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ARCHITECTURAL | ENGINEERING | DIGITAL

PIXON

Indoor Fine Pixel Pitch COB

Product Installation Manual

Design | Project Management | Service | Technical Support

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Contents

1. Product Overview

Pixon small-pitch COB product is newly designed, common cathode-driven displays ideal for indoor security monitoring, commercial exhibitions, education, and other fields.

PIXON Appearance

PIXON is a full front-maintenance product that supports both front and rear installation.
The features of PIXON 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 3W/cabinet;
- Optional configuration of dual card and dual power backup design;
- Die-cast cabinet are available with 45° cut edge and right-angle assembly design; Optional 5G receive driver design;

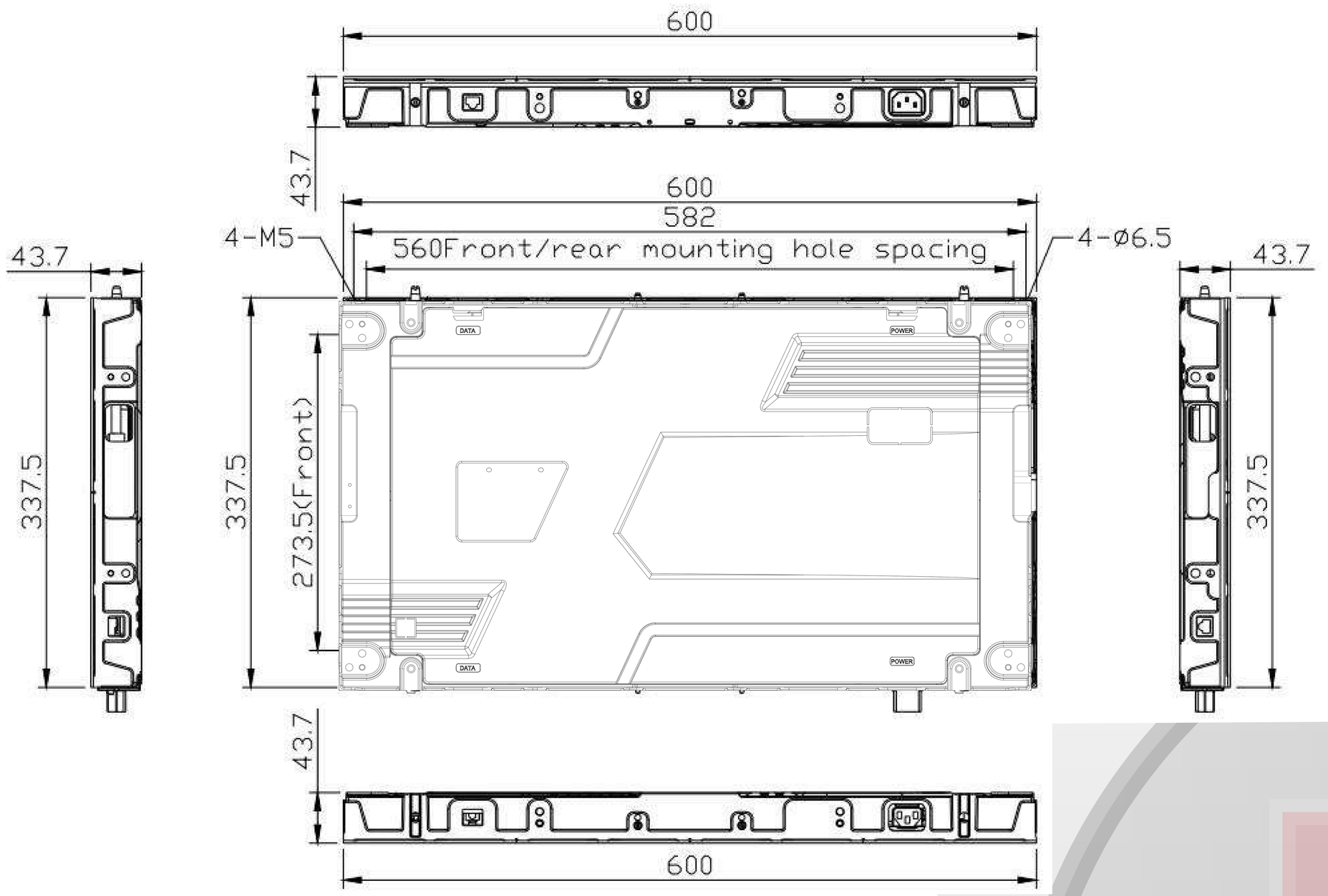
	Parameter Name	PIXON 007	PIXON 009	PIXON 012	PIXON 015	PIXON 018
Module	Pixel Structure	Full Flip Chip COB				
	Pixel Pitch (mm)	0.78	0.9375	1.25	1.56	1.875
	Module Resolution (W×H)	192×216	160×180	120×135	96×108	80×90
	Module Size (mm)	150×168.75				
Cabinet	Module Per Uint (W×H)	4×2				
	Resolution (W×H)	768×432	640×360	480×270	384×216	320×180
	Unit Size (W×H X D)	600×337.5×43.5 mm				
	Unit Area(m^2)	0.2025				
	Cabinet Weight (kg/m^2)	25				
	Pixel Density (pixel/$m^{2)}$	1638400	1137777	640000	409600	284444
	Surface Flatness (mm)	≤0.1				
Parameter	Brightness Calibration	Yes				
	Color Calibration	Yes				
	Brightness (nits)	600 (standard), 1000 (customized)				
	Color Temperature (K)	3000— 10000 adjustable				
	Horizontal Viewing Angle (°)	170				
	Vertical Viewing Angle (°)	170				
	Deviation of LED Luminance Center	< 3%				
	Brightness Uniformity (after calibration)	≥97%				
	Chromatic Uniformity (corrected)	Within ±0.003Cx,Cy				
	Contrast	10000:1& 20000:1				
Parameter	Max. Power Consumption(W /m^2)	425 & 550	375 & 530	325 & 510	325 & 510	300 & 500
	Avg. Power consumption(W /$m^{2)}$	200 & 280	175 & 265	160 & 260	160 & 260	150 & 250
	Input Voltage	A C 100~ 240V (50/60H z)				
	Drive Mode	Common cathode constant current drive				
	Frame Rate (Hz)	50& 60				
	Refresh Rate (Hz)	3840				
Parameter	LED Life - Span (Hours)	100,000				
	Ingress Protection	IP 54 (Surface Cleaning with Water)				
	Operating Temperature	-10 - -40				
	Storage Temperature	-20 - - 60				
	Operating Humidity	10 - 90%(No Condesation)				
	Storage Humidity	10 - 95%(No Condesation)				

Notes

The power consumption is the maximum power consumption parameter after correction and is not used as a power distribution parameter. The electrical parameters have a ±10% tolerance according to the certificate requirements.
Standard refresh rate is 2400HZ when shipped; the highest refresh rate is 3840HZ. Grayscale levels vary among products with different scanning methods, despite identical refresh rate settings. Please consult R&D for details and customize the refresh parameters according to customer needs.PIXON uses A8S and above configuration You can enable image quality engine requirements, customize grayscale correction and grayscale 18bit requirements.

1.1. Functional Analysis of Display Unit Structure

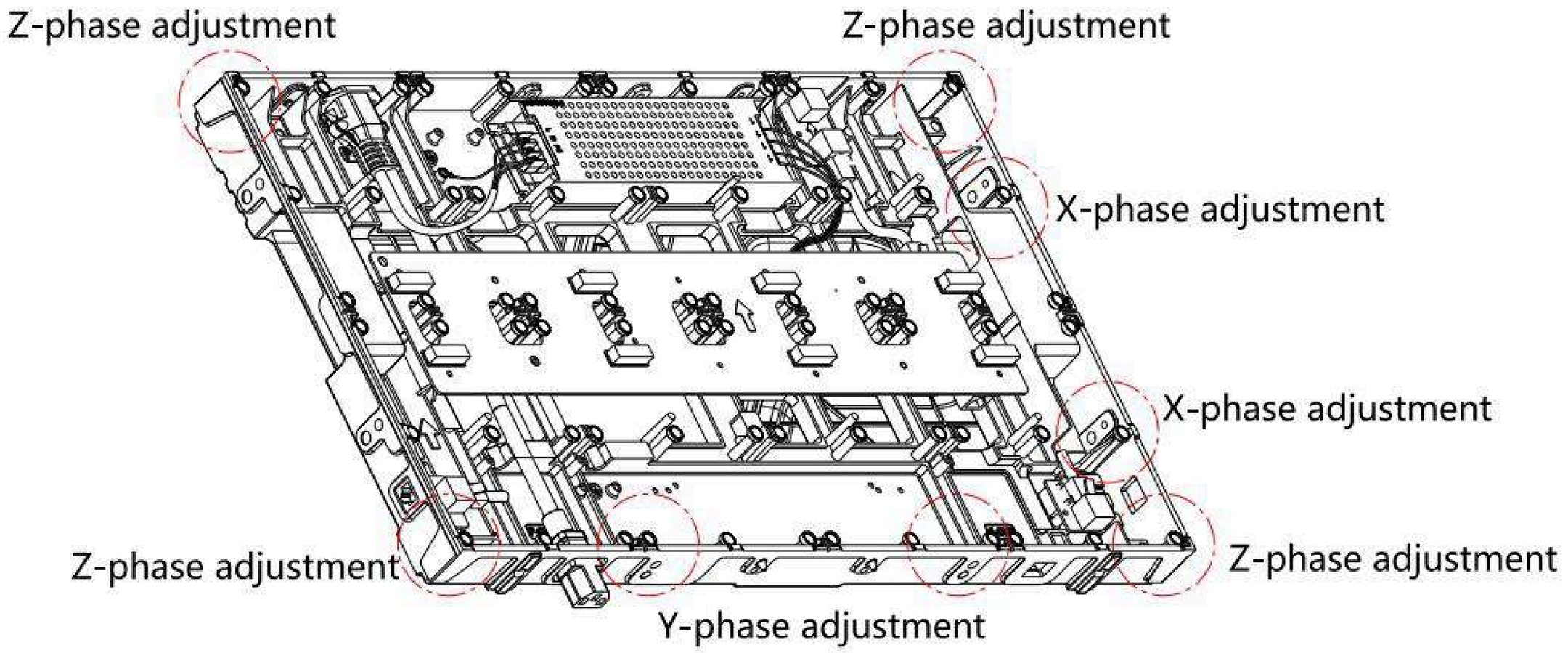
■ Display unit dimensions (unit: mm)



As shown in the figure, there are front and rear mounting holes for the display cabinet. For standard front-installation, M5x12mm hexagonal cylinder head screws are used. There are two ways to do the rear-installation: the connecting plate is not installed across the rod and the standard configuration is M5 12mm hexagon cylindrical head screw, and for the connecting plate cross-rod installation, the size of the installation rod needs to be added onto the foundation length of the non-cross rod installation. In this installation method, the installation screws are equipped by the engineers themselves, or the screw models submitted by the engineers are equipped by the factory.

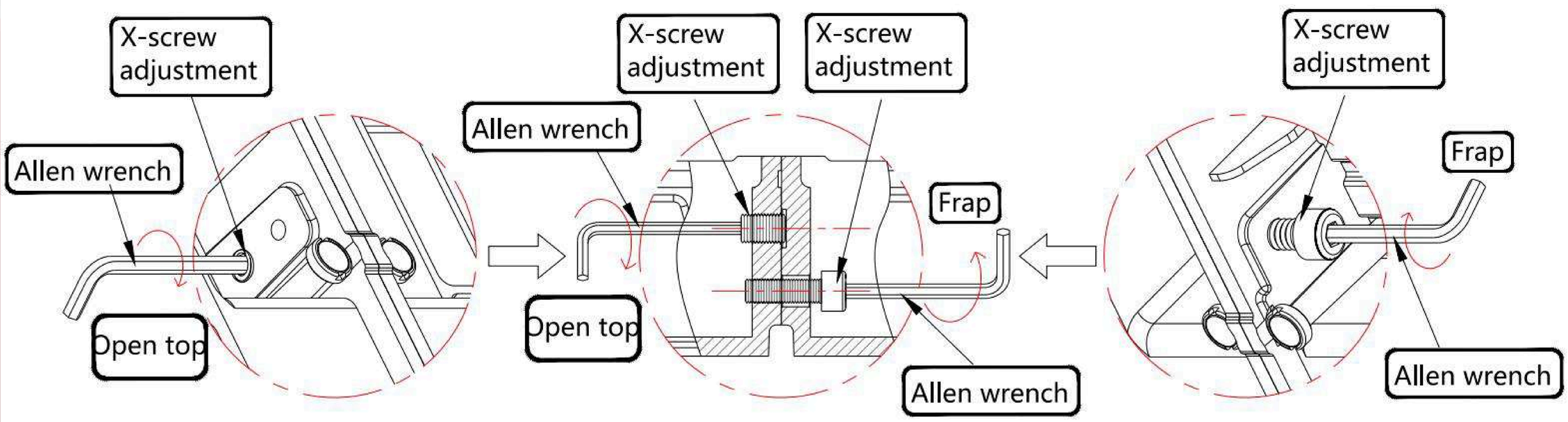
■ Six-way adjustment function introduction

As shown in the figure below, inside the red circles are six-way adjustment.

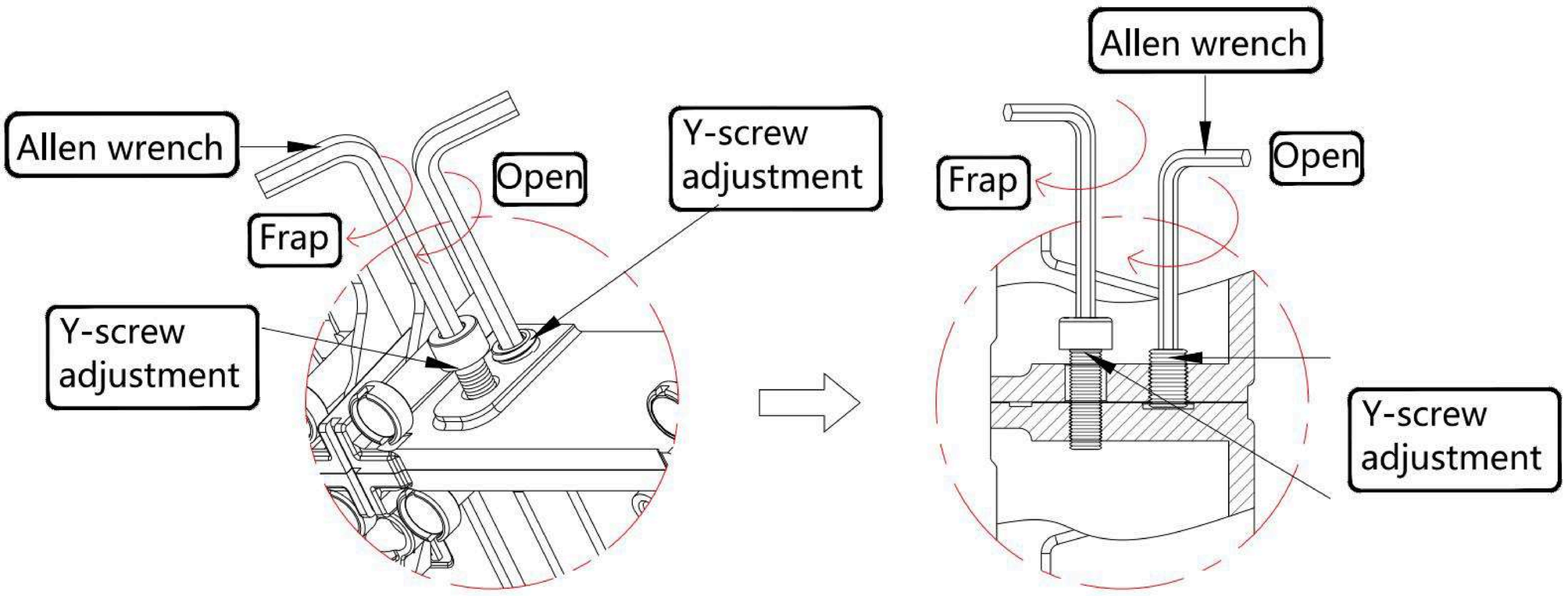


Using the six-way adjustment function during installation can effectively improve the installation accuracy of the LED screen; the following is a detailed description of the six-way adjustment:

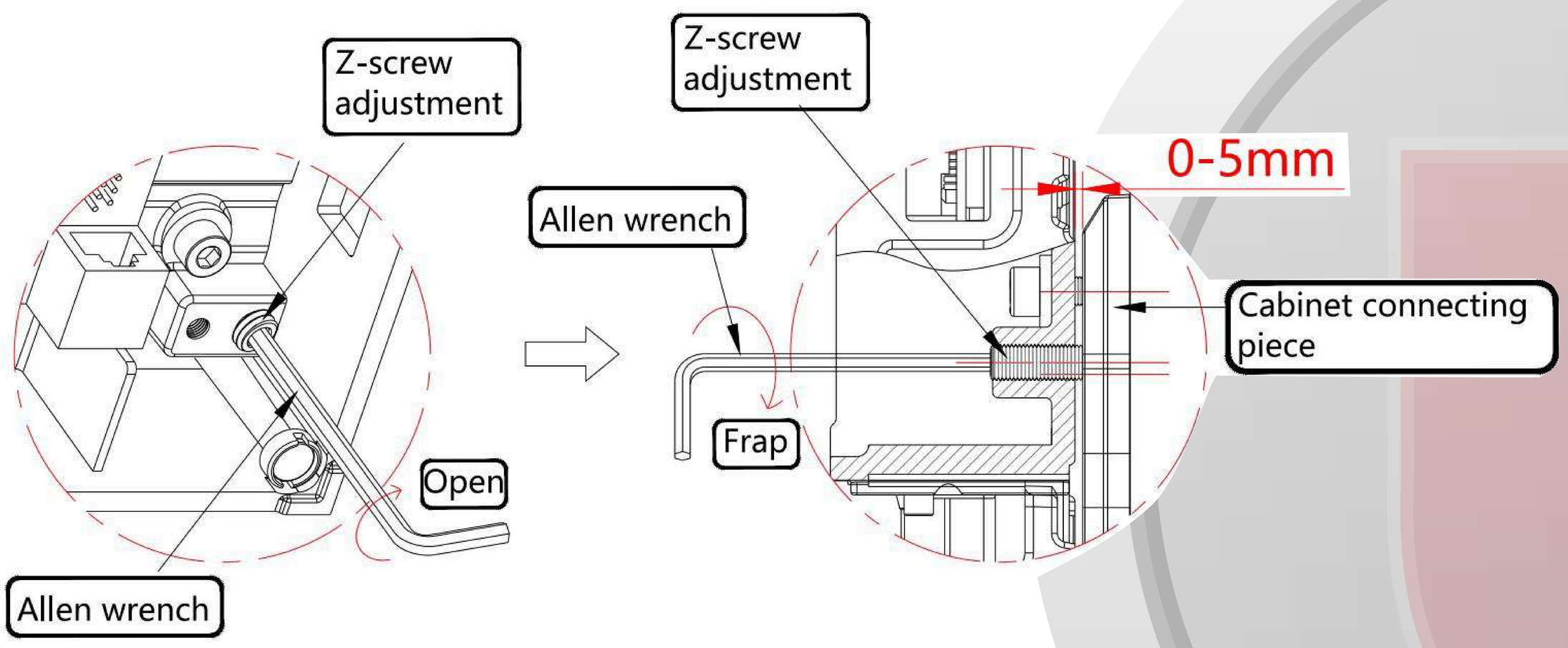
1.On the right side of the display unit, there is a M5 × 35mm cylindrical head screw at the top and a M6 hexagonal socket head at the bottom. These two screws are X-direction adjusting screws, which are mainly used to solve the gap adjustment between the left and right display unit in the process of 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 kimi 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;



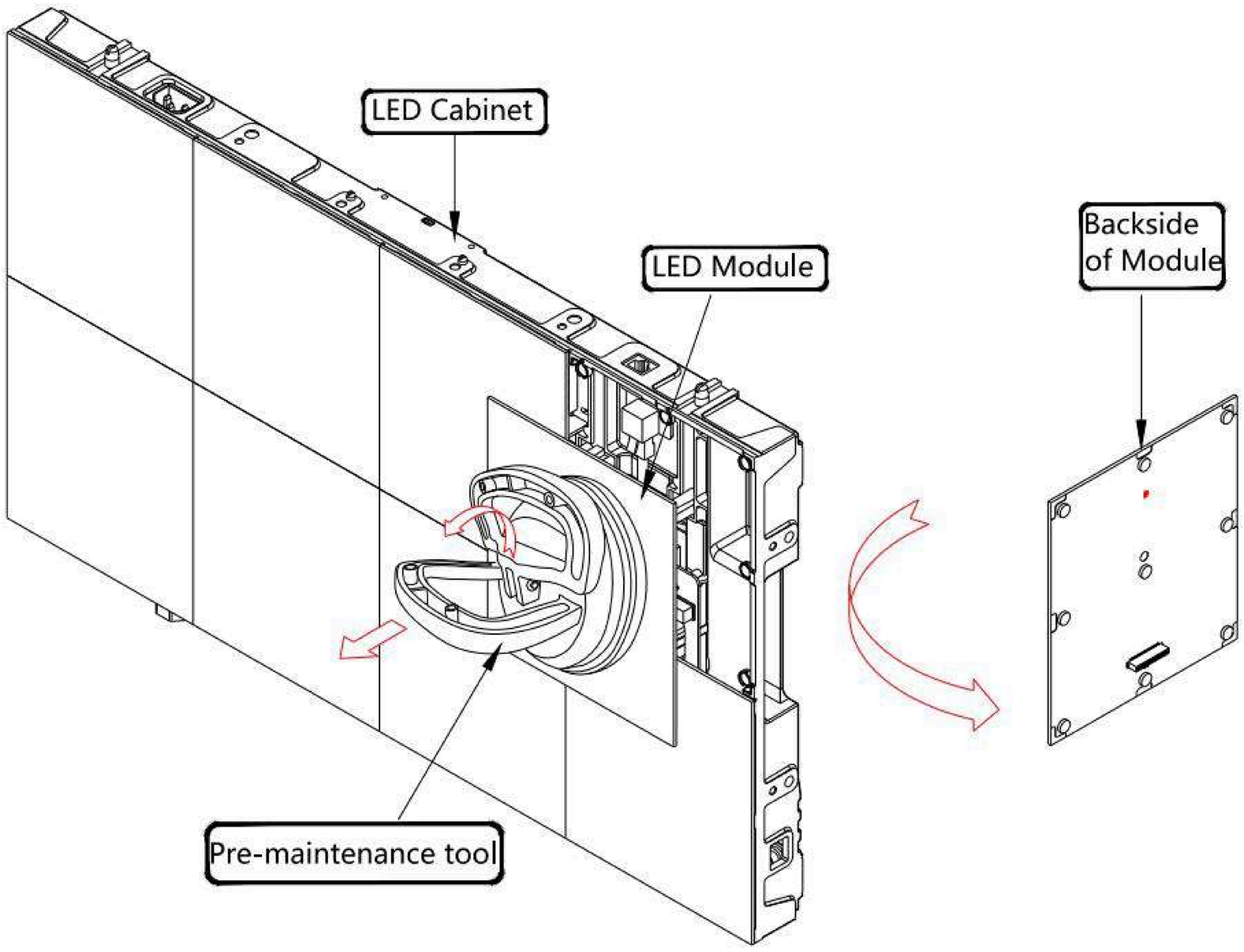
3. Z-direction adjustment, the 4 corners of the box installation hole have Z- direction adjustment function, this function can adjust the unevenness between the unit cabinets caused by the installation environment issue of the display screen, the adjustment range is between 0-5mm, and the specific adjustment method is shown in the figure below;



1.2. Product Maintenance Methods

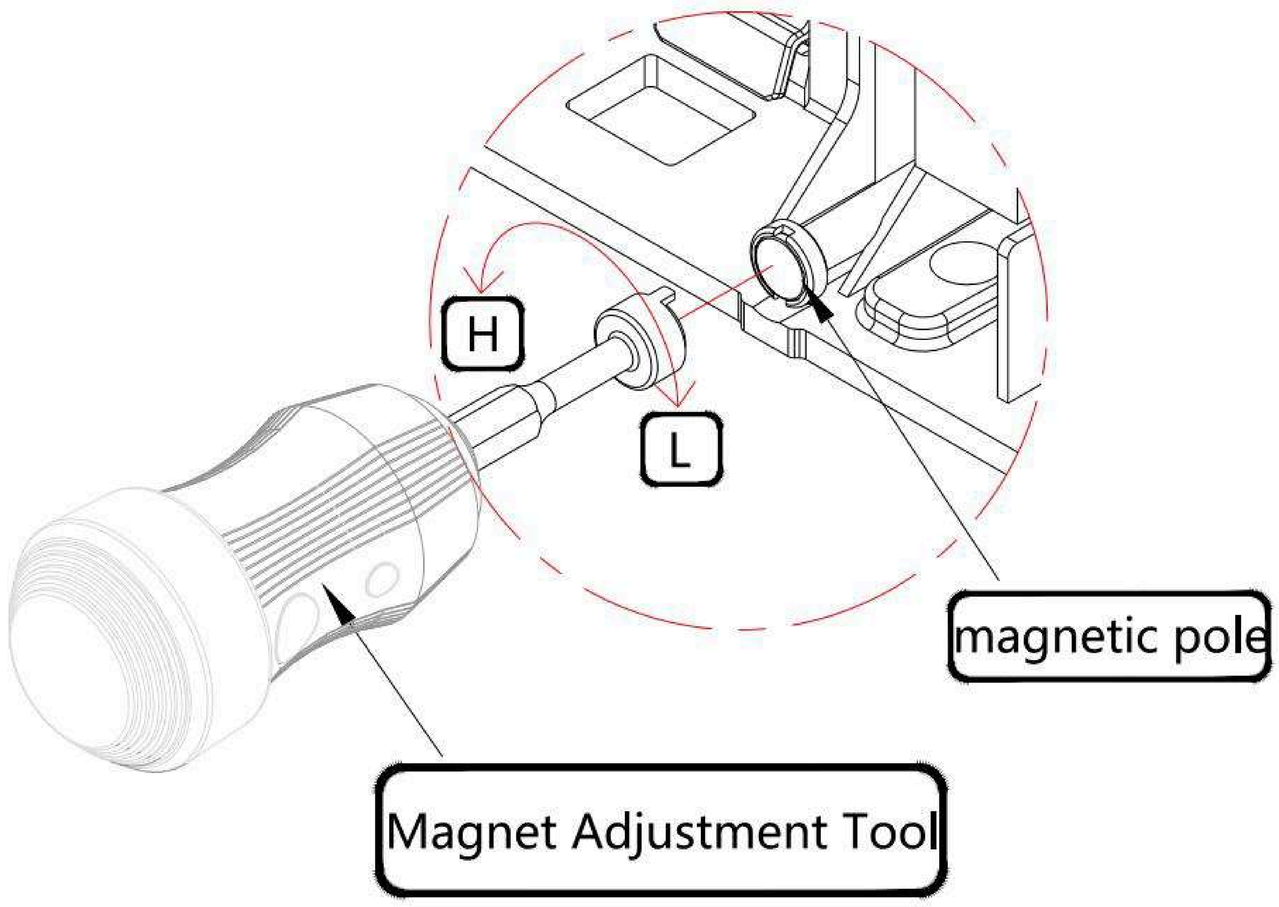
This product is a full front-service product, and the following are the detailed operating procedures for front-service:

1. As shown in the following figure, use the 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:

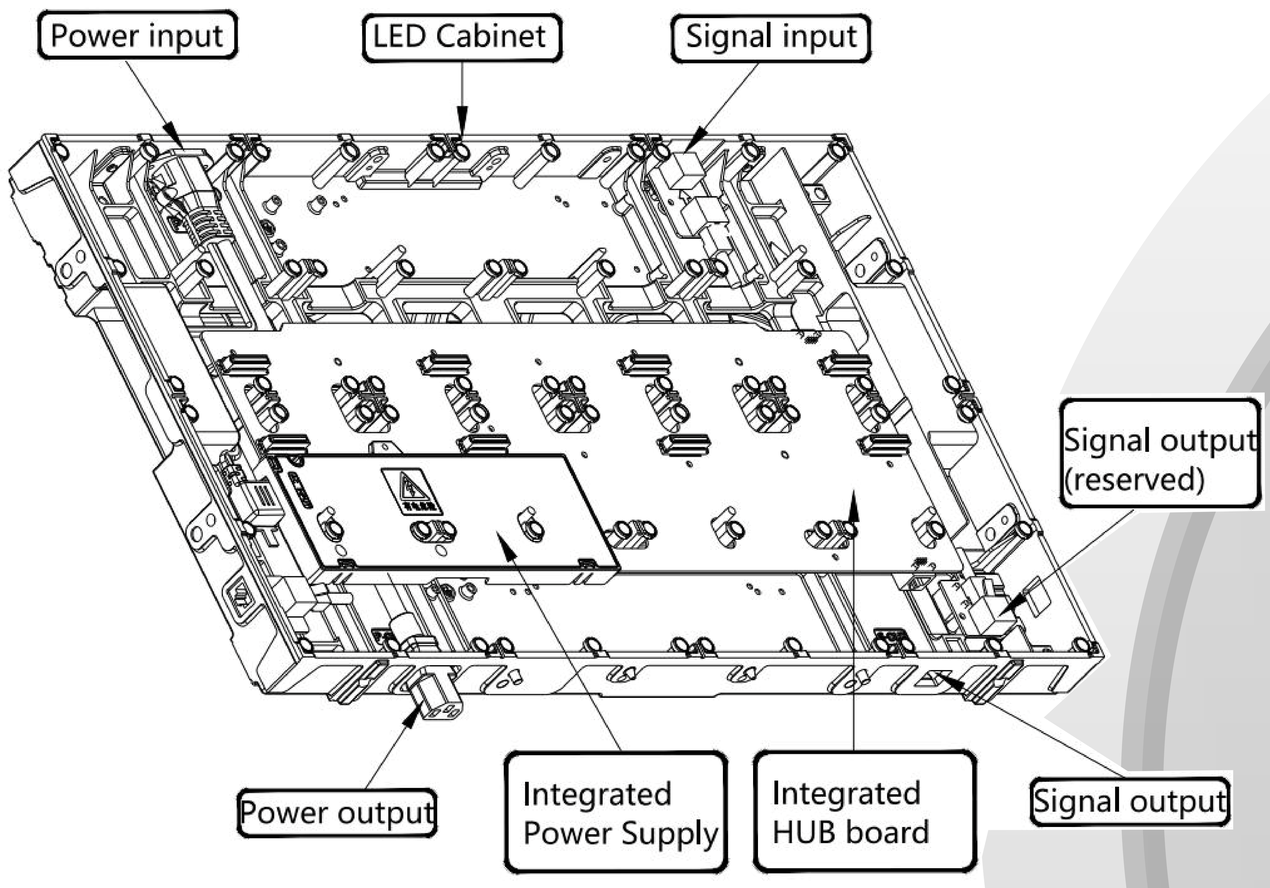


How to use the front maintenance vacuum tool:
1). Attach the vacuum tool to the front of the LED module;
2). As shown in the above figure, pull the movable handle to the fixed handle, at this time, the vacuum suction cup has already firmly sucked the LED module, hold the handle and pull it outward to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

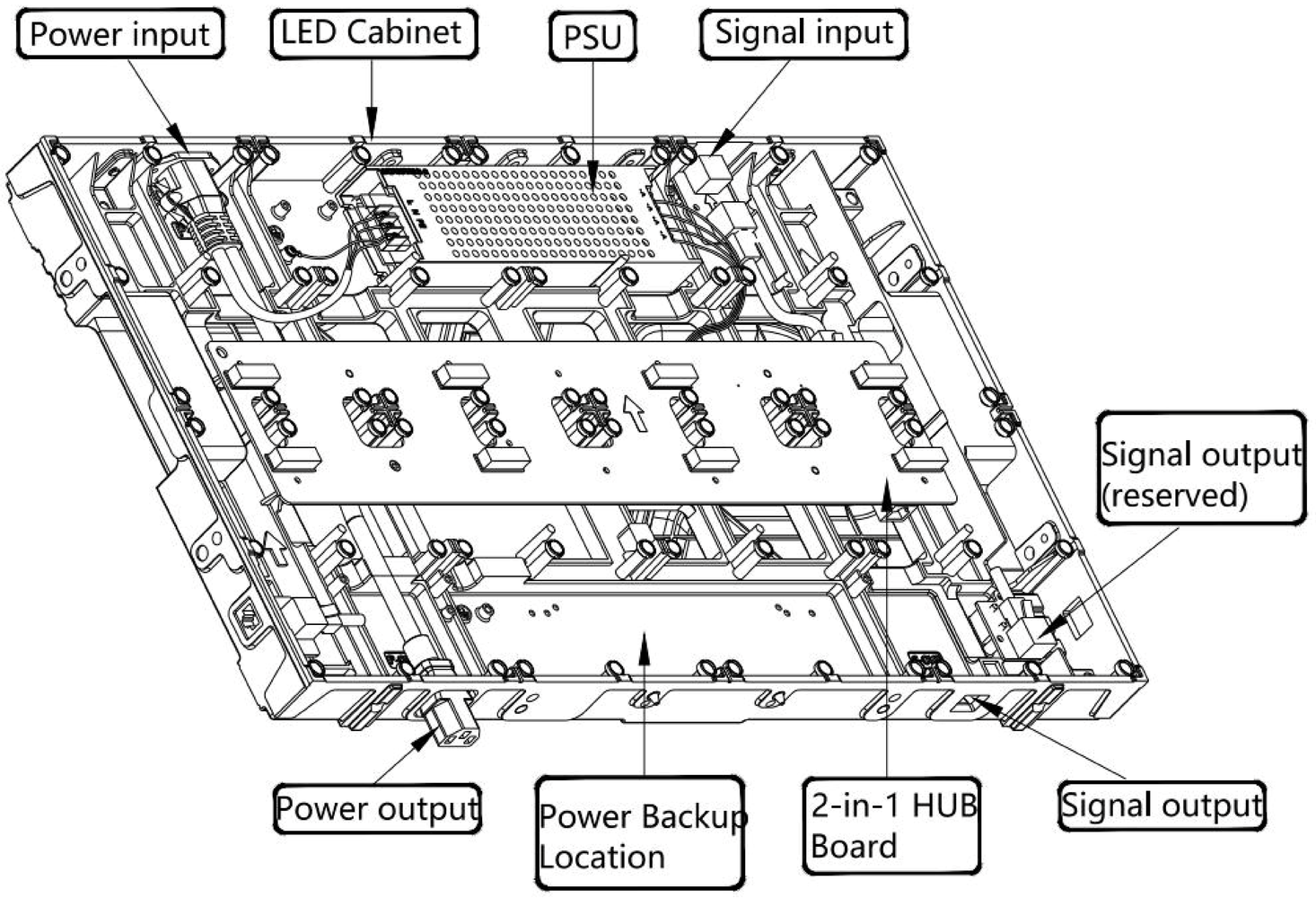
2. LED module flatness adjustment in the unit box, if there is unevenness between LED modules in the unit box, use quill magnet adjustment tool to adjust the height of the magnetic column in the unit box to solve the problem, the magnetic column can be adjusted within the range of 0-1mm, the specific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

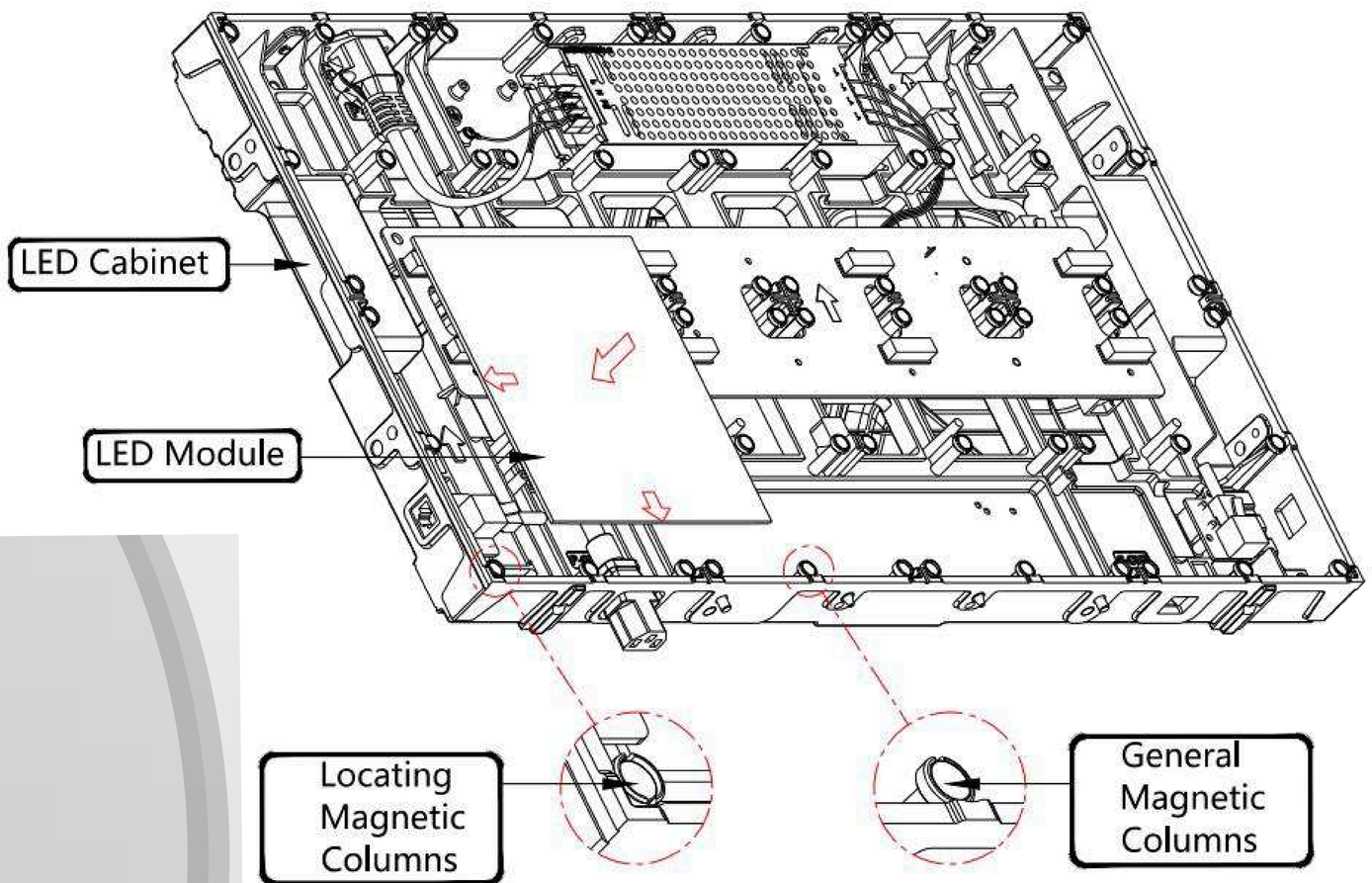


Three-in-one configuration product internal structure diagram



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

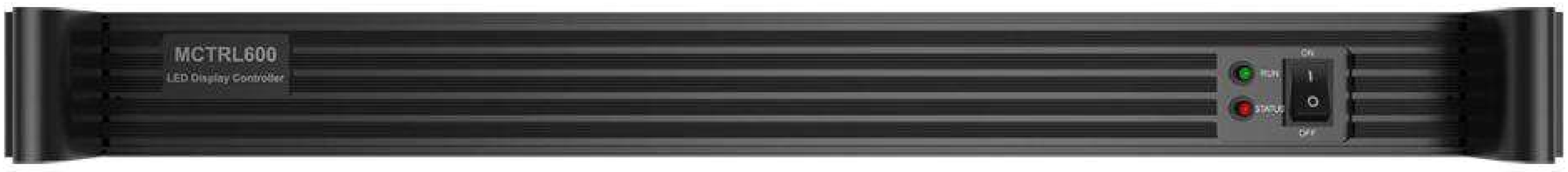
2.1. Receiver Card

The appearance of the receiver card is shown below:

2.2. Interface Description

Indicator light	Color	State of affairs	Clarification
Operation Indicator Lights	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
		Flashes 1 times every 0.2s	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
Power indicator	Red	Ever Bright	Power input normal

2.3. Screen Controller

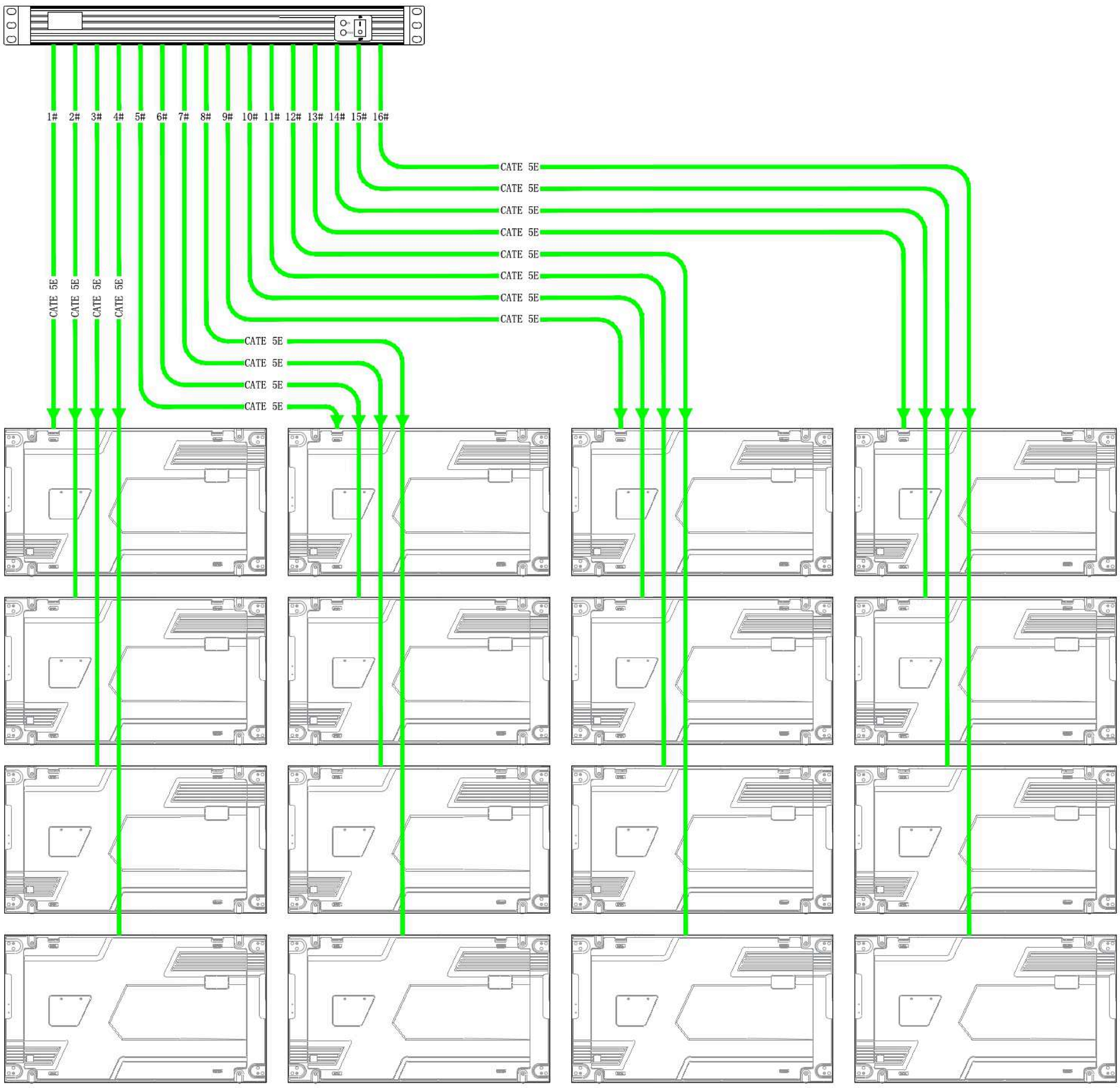


Lndicator light	
RUN	Device operation indicator, slow blinking when no video source (frequency is on for 2 seconds, off for two seconds).
	Blinks normally when there is video source input (about two blinks per second).
	The receiver card flashes fast when it displays the power-up screen.
	Breathing blinks 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 Lights	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
Power Supply	AC-100-240V-50/60HZ AC Power Interface

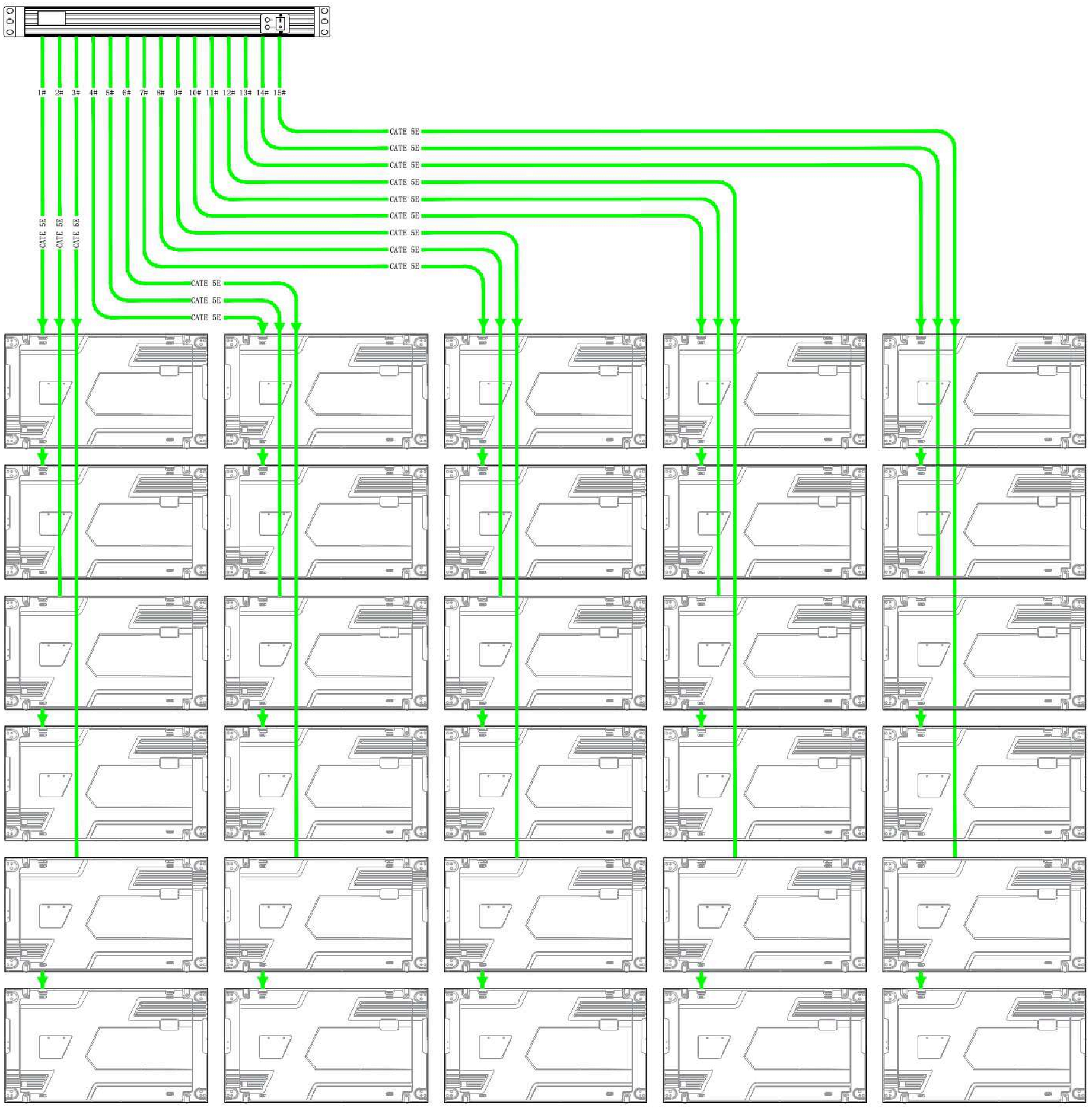
2.4. Example Single Signal Alignment Schematic:

Example 1: PIXON007 (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:



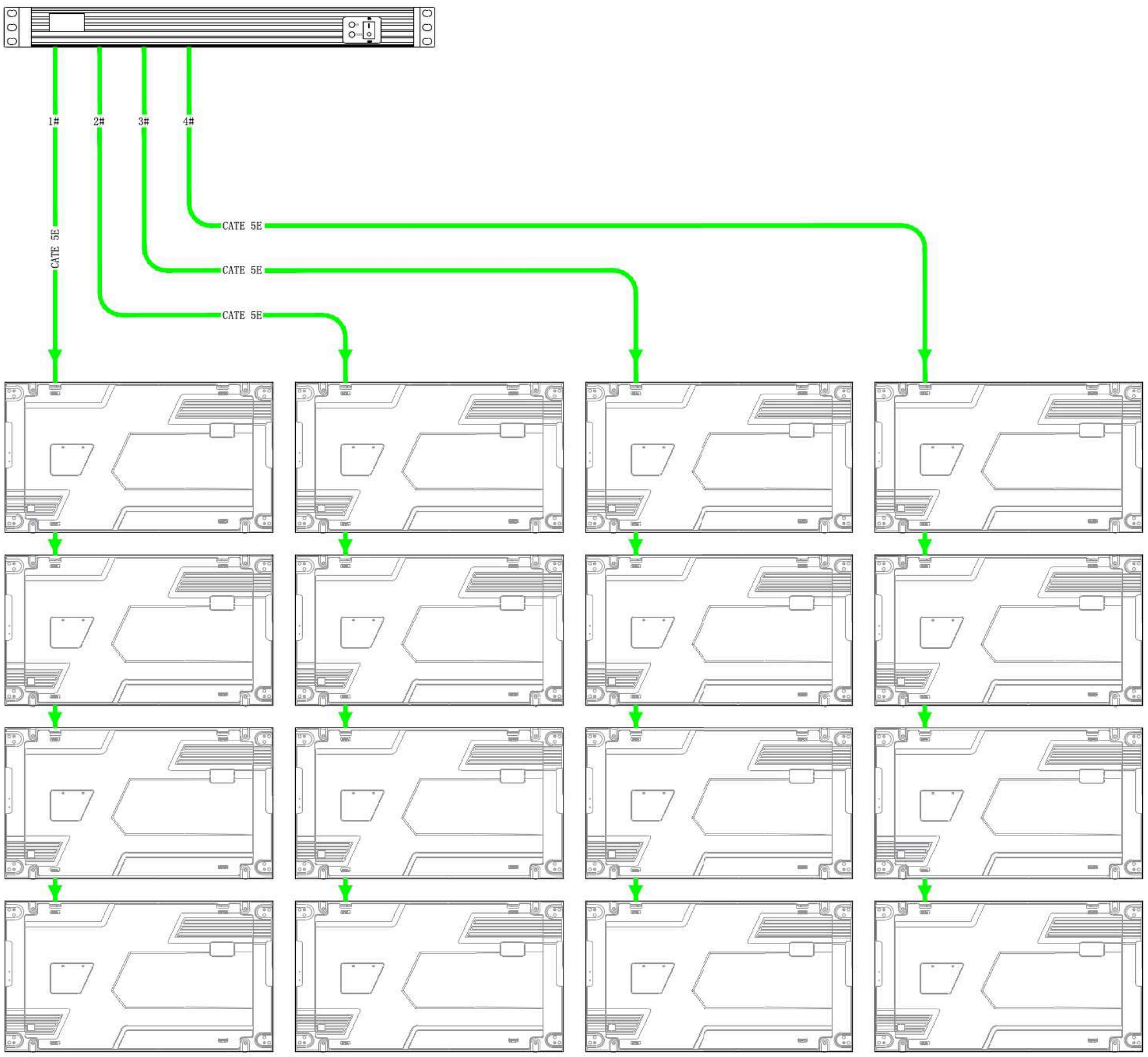
PIXON007 Single Signal Alignment Schematic

Example 2: PIXON009 (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:



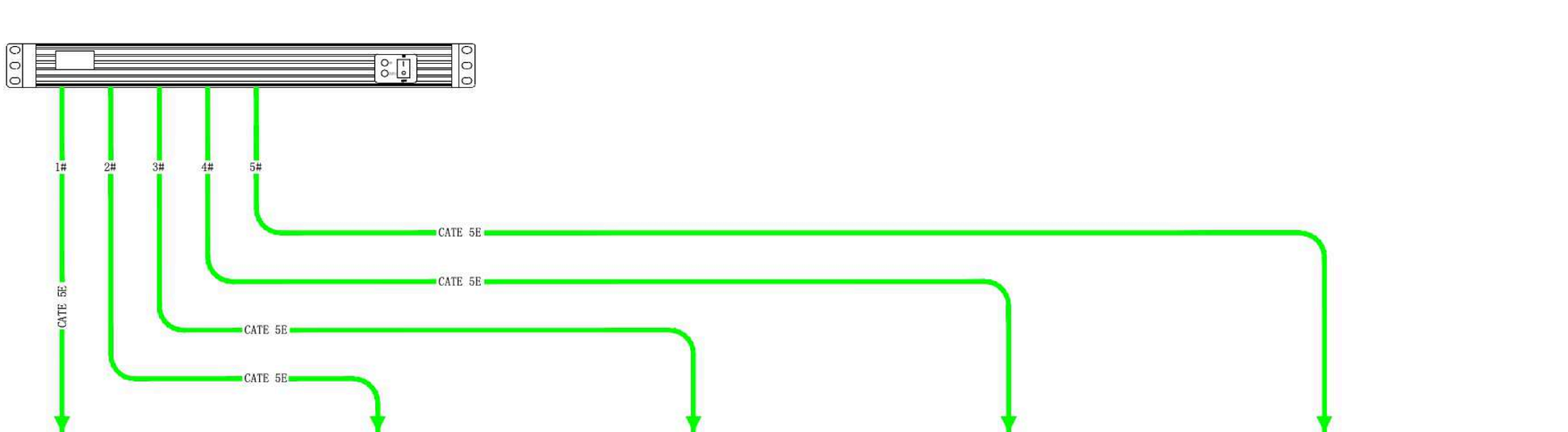
PIXON009 Single Signal Alignment Schematic

Example 3: PIXON012 (one box, one card) single unit box resolution of 480x270, conventional solution: one cable with a maximum of four boxes (Rectangle), support the top and bottom of the line, using the 2K sending card as an example, 4K area arrangement: 4 * 4, the total resolution of 1920 * 1080, see the figure below:



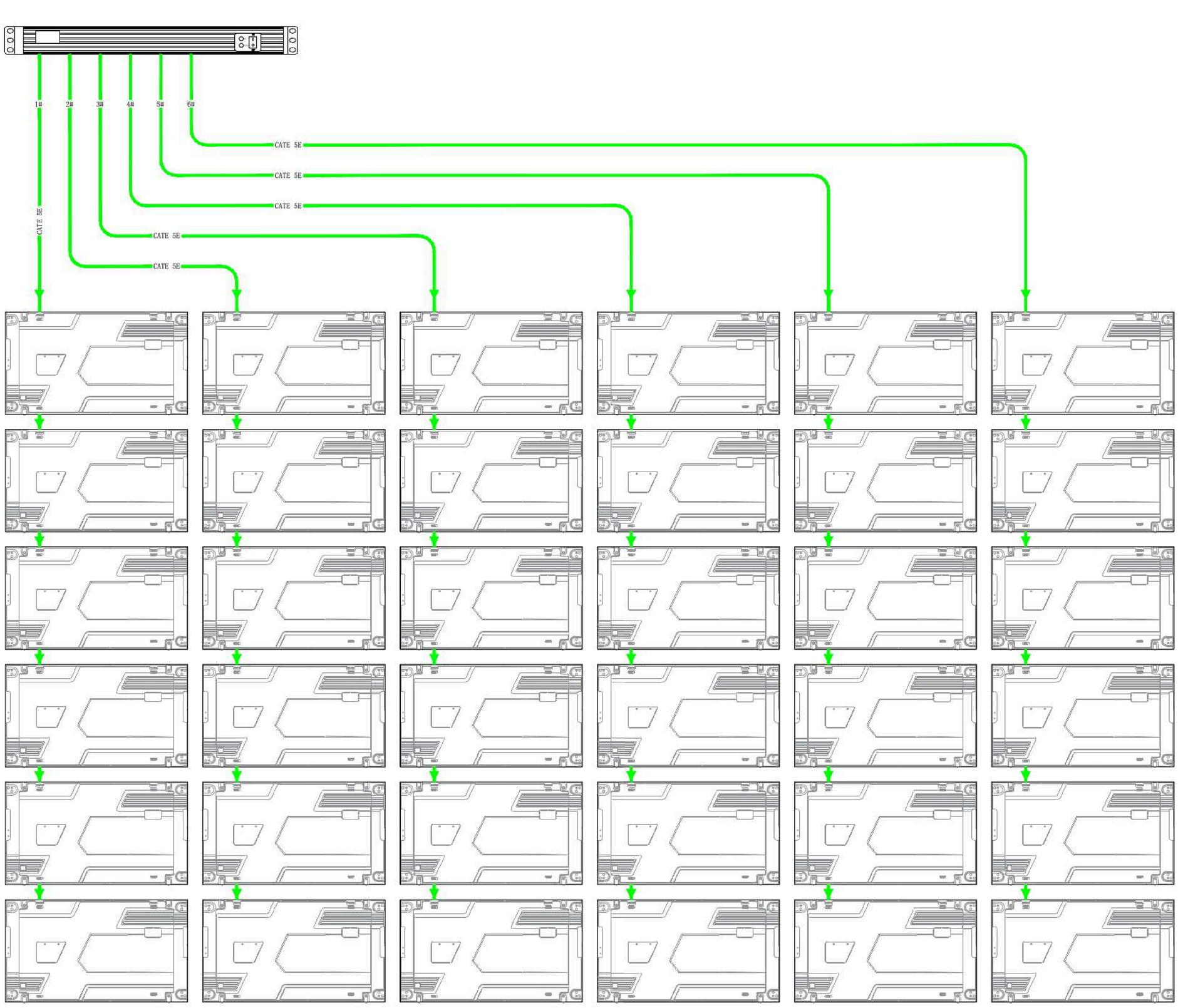
PIXON012 Single Signal Alignment Schematic

Example 4: PIXON015 (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:



PIXON015 Single Signal Alignment Schematic

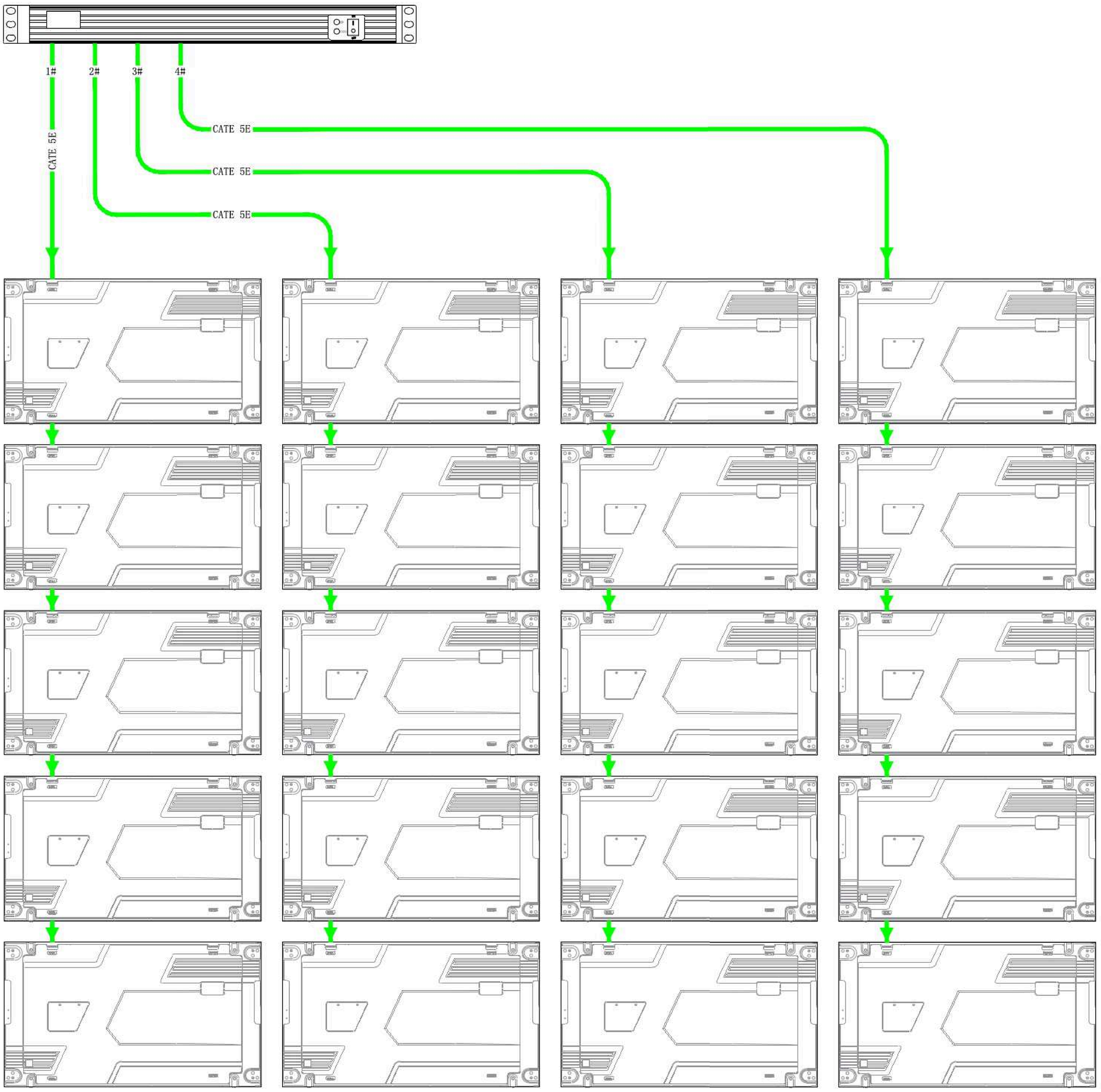
Example 5: PIXON018 (one box, one card) single unit box resolution of 320 * 180, the conventional program: a network cable with a maximum of 11 boxes (Rectangle), support the top and bottom of the line, using the 2K sending card.as an example, 4K area arrangement: 6 * 6, the total resolution of 1920 * 1080, see the figure below:



PIXON018 Single Signal Alignment Schematic

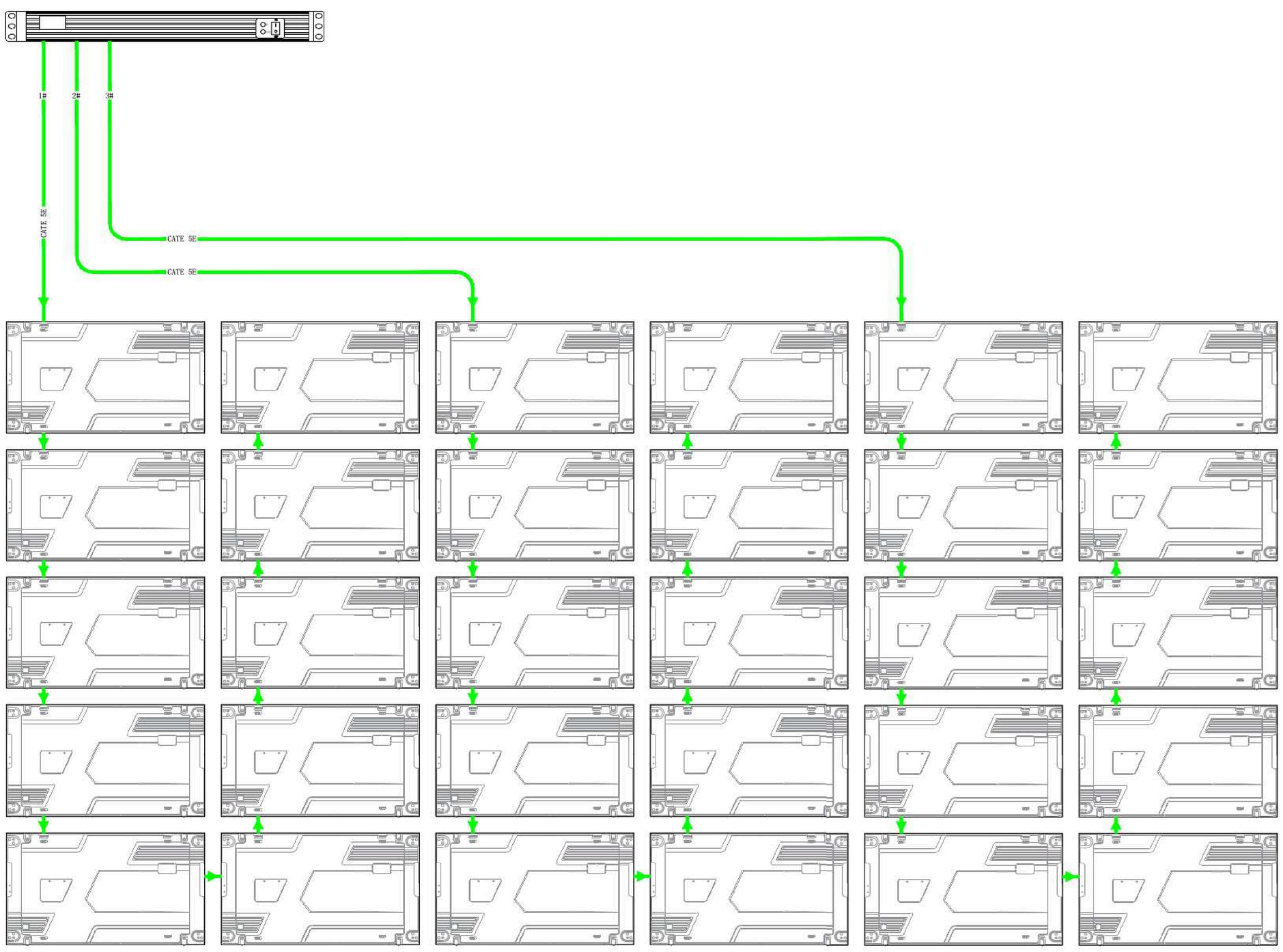
2.5. Example 5G signaling alignment schematic:

Example 1: PIXON007 (one box, one card) single unit box resolution of 768X432, 5G program: a network cable up to carry: 5 boxes (rectangular), support for the upper and lower over the line, using the 5G transmitter card, for example, the 4K area is arranged as follows: 4 * 5, the total resolution of 3072 * 2160, see the following chart:



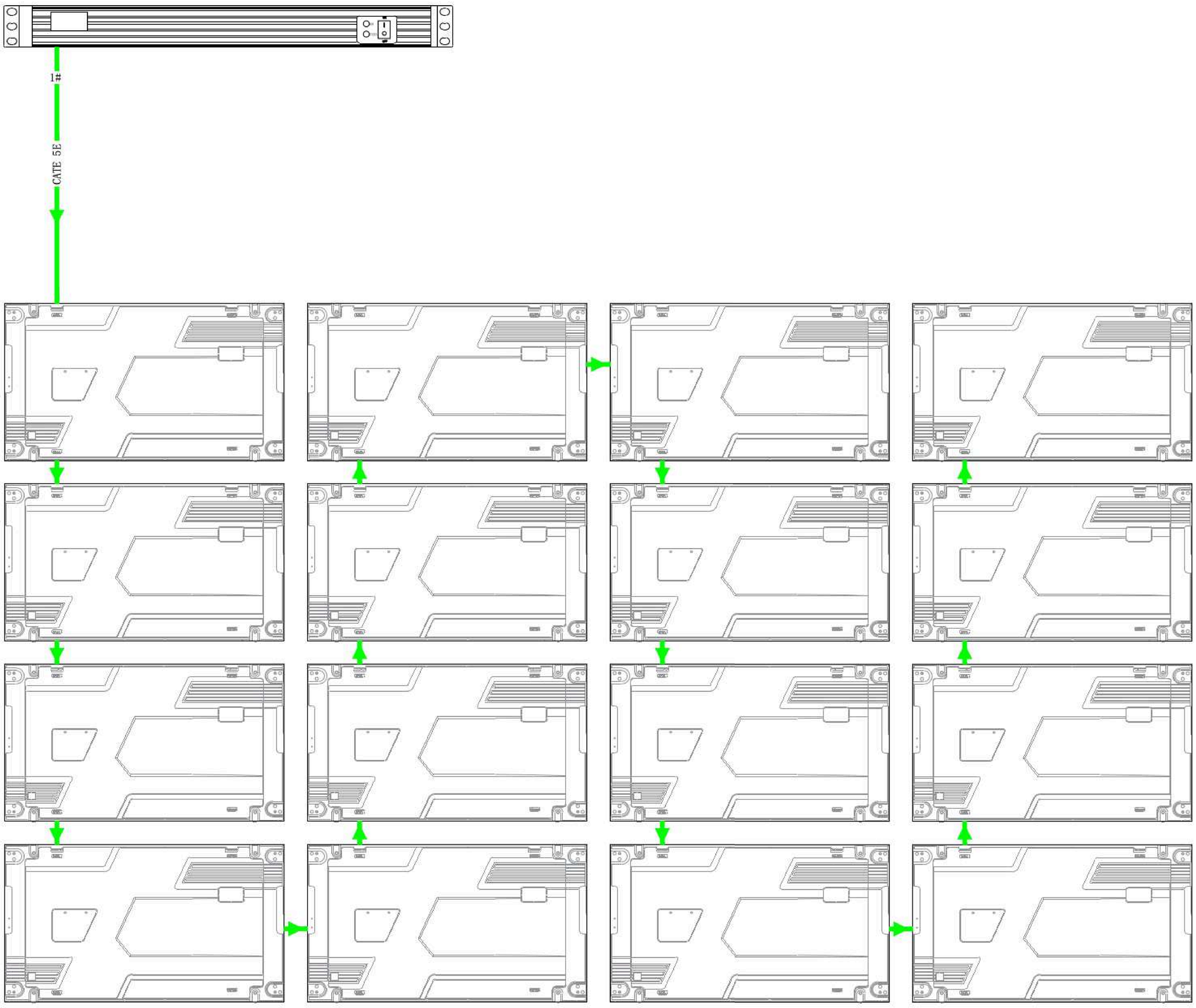
PIXON007 5G Signal Alignment Diagram

Example 2: PIXON009 (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:



PIXON009 5G Signal Alignment Diagram

Example 3: PIXON012 (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:



PIXON012 5G Signal Alignment Schematic

Example 4: PIXON015 (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:

PIXON015 5G Signal Alignment Schematic

Example 5: PIXON018 (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:

PIXON018 5G Signal Alignment Diagram

1G Signal Bandwidth						
Product Model	Single Box Resolution	Network Cable	Number of Carriers	Transponde Sending Card	Box Layout	Full Screen Resolution
PIXON 007	768*432	C A T5E	1	4K Transmitter Card	4*4	3072*1748
PIXON 009	640*360	C A T5E	2	4K Transmitter Card	5*6	3200*2160
PIXON 012	480*270	C A T5E	4	2K Transmitter Card	4*4	1920*1080
PIXON 015	384*216	C A T5E	7	2K Transmitter Card	5*5	1920*1080
PIXON 018	320*180	C A T5E	11	2K Transmitter Card	6*6	1920*1080

5G Signal Bandwidth						
Product Model	Single Box Resolution	Network Cable	Number of Carriers	Transponde Sending Card	Box Layout	Full Screen Resolution
PIXON 007	768*432	C A T6	5	5G Transmitter Card	4*5	3072*2160
PIXON 009	640*360	C A T6	10	4K Transmitter Card	6*5	3840*1800
PIXON 012	480*270	C A T6	20	2K Transmitter Card	4*4	1920*1080
PIXON 015	384*216	C A T6	35	2K Transmitter Card	5*5	1920*1080
PIXON 018	320*180	C A T6	55	2K Transmitter Card	6*6	1920*1080

3. Distribution Banding Description

3.1. Example Distribution Connection Diagram

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

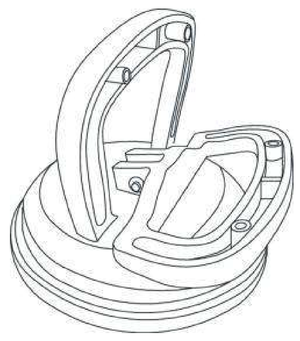
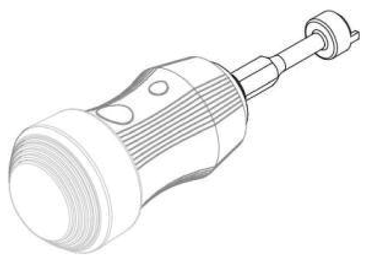
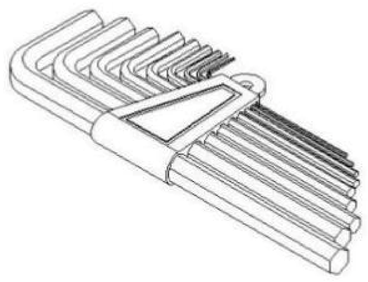
PIXON Distribution Connection Diagram

4. Product Installation Program

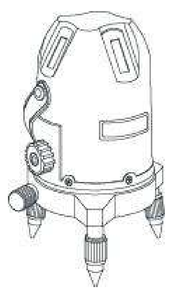
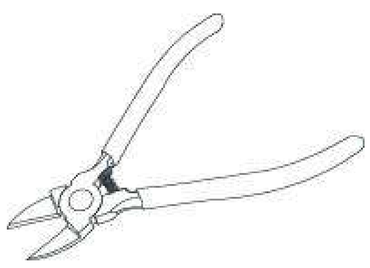
4.1. Pre-installation

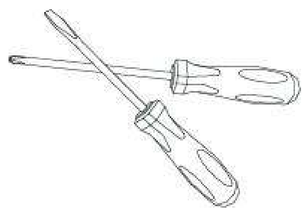
Before installation, you need to prepare the product corresponding supporting the necessary tools, installation of general tools, product installation accessories and operational protective gear, of which the necessary tools and product installation accessories equipped by the project, installation of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

1 Necessary tools:

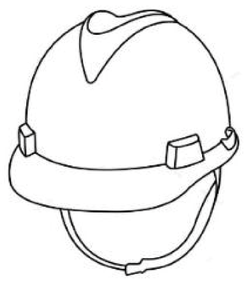
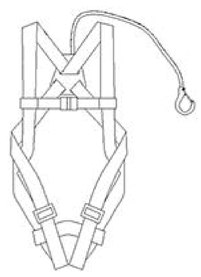
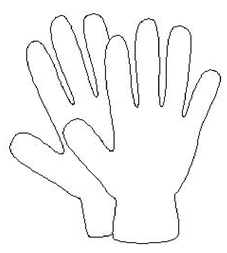
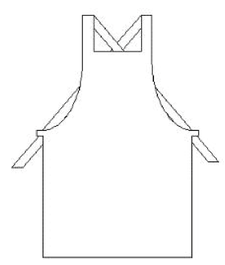
Tool Pattern			
Tool Name	Front Maintenance Vacuum Chucks	PIXON Bushing Magnet Adjustment Tool	Allen Key

2. Installation of general-purpose tools:

Tool Pattern				
Tool Name	Laser Level	Gimlet	Multimeter	Pliers

Tool Pattern				
Tool Name	Rubber Mallet	Adjustab Le Wrench	Tape Rule	Screwdrivers

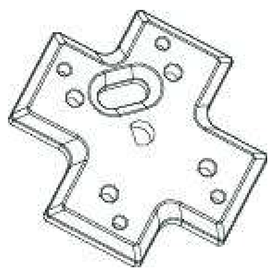
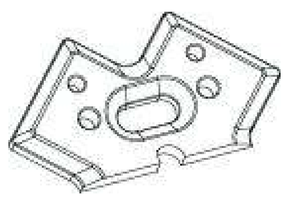
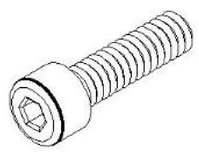
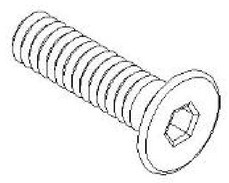
3. Installation of safety equipment:

Safety Equipment Pattern				
Name	Safety Helmet	Seat Belt Buckle	Protective Gloves	Protective Apron

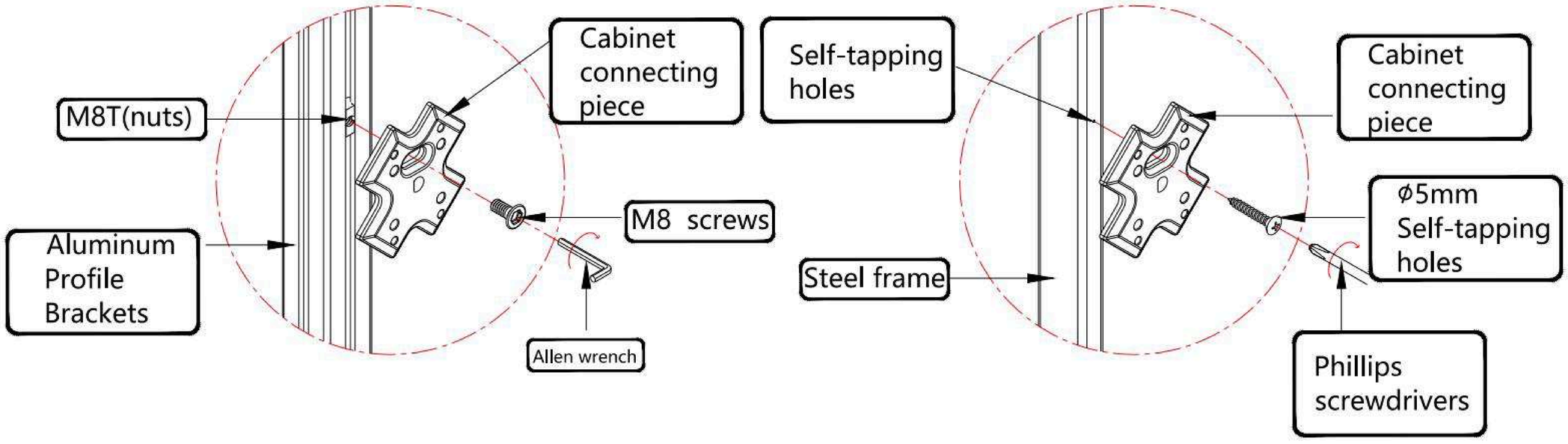
Remarks: Installation of screws after spanning the pole requires the project manager to choose the length of the screws according to the actual demand of the steel structure at the site, and the length of the screws is calculated as follows: 16mm + the size of the spanning pole = equal to the length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

4.2. Installation program introduction

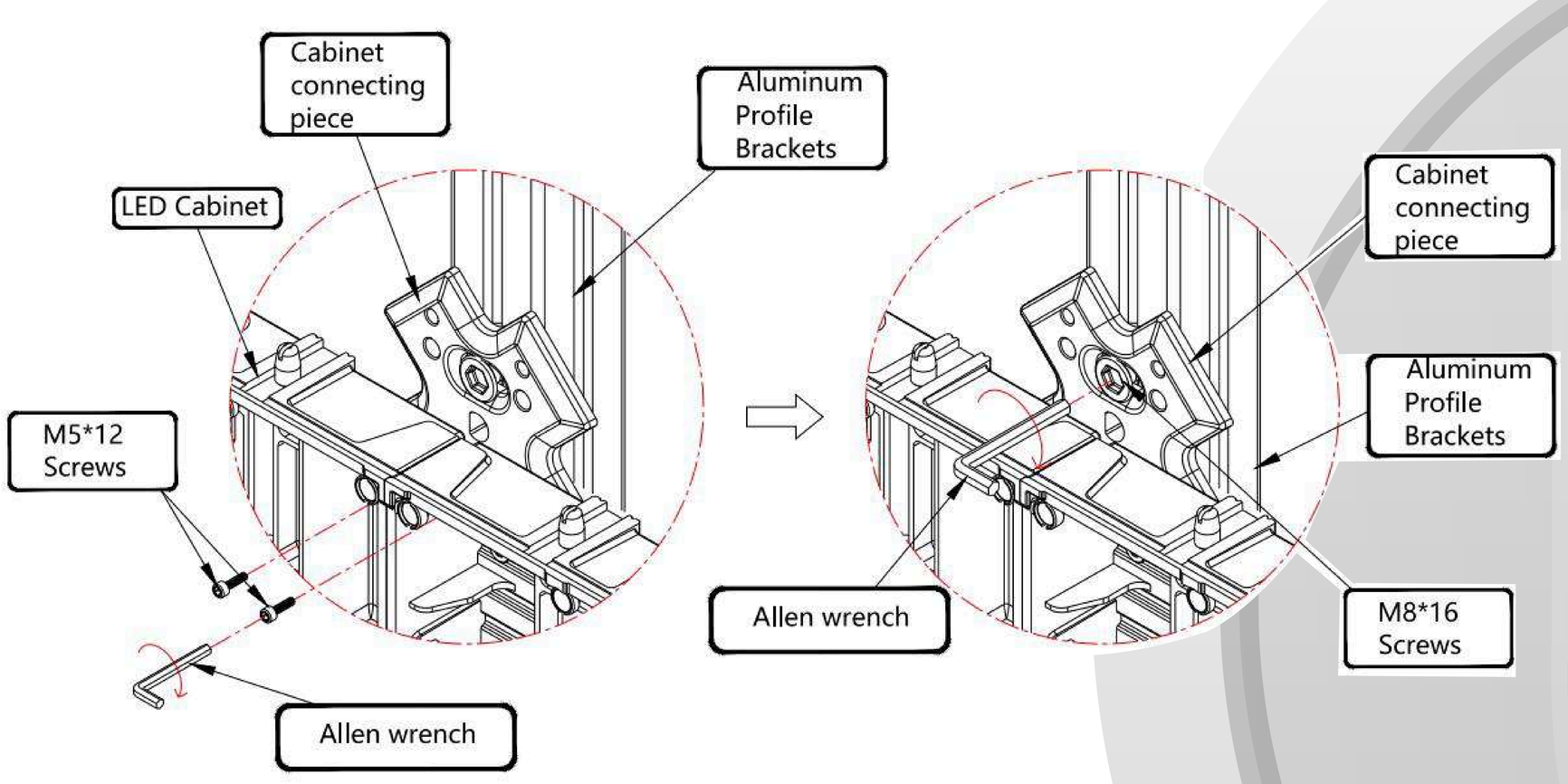
1. Conventional pre- installation program:
This mounting solution is suitable for all wall-mounted, seat-mounted and embedded mounting without any requirement on the thickness of the display, etc. The installation is simple and level:
Routine before the installation of the necessary accessories, this 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

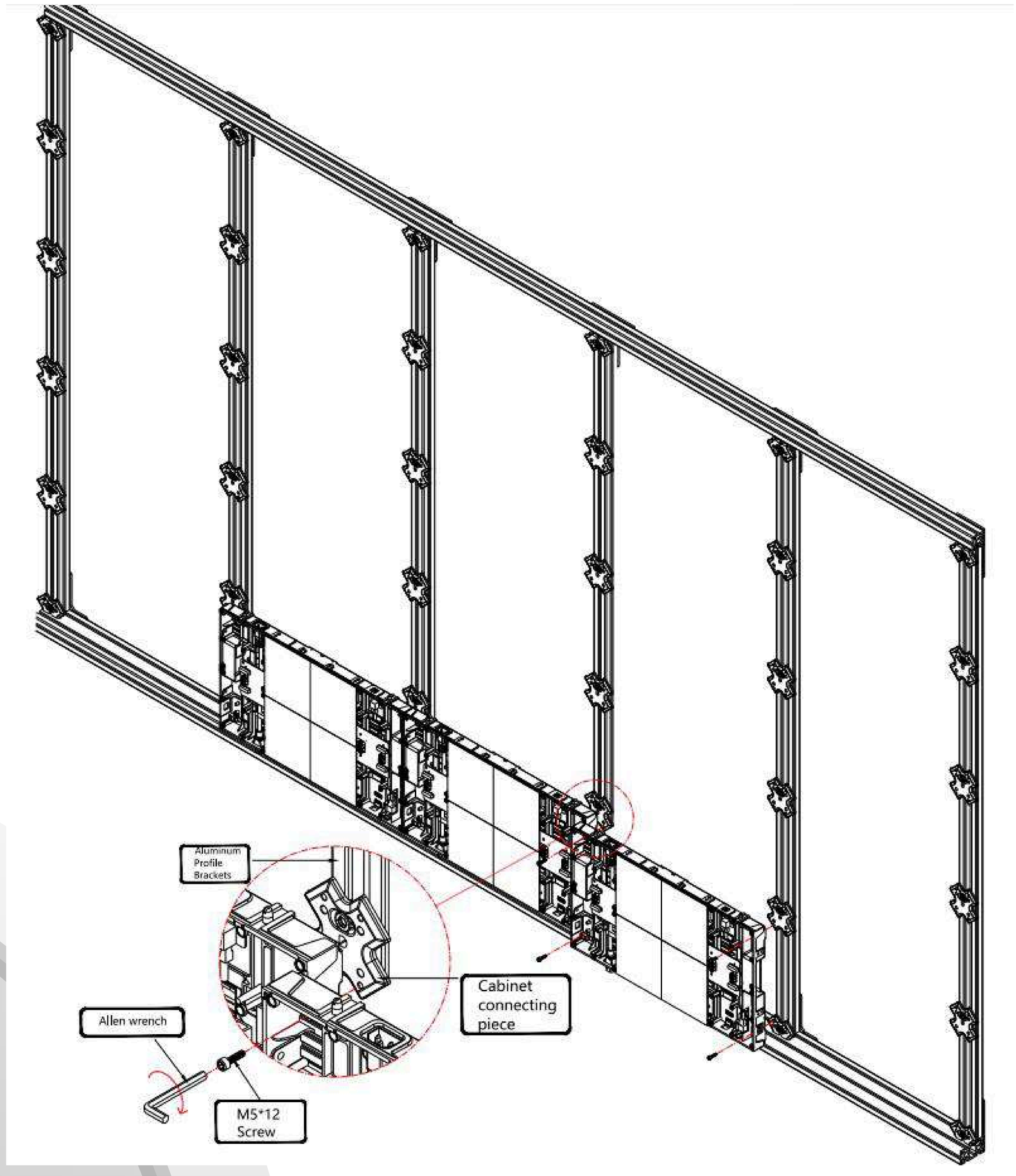
2. According to the steel structure design drawings of the project, first make and install the steel structure frame and aluminum bracket required for the LED screen according to the requirements, use M8*16mm hexagon socket countersunk head screws to lock the box connecting piece A/B on the corresponding aluminum bracket backing strips (if non-aluminum bracket is installed, please replace the M8*16mm hexagon socket countersunk head screws with 5mm 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;



3. 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:



4. 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.

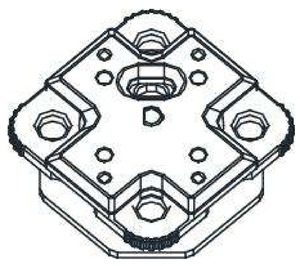
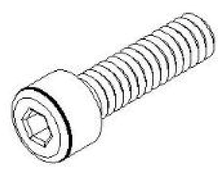
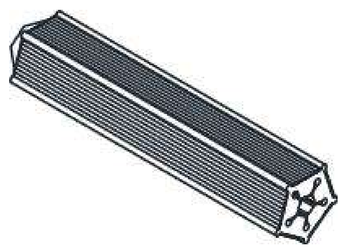
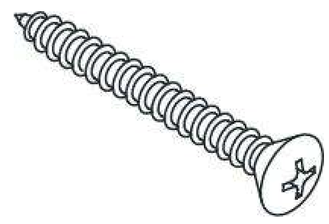


5. Cable connection Connect the relevant cables according to the project power distribution system diagram and system connection diagram.
6. After completing the electrical test with a multimeter, put the molded assembly back into the box to adjust the flatness and power on for debugging.

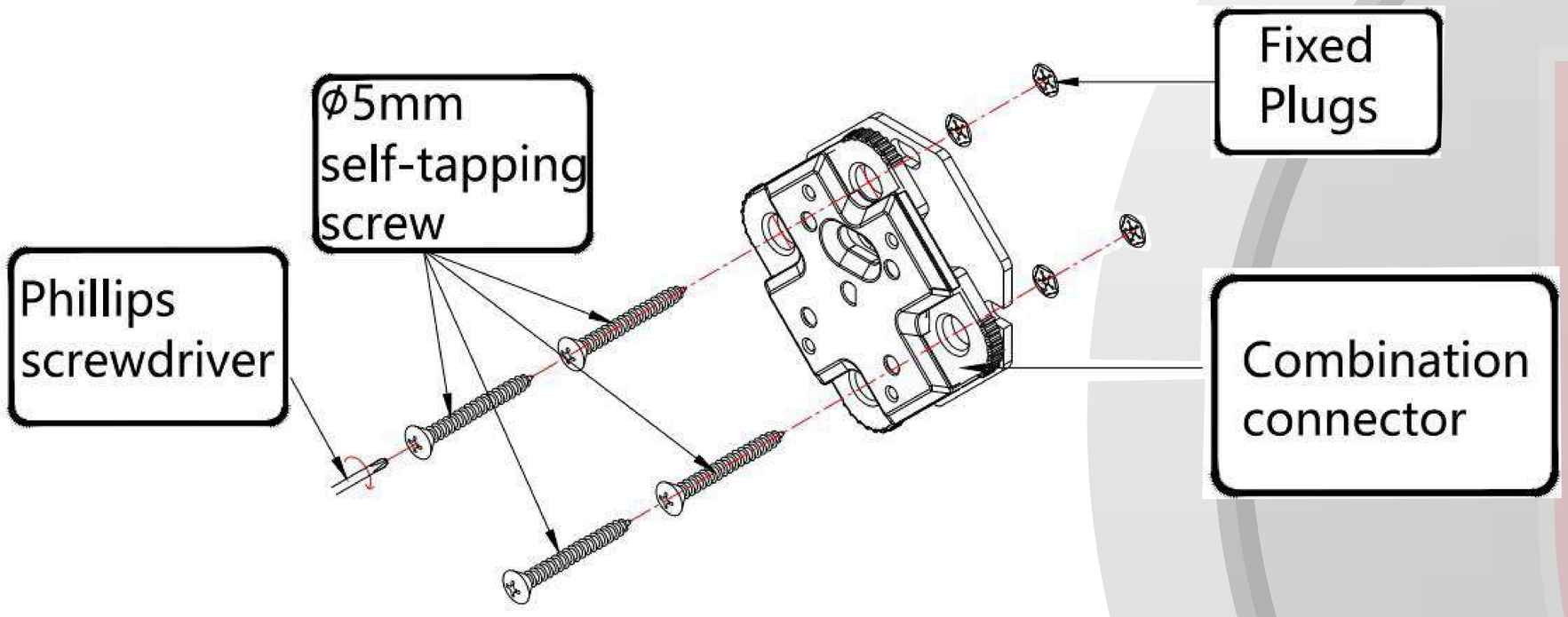
4.2. Combination connector installation program:

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:

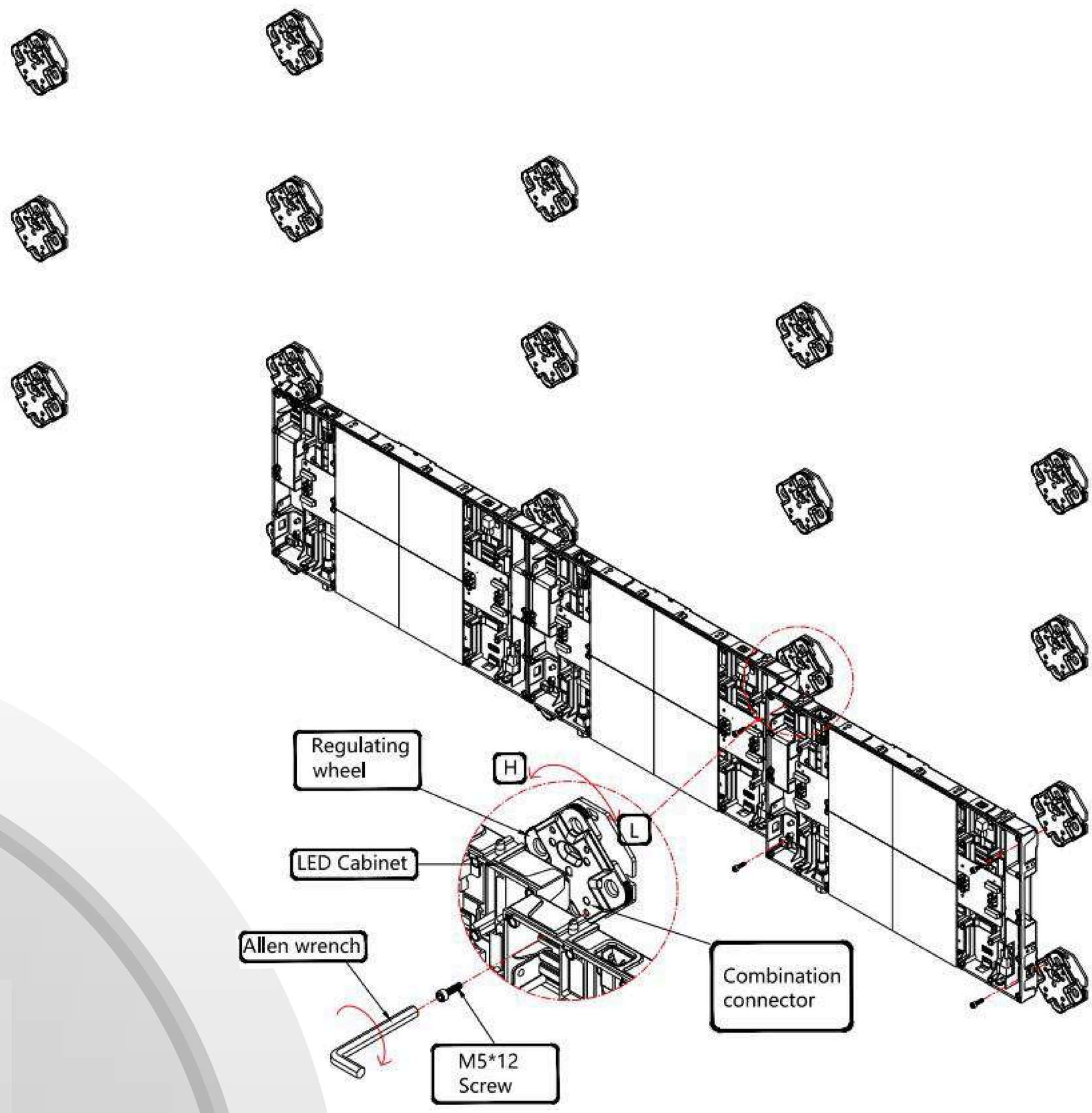
1. Routine before the installation of the necessary accessories, this accessory is provided by the factory, please be sure to point out the number of accessories before installation, accessories specific see the following table:

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

2. 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 5 * 40mm 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.



3. 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;



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

5. 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.

5. Common Failures and Solutions

Fault description	Description
1.The whole LED screen does not display image	1.Whether the display is powered on.
	2.Whether the display has HDMI signal input, connect the LCD monitor to check whether it is caused by a signal transmission link failure.
	3.Whether the brightness setting of the display control software is normal.
2.Part of the LED screen does not display image	1.Check the display screen area that does not display an image and make sure the power is normal, including input power and switch power.
	2. If no abnormality is found in the first step, restart the power switch in the relative area, after the power is off, wait for more than 1 minute before powering it on again, and when the power is on again, the re-initialization of the display unit may solve the problem.
	3.Display unit cascade cable transmission issues.
	4. If the control board is replaced, the display unit image still can not be connected with the surrounding, you need to use the software to set the corresponding address coordinates and brightness color values.
3.Part of the LED screen images flash	1.Display unit cascade signal transmission problem. Try replacing the cascaded signal cable or control panel. If the control board is replaced, the display unit image still can not be connected with the surrounding, you need to use the software to set the corresponding address coordinates and brightness color values.
	2.Input signal problem, connect the LCD monitor to check.
	3.The processor resolution exceeds the maximum resolution of the sending card.
	4.Power supply problems in the screen.
4.LED display module display is not normal, the whole module or part of the module lack of color, long light, out of control or semi-out of control state	1.If the display unit is not initialized properly, restart the power of the area at intervals of not less than 1 minute, and sometimes it may take 2-3 times to solve the problem.
	2.If step 1 does not solve the problem, preliminary judgment may be because of poor contact between LED modules and control board, which can be re-inserted in order to solve the physical contact problem.
	3.If the problem still exists after the above two-step settings, the judgment may be because of LED module or control board circuit issues, you can replace the LED module or control board, adjust the coordinate, color, brightness , so that it is consistent with the the image color of the whole screen.
	4.The cabinet set resolution is inconsistent with the actual resolution

5.The video window image is incomplete	1.Connect the LCD monitor to check whether the signal input or output of the video processor is normal
	2.Check whether the input signal resolution is consistent with the saved resolution set.
	3.Check if the video processor is set correctly.
6.The sending card is not detected	1. The power supply of the equipment is not normal
	2. The serial cable or computer USB port is damaged
	3.The serial port is occupied by the other software
	4. Serial port drive computer is not installed

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.