maximum bandwidth on one cable: 10 boxes (Rectangle), support for up and down, left and right over the line, using 4K send card as an example, 4K area arrangement: 6 * 5, the total resolution of 3840 * 2160, see the figure below:
VDS009 5G Signal Alignment Diagram

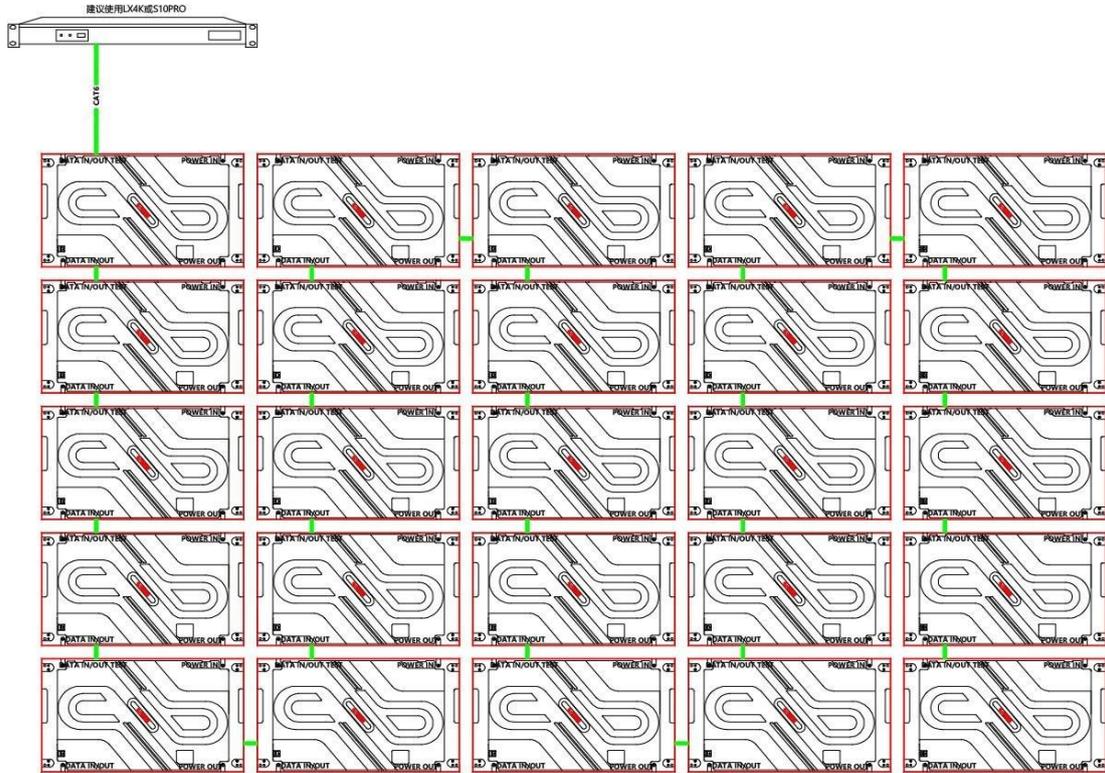


Example 3: VDS012 (one box, one card) Single unit box with 480x270 resolution, 5G scheme: Maximum bandwidth on one cable: 20 boxes (Rectangle), support for up and down, left and right over the line, using 2K send card for example, 4K area arrangement: 4 * 4, the total resolution of 1920 * 1080, see the following figure:



VDS012 5G Signal Alignment Schematic

Example 4: VDS015 (one box, one card) with 384x216 resolution for a single unit box, 5G scheme: Maximum bandwidth on one cable: 35 boxes (Rectangle), support up and down, left and right over the line, using 2K send card for example, 4K area arrangement: 5 * 5, the total resolution of 1920 * 1080, see the figure below:



VDS015 5G Signal Alignment Schematic

Example 5: VDS018 (one box, one card) Single unit box with 320x180 resolution, 5G scheme: Maximum load on one cable: 20 boxes (Rectangle), support up and down, left and right over the line, using 2K send card for example, 4K area arrangement: 6 * 6, total resolution of 1920 * 1080, see the following figure:



VDS018 5G Signal Alignment Diagram

1.6. List of signal bandwidth:

1G Signal Bandwidth						
Product Model	Single box resolution	network cable	Number of carriers	transponder card	Box layout	full screen resolution
VDS007	768*432	CAT5E	1	4K Transmitter Card	4*4	3072*1748
VDS009	640*360	CAT5E	2	4K Transmitter Card	5*6	3200*2160
VDS012	480*270	CAT5E	4	2K Transmitter Card	4*4	1920*1080
VDS015	384*216	CAT5E	7	2K Transmitter Card	5*5	1920*1080
VDS018	320*180	CAT5E	11	2K Transmitter Card	6*6	1920*1080
5G Signal Bandwidth						
Product Model	Single box resolution	network cable	Number of carriers	transponder card	Box layout	full screen resolution
VDS007	768*432	CAT6	5	5G Transmitter Card	4*5	3072*2160
VDS009	640*360	CAT6	10	4K Transmitter Card	6*5	3840*1800
VDS012	480*270	CAT6	20	2K Transmitter Card	4*4	1920*1080

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VDS015	384*216	CAT6	35	2K Transmitter Card	5*5	1920*1080
VDS018	320*180	CAT6	55	2K Transmitter Card	6*6	1920*1080

3 Distribution Banding Description

1.1. Calculation of total display power

Total power of display = total power of screen + total power of peripheral equipment + total power of heat dissipation equipment

① Switching power supply power: Output voltage (V) × output current (A) = single power supply power (W)

② Total screen power:

Method (1): Number of boxes used × box power

Method (2): Number of screen area × maximum power per square × 120% (20% reserved for switching power supply)

(Note: the maximum power per square meter of the screen body, see the corresponding product model specifications)

(iii) Peripheral equipment: processor, lighting behind the screen about 2KW

④ Heat dissipation equipment: air conditioning power $\approx 10m^2/P \approx 800w$ (e.g. $30m^2$ screen needs heat dissipation air conditioning 3P, then the total power is $800w \times 3$)
 = 2.4kw)

1.2. Distribution cabinet cable type selection

Distribution model (KW)	Incoming cable type (MM ²)	Maximum current (A)	Minimum line pipe (mm)
10KW Power Distribution Cabinet	YJV5×6	25	25
20KW Power Distribution Cabinet	YJV5×10	50	50
30KW Power Distribution Cabinet	YJV5×16	65	50
40KW Power Distribution Cabinet	YJV4×25+1×16	85	50
50KW Power Distribution Cabinet	YJV4×35+1×16	105	65
60KW Power Distribution Cabinet	YJV4×35+1×16	125	80
80KW Power Distribution Cabinet	YJV4×50+1×16	150	80
100KW Power Distribution Cabinet	YJV4×70+1×16	190	100
120KW Power Distribution Cabinet	YJV4×120+1×70	235	120
150KW Power Distribution Cabinet	YJV4×185+1×95	300	150
200KW Power Distribution Cabinet	YJV4×240+1×120	412	150

Note: It is generally stipulated that in important fire prevention places, such as airports, railway stations, the Great Hall of the People and other densely populated areas, the cables leading from the customer's distribution room to the display distribution cabinet are required to be low-smoke, halogen-free, flame-retardant cables, No.: WDZB(C)- YJY-. Other general conventional places can choose cross-linked power cable, No.: YJV or YJY, this cable is more tensile. Outdoor places may also encounter the requirement for cables to be buried directly in the ground, this cable requires Armored (jacket jacket with a layer of metal skin), commonly used number: YJV22- or YJV23-, etc., this cable has a large bending radius, is not convenient to lay.

1.3. Lazard Engineering Distribution Cabinet Model Description

Distribution Cabinet Model	10KW Power Distribution Cabinet	20KW Power Distribution Cabinet	30KW Power Distribution Cabinet	40KW Power Distribution Cabinet	50KW Power Distribution Cabinet	60KW Power Distribution Cabinet
Distribution cabinet size MM (W)x(H)x(D)	400×600×200	500×700×200	600×800×200	600×1000×200	600×1000×200	600×1200×200
Distribution cabinet weight (KG)	10	15	20	25	30	40
Installation	mount					
Power supply method	AC380V three-phase five-wire system					
Distribution cabinet feeder (MM ²)	YJV5×6	YJV5×10	YJV5×16	YJV4×25+1×16	YJV4×35+1×16	YJV4×35+1×16
Output voltage and number of circuits	AC220 6 way	AC220 9 way	AC220 12 way	AC220 15 way	AC220 18 way	AC220 24 way
Distribution cabinet main circuit breaker	D25A/3P	D40A/3P	63A/3P	80A/3P	100A/3P	125A/3
communication interface	RJ45,RS232.RS485					
Key Features	Short-circuit, over-current, over-voltage protection, PLC remote switch, timer display function					

The above is a selection of standard distribution cabinet parameters commonly used for indoor screens. The description is as follows:

When the peak power of the display does not exceed 10KW, use the 10KW standard distribution cabinet in the above table, and the input voltage is

three-phase AC380V. At the same time, distribution cabinets above 60KW need to be used in conjunction with breakout boxes.

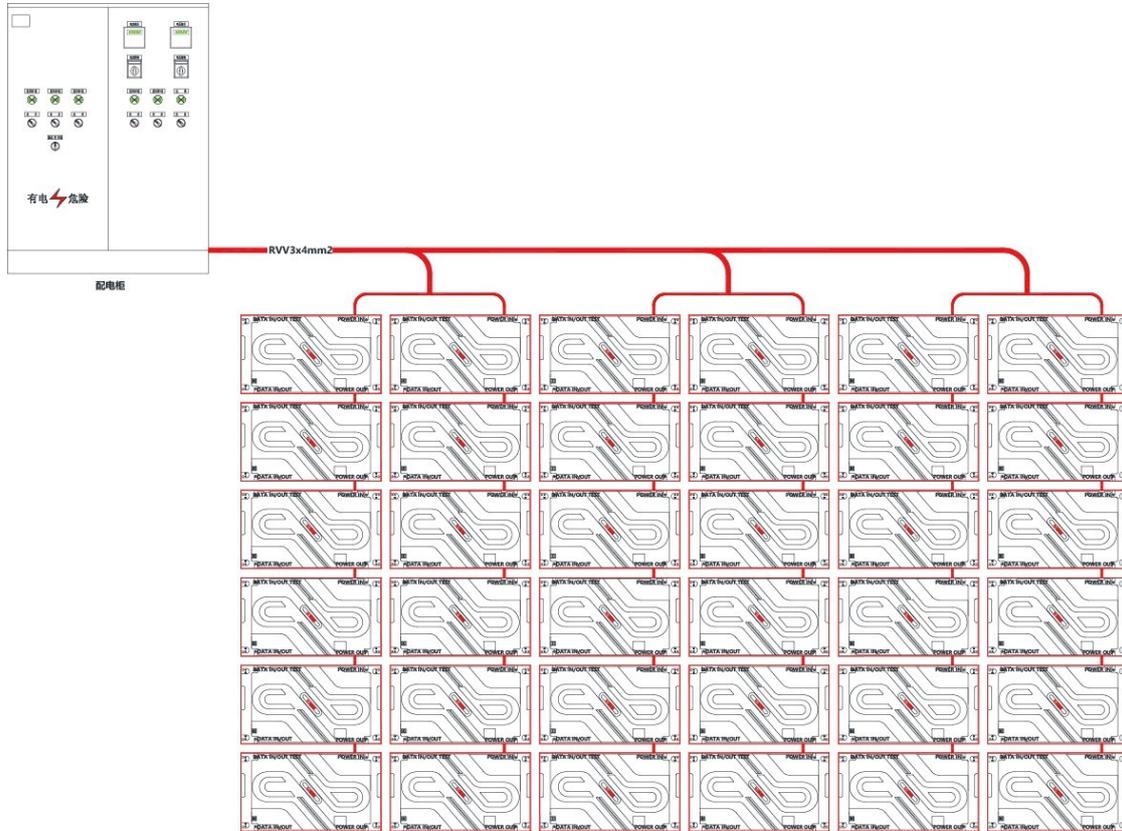
10KW-60KW The output of the power distribution cabinet is AC220V, which directly supplies power to the display. The output of 80KW-200KW power distribution cabinet adopts AC380V, and it should be equipped with 20KW or 30KW breakout box to supply power to the display.

Distribution cabinets (breakout boxes) all adopt step-by-step starting to reduce the impact of the distribution cabinet to the power grid. Each step is powered by more than 8KW. The cable from the power distribution cabinet to the display screen routinely adopts RVV3*4MM² (branch line). For VDS series products, one

RVV3*4MM² (branch wire) shall not carry more than 18PCSVDS cases.

1.4. Example Distribution Connection Diagram

VDS Box Arrangement (W) 6 x (H) 6 Distribution Connection Diagram:



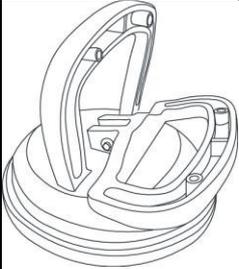
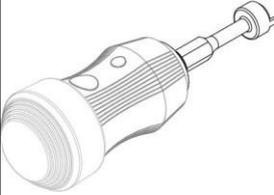
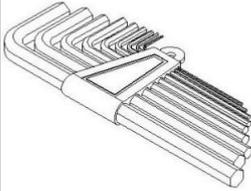
VDS Distribution Connection Diagram

4 Product Installation Program

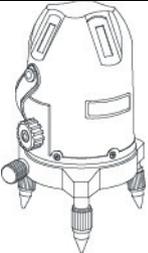
1.1. Pre-installation

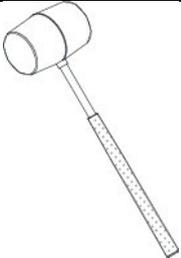
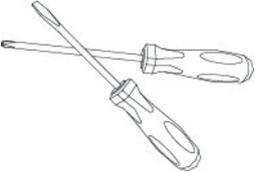
Before installation, you need to prepare the product corresponding supporting the necessary tools, installation of general tools, product installation accessories and operational protective gear, of which the necessary tools and product installation accessories equipped by the project, installation of general tools and operational protective gear by the construction personnel equipped with their own.

① Necessary tools:

tool pattern			
Tool name	Front Maintenance Vacuum Chucks	VDS Bushing Magnet Adjustment Tool	Allen key

② Installation of general-purpose tools

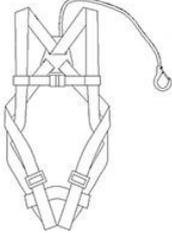
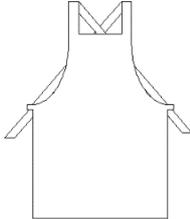
tool pattern				
Tool name	laser level	gimlet	multimeter	pliers

tool pattern				
Tool name	rubber mallet	adjustable wrench	tape rule	screwdrivers

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③ Installation of defense equipment:

morphology of body armor (traditional)				
Name of Defense	safety helmet	Seat belt buckle	protective gloves	protective apron

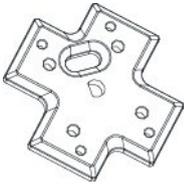
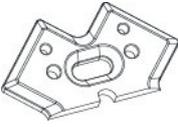
Remarks: Installation of screws after spanning the pole requires the project manager to choose the length of the screws according to the actual demand of the steel structure at the site, and the length of the screws is calculated as follows: 16mm + the size of the spanning pole = equal to the length of the screws for the actual demand.

1.2. Installation program introduction

① Conventional pre- installation program:

This mounting solution is suitable for all wall-mounted, seat-mounted and embedded mounting without any requirement on the thickness of the display, etc. The installation is simple and level:

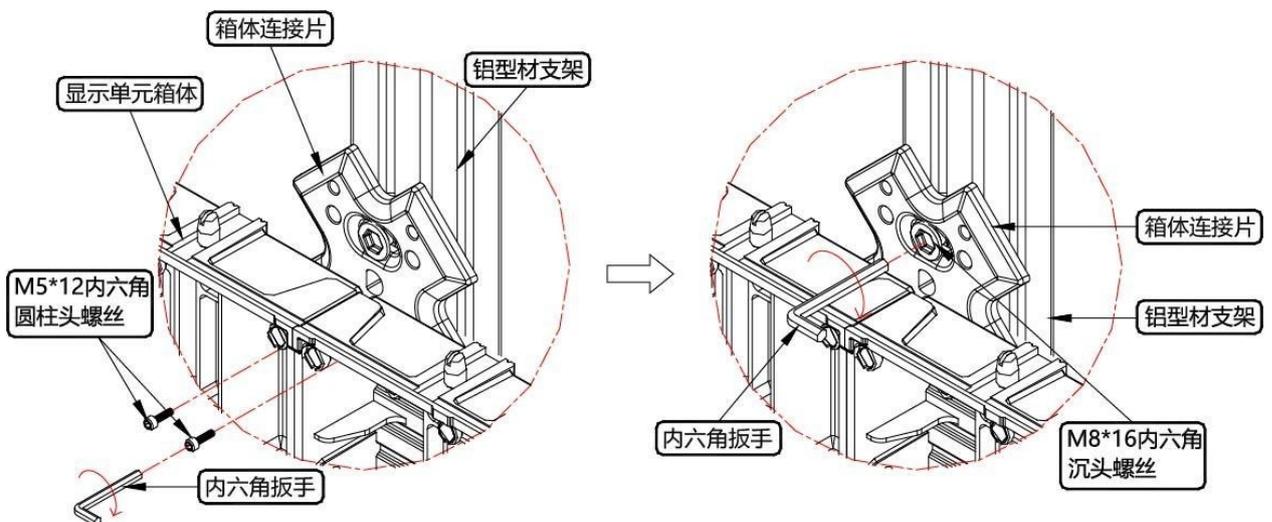
Routine before the installation of the necessary accessories, this accessory is provided by the factory, please be sure to point out the number of accessories before installation, accessories specific see the following table:

Accessory form				
Accessory Name	Box connecting piece A	Box connecting piece B	M5*12 Cylinder head hexagon socket screws	M8*16 Countersunk head hexagon socket screws

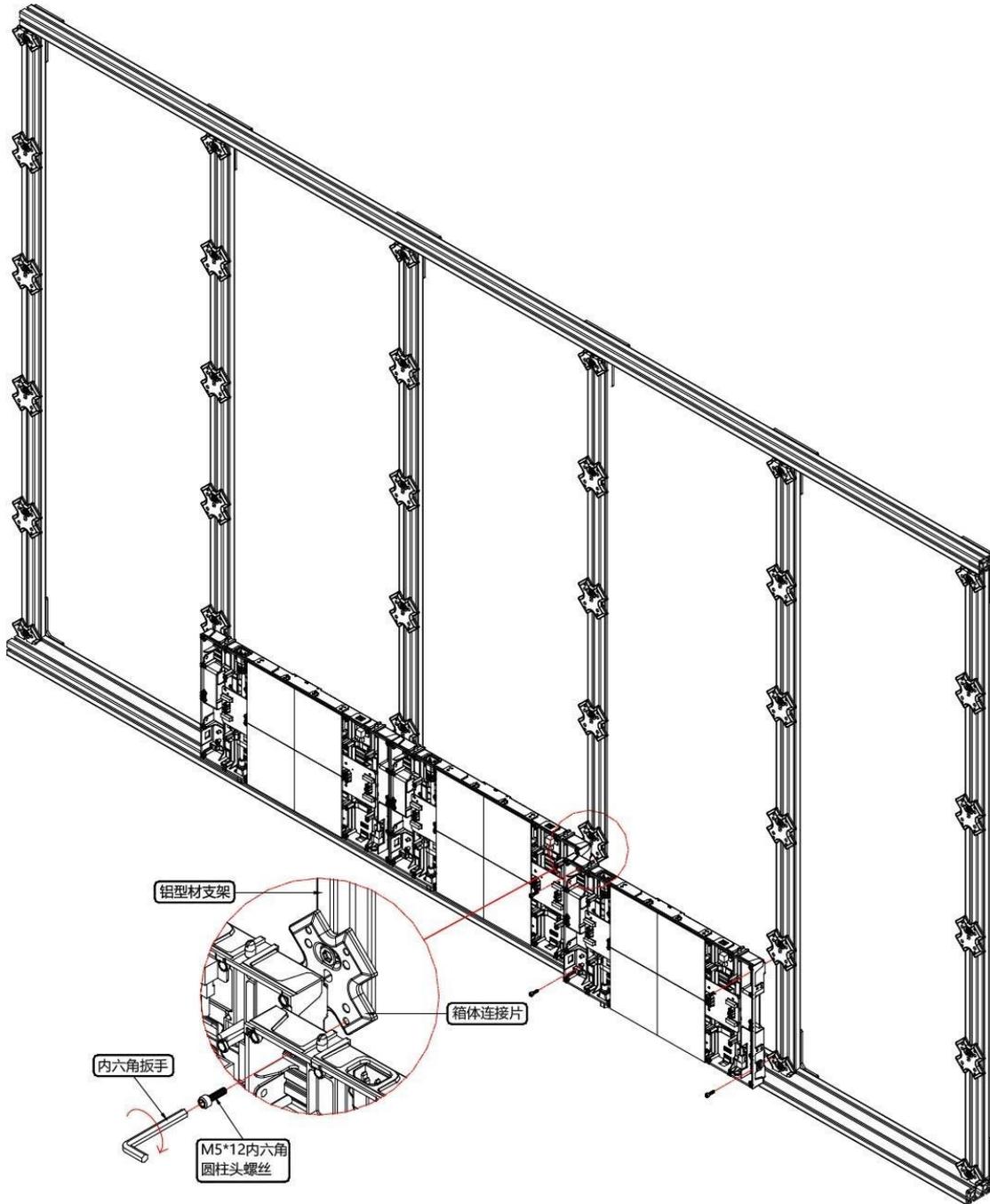
According to the steel structure design drawings of the project, first make and install the steel structure frame and aluminum bracket required for the LED screen according to the requirements, use M8*16mm hexagon socket countersunk head screws to lock the box connecting piece A/B on the corresponding aluminum bracket backing strips (if non-aluminum bracket is installed, please replace the M8*16mm hexagon socket countersunk head screws with $\phi 5$ mm tapping countersunk screws), and adjust the position of the box connecting piece by measuring with a tape measure. Measure and adjust the position of the box connecting piece with a tape measure and use a laser level to adjust the horizontal bottom box connecting piece on the same level;



After locking the first row of box connecting piece, the subsequent connecting piece are first locked in the aluminum bracket (if the steel frame without first lock), the subsequent connecting piece is not locked first, such as fixing the box and then lock the connecting piece and the aluminum bracket or steel frame connection, see the following figure for details:



According to the following chart in order to install all the unit box, box installation order, first from the bottom center to the sides of the installation in turn, each layer are installed in accordance with this rule.



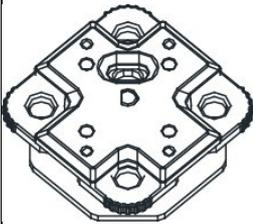
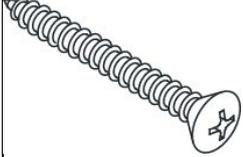
Cable connection Connect the relevant cables according to the project power distribution system diagram and system connection diagram.

After completing the electrical test with a multimeter, put the molded assembly back into the box to adjust the flatness and power on for debugging.

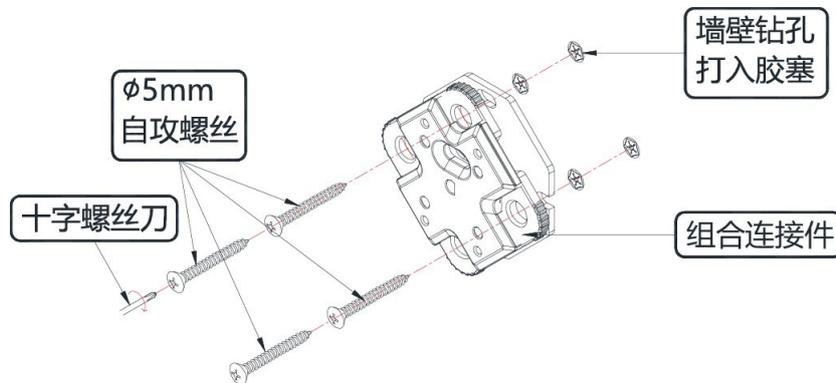
② Combination connector installation program:

This solution is suitable for installation in complex wall environments and has the advantage of eliminating the need for profile construction, with a total thickness of 30 mm for the combined connecting piece, as well as The Z-direction adjustment function has an adjustment range of 0-5mm; the following is the procedure for installing the combination connector:

Routine before the installation of the necessary accessories, this accessory is provided by the factory, please be sure to point out the number of accessories before installation, accessories specific see the following table:

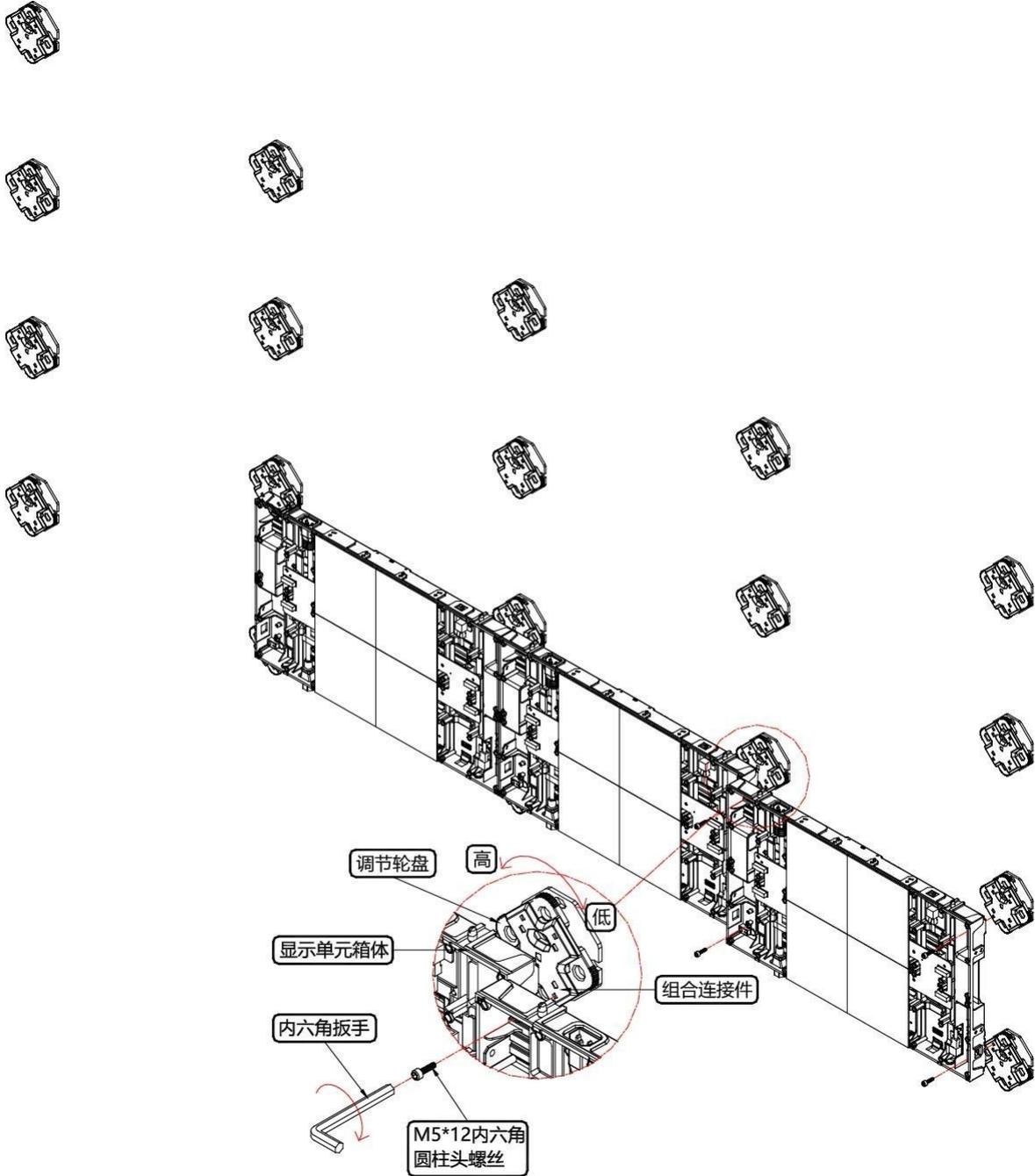
Accessory form				
Accessory Name	Combined connectors	M5*12 Cylinder head hexagon socket screws	gag	5mm self-tapping screws

According to the project steel structure design drawings, with a laser level and tape measure in the wall positioning, drilling and glue plugs (if the installation wall for the wood wall does not need to be drilled into the glue plugs, directly with self-tapping screws to fix the kit connecting piece can be), and then $\varnothing 5 * 40\text{mm}$ flat head self-tapping screws to fix the kit connecting piece of the holes in the wall, fixed all the kit connecting piece can be ready to install the unit boxes After fixing all the connecting pieces of the kit, you can prepare to install the unit box; see the following picture for specific installation.



According to the following chart in order to install all units of the box, every installation of a layer of the box can be adjusted in the combination of connectors to adjust the flatness of the box at the wheel disc, the box installation

order, starting from the bottom of the center in turn to the two sides of the installation, each layer in accordance with the rules of the installation;



Cable connection, according to the project power distribution system diagram, system connection diagram to connect the relevant cables;

After completing the electrical test with a multimeter, put the molded assembly back into the box to adjust the flatness and power on for

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debugging.

5 Common Failures and Solutions

fault description	cure
1. LED screen does not display images	1. Is the display power on.
	2. Whether the display has HDMI signal input, connect the LCD monitor to check whether it is caused by signal transmission link failure.
	3. Is the brightness setting of the display control software normal.
2. Some LED screens do not display images	1. Is the power supply to the display in the part that does not display an image normal, including the input power supply and the switching power supply.
	2. If no abnormality is found in the first step, restart the power switch of the relative area, with the interval between power-ups of not less than 1 minute, and re-initialize the display unit when re-powering up the unit may solve the problem.
	3. Display unit cascade cable transmission problems.
	4. If the display unit image of the replacement control board cannot be connected to the periphery, it is necessary to set the corresponding address coordinates and brightness color values using software.
3. Flickering images on some LED screens	1. Display unit cascade signaling problems. Try replacing the cascade signal cable or control board, such as the If the display unit image of the replacement control board cannot be connected to the periphery, it is necessary to use the software to set the corresponding address coordinates and brightness color values.
	2.. Input signal problem, check by connecting the LCD monitor.
	3. Processor resolution exceeds the maximum resolution of the sending card
	4. Problems with screen power supply
	1. Display unit initialization is not normal, restart the power supply of the area, the time interval is not less than 1 minutes, sometimes it may take 2-3 times to eliminate the problem.

4. LED display module display is not normal, part of the module color, long light, in a runaway or semi-state	2. If step 1 does not solve the problem, the preliminary caused by poor contact between the LED module and the can re-plug them to solve the problem of poor physical
	3. If the problem still exists in the above two steps, it is possible that the LED module or the control board may be identified the damaged Problems occurring in the road, you can replace the LED module or control board to solve the problem, you need to adjust its coordinated color brightness, so that it is consistent with the color of the leveling
	4. Setting the box resolution does not match the actual
5. Incomplete video image	1. Connect the LCD monitor to check whether the signal the video processor is normal.
	2. Check that the input signal resolution is the same as the setting has been saved.
	3. Check to see if the video processor is set up correctly.
6. Transmitter card not detected	1. Equipment not properly powered
	2. Damaged serial cable or computer USB port
	3. Serial port occupied by other software
	4. Serial port driver not installed on computer

When the LED display abnormalities, need to be based on experience, combined with different situations to comprehensively analyze which part of the display is the problem. If it is ultimately determined to be a problem with one of the components in the display unit, it is recommended that it be replaced directly in the field. For example, LED light board module, power supply or LED control board, etc. After replacing the LED module, you need to read back the data from the software to the LED control board, and after replacing the LED control board, you need to do the software setup, please refer to the chapter of Software Operation Guide for details.

6 Product use precautions and acceptance criteria

1.1. caveat

Since LEDs and CMOS integrated circuits are static-sensitive devices, care should be taken to prevent static electricity when using LED modules. Static electricity can be effectively prevented by taking the following measures:

Personnel in contact with the product must wear grounded static hand rings or static gloves

Switching power supply shell, box, screen and other strict grounding, grounding resistance is required ≤ 10 ohms, every six months for a point inspection;

All tools during assembly must be strictly grounded

② When cleaning the surface of LED module, do not use unknown chemical liquid to avoid damaging or corroding the LED:

To clean the LED tube, wipe gently with a clean, soft rag moistened with alcohol and allow to dry before starting to use;

To clean the kit, wipe it gently with a soft, clean cloth moistened with water, do not leave water marks after wiping, and dry it before use;

③ When repairing LED modules, it is recommended to use a constant temperature soldering iron, and the temperature of the soldering iron should be adjusted according to the composition of the tin wire:

When soldering LEDs, the temperature of the soldering iron is generally set at about 315°C, the soldering time is no more than 5s (preferably 3s), and the number of soldering times is no more than three;

When soldering CMOS devices, the temperature of the soldering iron must be kept below 315°C, the soldering time must not exceed 3s, and the number of soldering times must not exceed three;

④ To ensure the stability and service life of LEDs, the storage temperature should not exceed 60 °C, otherwise necessary cooling measures must be taken

In order to prevent the improper use of power supply from reducing the service life of the module or burning the module, the following precautions should be strictly followed when connecting the power supply to the LED module:

Use the switching power supply for LED display, the module adopts DC 4.2V input, and must not be directly connected to 220V, or it will cause the whole screen module to be burnt;

When installing LED modules, please pay attention to the correct wiring of the power port, the positive and negative poles must be opposite to each other; if the positive and negative poles are reversed, the power must be disconnected in time to avoid damaging the components;

Do not exceed the maximum allowable operating voltage of 5.5V

- ⑤ Modules are not recommended to be mounted by magnetic suction in the area of -10°C and below, which will affect the flatness of display by deformation of modules, and need to be mounted by screw locking;
- (vi) Require the distribution box to be equipped with lightning protection facilities such as surge protectors.
- ⑦ In the process of use and transportation, do not drop, push, squeeze or press the module to avoid damage to the module.
- ⑧ any product under certain conditions have a certain failure or malfunction may occur, the user is responsible for the use of the product in the process of compliance with safety standards and take safety measures to avoid the risk of potential failure and may cause personal injury or property damage occurs.

1.2. Acceptance criteria and methods for the whole screen

Screen Brightness: Set the screen to full brightness, set the brightness efficiency of the test software to 80% on the computer, and use the light gun to measure the brightness of the screen within 10 minutes. When measuring the brightness, the light gun is required to be aligned with the screen, it is best to keep the light gun level with the screen, make sure that the black position of the observation window covers more than 16 pixels, and adjust the focus so that you can clearly see the luminous point before measurement and reading.

Visual Angle: Measurement of people standing in the screen body around 160° position, the screen body under the viewing angle of 70° position to watch (i.e., the screen body vertical viewing angle of 140°), the requirements of the screen body is no obvious black spots, no obvious dark block problems

Grounding: switching power supply shell, box, screen structure is correctly grounded, the grounding point is correctly grounding labeling, the grounding resistance is required to be ≤ 10 ohms, every six months for a spot check;

Lightning treatment: buildings are required to have lightning rods or lightning belt facilities and effective grounding, the requirement of power distribution boxes with surge protectors, lightning protection facilities, every six months for a spot check.