产品规格书

PRODUCT SPECIFICATION

客户名称 Customer：_____

产品名称 Description：P0.93 户内全彩倒装 COB

产品型号 Model：M-CFC093R-B

规格书编号 Lot No.: 2401014SX

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1.适用范围 Range of application

本产品规格书仅适用于 P0.93 户内全彩 COB 模组，规格型号为 M-CFC093R-B。

This product specification only applicable to P0.93 indoor full color COB module, specification model M-CFC093R-B.

2.产品说明 Description of products

本产品使用倒装芯片用锡膏焊接并进行 COB 封装。

This product welded with flip chip by solder paste and COB packaged.

本产品使用 PWM IC 芯片和集成的行驱动芯片通过计算机控制；显示视角宽阔，色彩纯正一致协调，亮度稳定均匀，文字、图像、视频清晰。

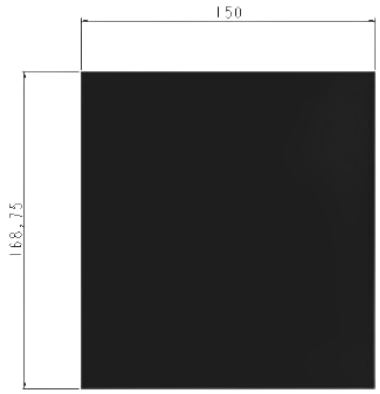
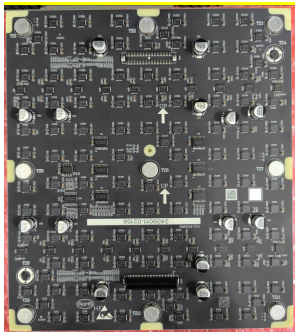
This product controlled with computer using PWM IC chip and integrated line driver chip .The display Angle is wide, the color is pure and consistent, the brightness is stable and uniform, and the text, image and video are clear.

RGB 芯片、驱动 IC、电容、电阻贴装在 PCB 板上，形成单元模块。

The RGB chip, driver IC, capacitor and resistor are pasted on the PCB board to form a unit module.

八个单元模块背面的铁片吸附在箱体的磁柱上，从而拼接成整屏。

The iron sheet on the back of the eight modules is attached to the magnetic column of the box,thus stitching the whole screen.

模块正面	模组背面
	

模块接口定义 Module interface definition

引　脚							
2.8V	1	2	2.8V	A	31	32	B

2.8V	3	4	2.8V	C	33	34	GND
2.8V	5	6	2.8V	GND	35	36	GND
2.8V	7	8	2.8V	CLK	37	38	LAT
GND	9	10	GND	OE	39	40	3.3V
GND	11	12	GND	S-CK	41	42	S-CS
GND	13	14	GND	S-MOSI	43	44	S-MISO
GND	15	16	GND	GND	45	46	GND
R1	17	18	R2	GND	47	48	GND
G1	19	20	G2	GND	49	50	GND
B1	21	22	B2	GND	51	52	GND
R3	23	24	R4	3.8V	53	54	3.8V
G3	25	26	G4	3.8V	55	56	3.8V
B3	27	28	B4	3.8V	57	58	3.8V
GND	29	30	GND	3.8V	59	60	3.8V

3. 规格型号定义 Definition of specifications

M-CFC093R-B

M--表示成品模块；C--COB ；F--倒装产品；C--共阴；像素间距：0.93mm；产品系列：R--普通实像素；PCB 板型：B（150*168.75mm）。

M--indicates the finished product module; C--COB ; F--inverted product; C--co-cathode; pixel spacing:0.93mm; product series: R--ordinary real pixels; PCB board type: B (150*168.75mm).

4. 技术参数 Technical parameters

序号 No.	项目名称 Project name	参数及指标 Parameters and indicators
单元模块 module		
1	封装方式 Packaged type	倒装芯片 COB 封装 Flip chip COB package
2	水平视角 Horizontal perspective	≥160°
3	垂直视角 Vertical perspective	≥160°
4	像素组成 Pixel composition	1R1G1B-COB
5	点间距 Pitch of point	0.93mm
6	扫描方式 Scanning mode	1/54 扫描 S
7	驱动方式 Driving mode	恒流驱动 Constant current drive
8	分辨率 Resolution	160*180 点

9	尺寸 Size	150*168.75mm
10	重量 Weight	0.14 KG
11	类型 Type	灯驱合一 Combination of lamp and drive
12	工作电压 Operating voltage	DC3.8V/2.8V
13	平均功率 Average power	≤5W
14	最大功率 Maximum power	≤12W
单元箱体 Modular box		
1	模块分布 Module distribution	2*4 块
2	缝隙 Gap	≦0.1mm
3	箱体分辨率 Resolution	640×360 点
4	箱体平均功率 Average power	≤35W
5	箱体最大功率 Maximum power	≤70W
6	亮度均匀性 Light uniformity	≥98%
7	色度均匀性 Color uniformity	Cx，Cy ±0.003
8	箱体尺寸 Dimension （含灯板模组）（Including light board module）	600×337.5×34.55mm（金刚箱体） (Transformers series) 600×337.5×38.15mm（磐石箱体） (Monolith series) 600×337.5×33.65mm（青锋箱体） （Qingfeng series)
9	箱体重量 Weight	3.5KG（金刚）(Transformers)/ 4.3KG（磐石）(Monolith)/ 3.4KG（青锋）（Qingfeng）
10	箱体颜色 Color	黑色 Black
整屏 Full screen		
1	使用环境 Usage environment	室内 indoor
2	白平衡亮度 White balance brightness	600-800
3	静态对比度 Static contrast	10000：1
4	亮度均匀性 Light uniformity	≥98%
5	箱体平整度 Flatness	≦0.15mm（金刚箱体）(Transformers series) ≦0.1mm（磐石箱体）(Monolith series) ≦0.2mm（青锋箱体）（Qingfeng series)

6	水平视角 Horizontal perspective	≧160°
7	垂直视角 Vertical perspective	≧160°
8	色温 Color temperature	3000-18000K 可调 3000-18000K Tunable
9	平均功率 Average power	≤175W/m2
10	最大功率 Maximum power	≤350W/m2
11	像素密度（点/平方米）Pixel density	1137422
12	供电方式 Power supply	AC100-240V,50/60Hz
13	对地漏电流 Current against floor drain	＜2mA
14	工作环境温度 Operating ambient temperature	-10℃～40℃
15	工作环境湿度 Ambient humidity	10%～90%无结露 Dew free
16	存储环境温度 Storage ambient temperature	-20℃～60℃
17	存储环境湿度 Storage ambient humidity	10%～90%无结露 Dew free
18	换帧频率 Frame change frequency	60Hz
19	刷新频率 Refresh frequency	≥3840Hz
20	最佳视距 Optimum visual distance	≥1.25m
21	灰度/颜色 Grayscale/color	281 万亿
22	亮度调节软件 Brightness adjustment software	软件 14 级调节/14 级自动调节 Software 14 level adjustment /14 level automatic adjustment
23	控制方式 Control mode	与电脑显示屏同步显示 Synchronized display with computer display
24	无中继有效通讯距离 Valid communication distance without relay	非屏蔽双绞线最大传送距离 90 米，多模光纤传输距离可达 500 米，单模光纤传输距离可达 15 公里 The maximum transmission distance of unshielded twisted pair is 90 meters, the transmission distance of multi-mode fiber can reach 500 meters, and the transmission distance of single-mode fiber can reach 15 kilometers
25	计算机操作系统 Operating system	Windows(XP、Vista)、Win7、Win8、Win10
26	视频信号 Video signal	VGA、DVI、RF、S-Video、RGBHV YUV、YC、COMPOSITION 等

27	平均无故障时间 Mean time between failure	≥10000 小时
28	LED 芯片寿命典型值 Typical value of chip life	100000 小时
29	杂点率 Stray point rate	≤1/10000
30	稳定性 Stability	支持 7*24H 连续工作 Support 7*24H continuous work
31	阻燃（防火） Flame retardant (fire prevention)	PCB 的阻燃等级达到 UL94 V-0 级 The flame retardant rating of PCB reaches UL94 V-0 level
注：参数指标可根据实际情况定制，最终解释权归山西高科视像科技有限公司。 Note: The parameters and indicators can be customized according to the actual situation.The rig ht to the final interpretation belongs to Shanxi High-Tech Visual Technology Co., Ltd.		

5. 包装 package

5. 1 模块包装 packaging of modules

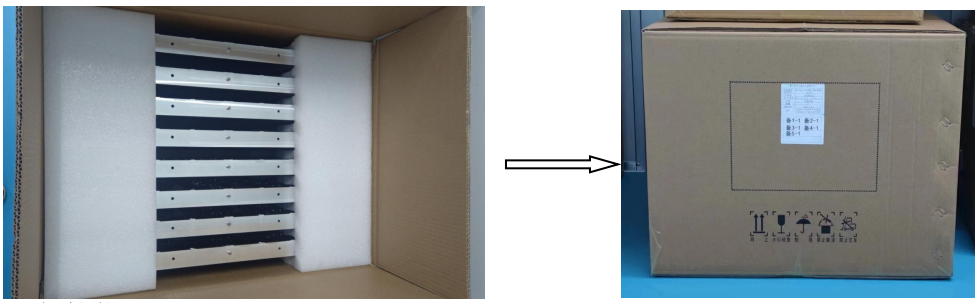
每箱有 2 层珍珠棉，一层棉可以装 32 张灯板，一个纸箱共 64 张模块。

Each box has 2 layers of pearl cotton, one layer of cotton can hold 32 light boards, a carton of 64 modules.



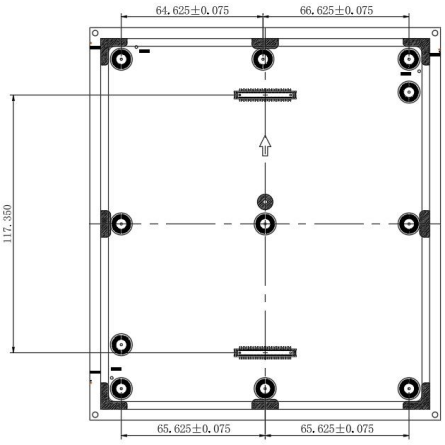
5. 2 箱体包装 packaging of Cabinet

每箱放置 8 个箱体 There are 8 cabinet in the box。



6. 安装指导 Installation guide

6. 1 模块安装孔位图 Module Mounting Hole Diagrams

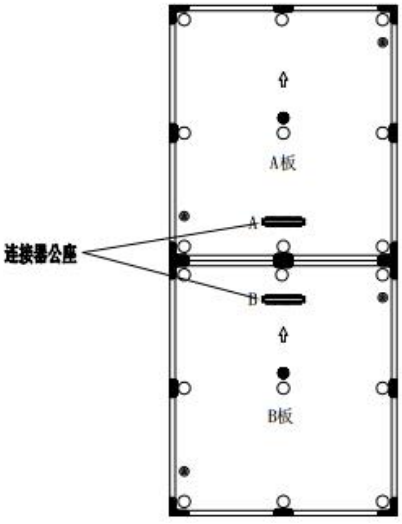


6.2 模块信号线连接方式 Connection of module signal cable

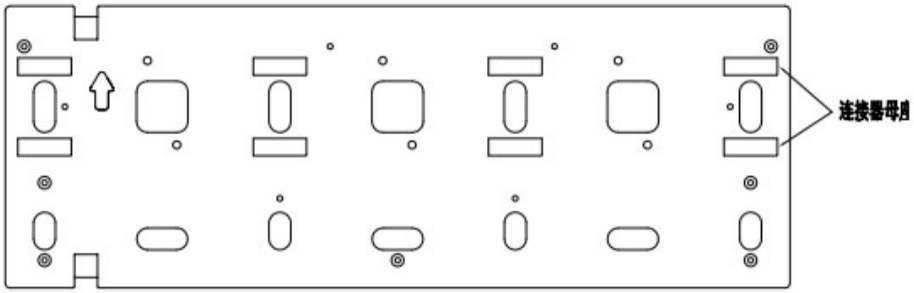
由于本产品为微小间距、高精度产品，仅适配高精度的封闭式压铸箱体，并且为硬连接方式，电源和信号在同一个 60P 的浮动连接器上输出，在安装模组之前需将转接板安装好，并且将电源的输入线接至电源，另将信号的输入输出线接至转接板上。单元模块电源及信号的连接方式如下：

As this product is a micro-pitch and high-precision products that only suitable for high-precision closed die-casting box, and for hard-wired. The power supply and signal output are output from the same 60P floating connector. Before installing the module, install the three-in-one adapter board, connect the power input line to the power supply, and connect the signal input and output line to the adapter board.. The unit module power and signal connections are as follows:

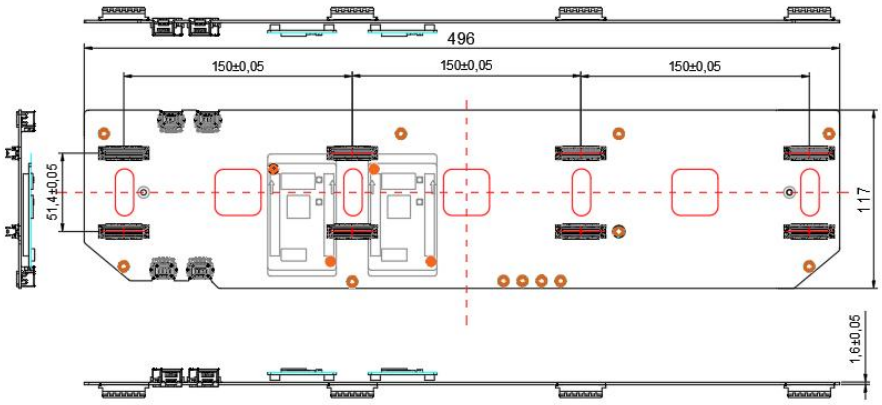
（我公司定制点亮程序，满足带载像素）：(Our company customized lighting program to meet the on-load pixel) :



三合一转接板结构图 Three-in-one transfer board structure：



双卡双备份转接板结构图 Dual-card dual-backup Transfer Board chart：



模块安装 Module installation

箱体上磁柱位置与模块上铁片螺丝位置对应，箱体上自带安装磁柱，将模组紧密配合磁吸在安装好转接板、线材的箱体上即可（注意拼接缝隙、符合平整度要求）。

The position of the magnetic column on the box corresponds to the position of the iron screws on the module.The box comes with a magnetic post for mounting ,so that the module can be tightly mounted to the box with the adapter board and cable installed. (pay attention to the stitching of gaps and meet the flatness requirements).

箱体安装要求 Box installation Requirements

本箱体为我公司自主设计铝合金箱体，采用压铸模具一次成型，具有重量轻，结构合理，精度高，散热效果好，基本可实现无缝拼接等优点。

This box is designed for our company’s own aluminum alloy box,it adopts die-casting mould one-time molding， which has the advantage of light weight, reasonable structure, high precision, good heat dissipation effect.Basic seamless splicing and other advantages can be realized.

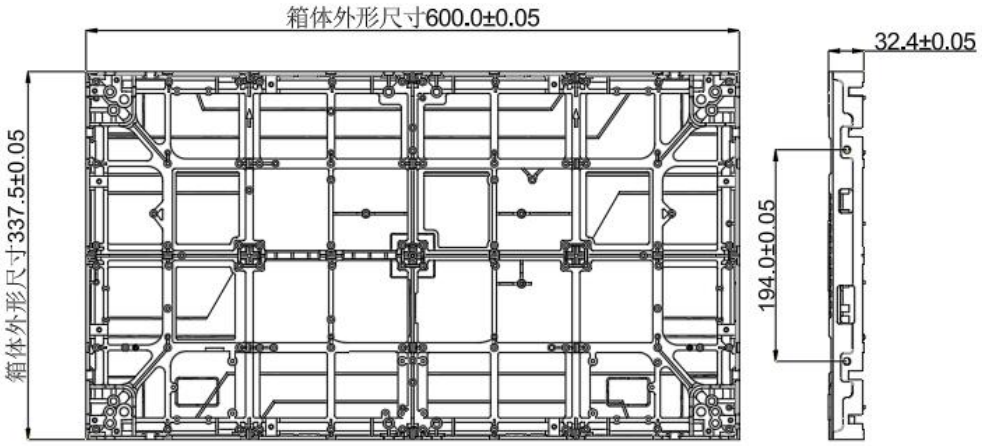
箱体内部的转接板都从正面安装及拆卸，可以实现箱体全前维护。箱体上下左右连接采用连接片锁紧调平，安装简便，模组通过磁柱吸附于箱体上，每个箱体上吸附 8 个模块。

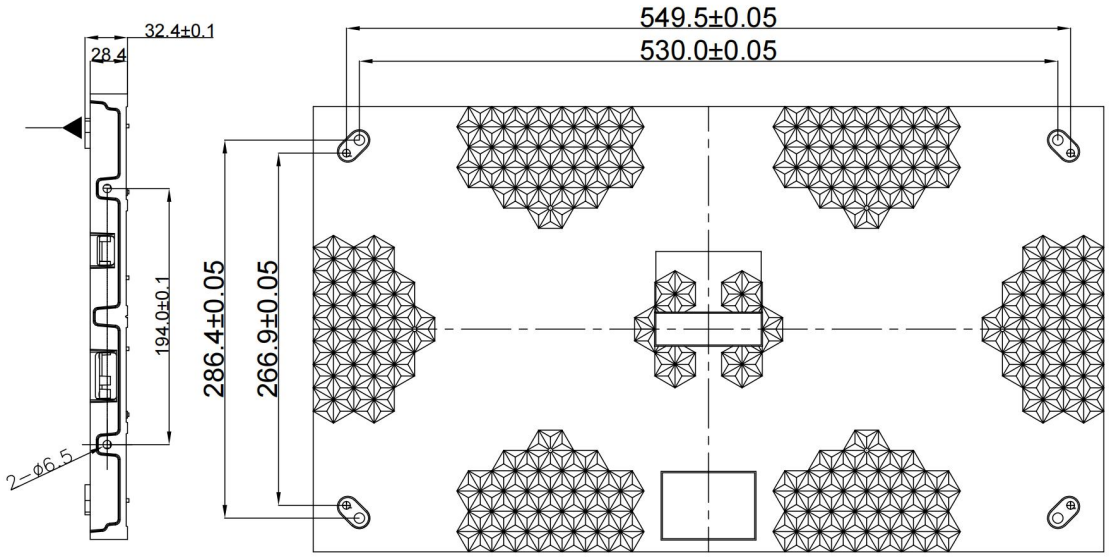
Adapter plates inside the box are installed and removed from the front, which can realize the full front maintenance of the box. The upper, lower, left and right connection of the box body is locked and leveled by the connecting piece, and the installation is simple. The module is adsorbed on the box body by the magnetic column, and 8 modules are adsorbed on each box body.

箱体安装尺寸图（后续出货以金刚箱体二代和青锋箱体为主）

Dimension drawing of box installation（The subsequent shipments will mainly consist of transformers series and Qingfeng series）

金刚箱体二代 The second transformers series：





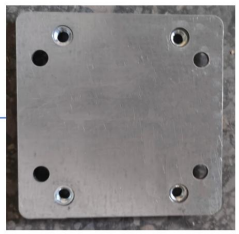
采用钢结构安装时使用

It is used when it is installed with steel structure

箱体侧边连接螺丝 M6*20mm

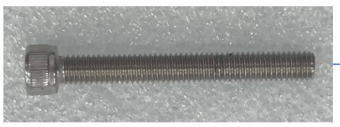
Side connection screws M6*20mm





后安装连接片

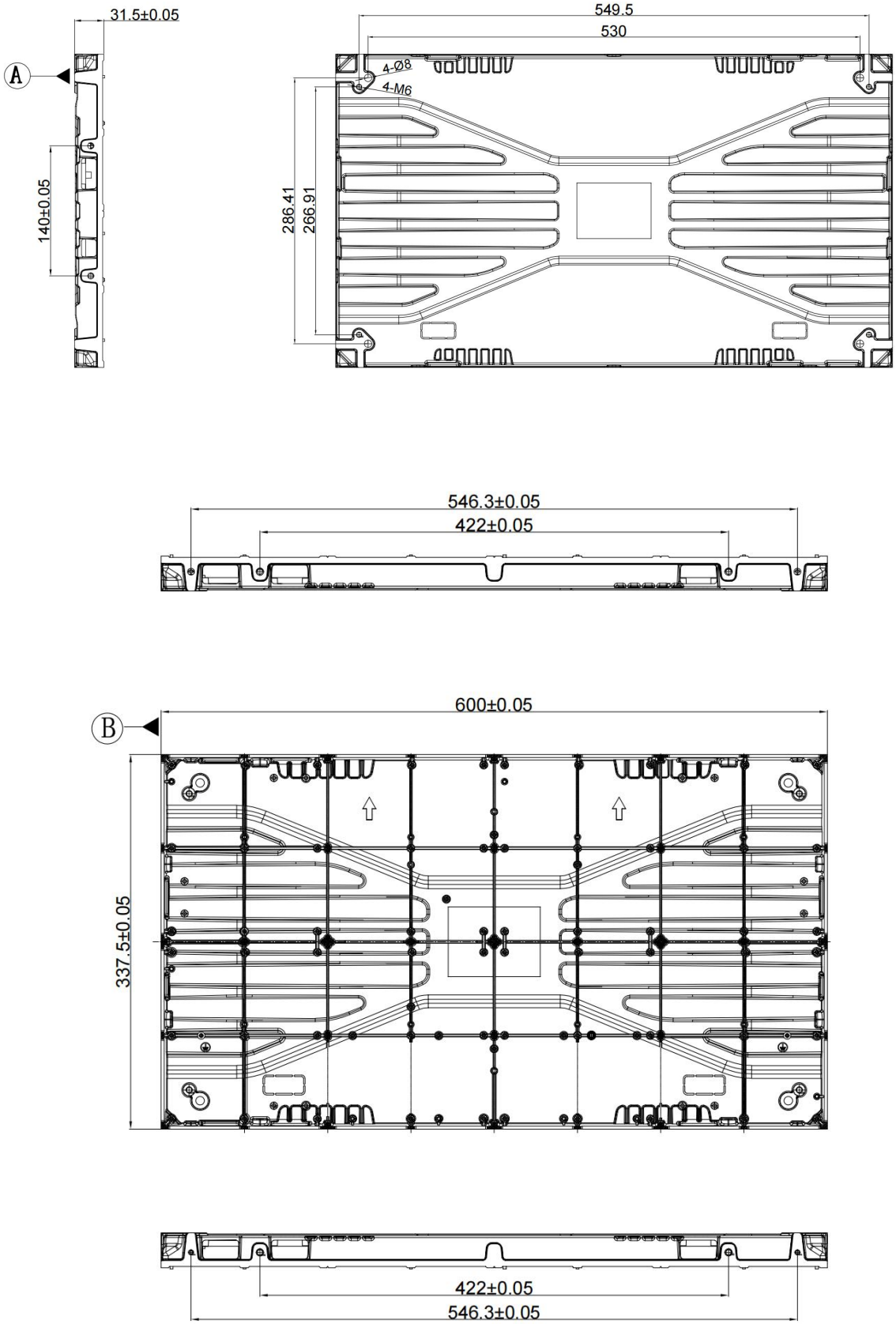
Install the connecting piece at the rear



后安装连接片配套螺丝 M6*60mm

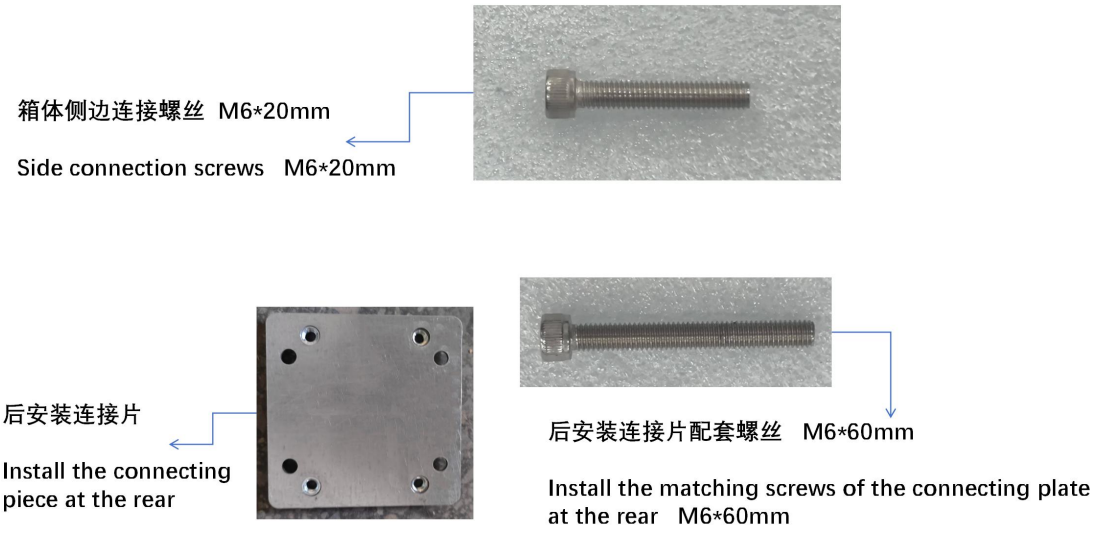
Install the matching screws of the connecting plate at the rear M6*60mm

青锋箱体 Qingfeng series

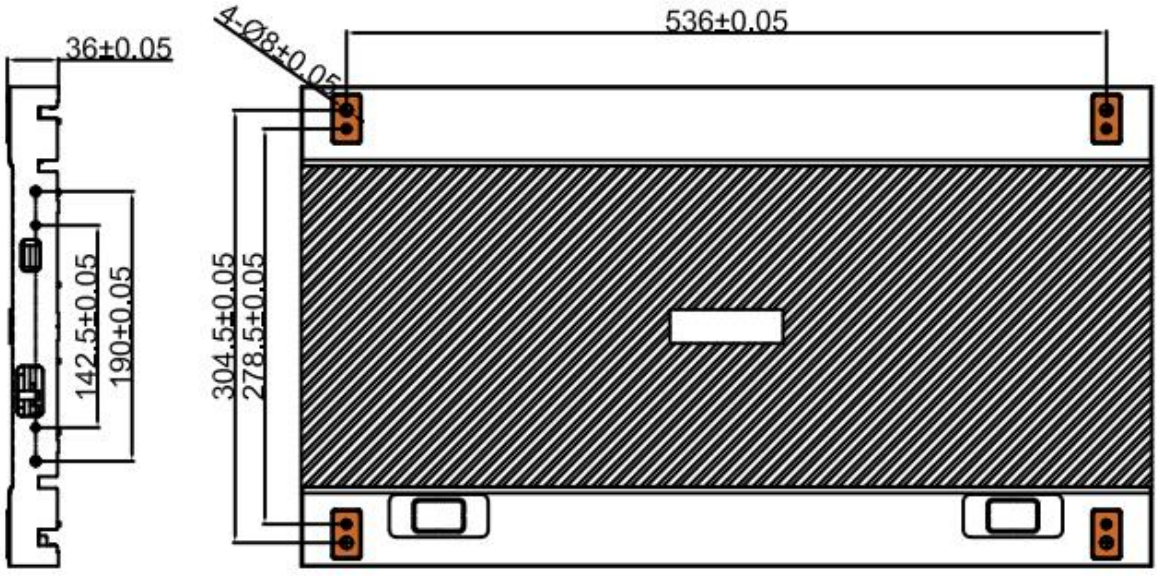


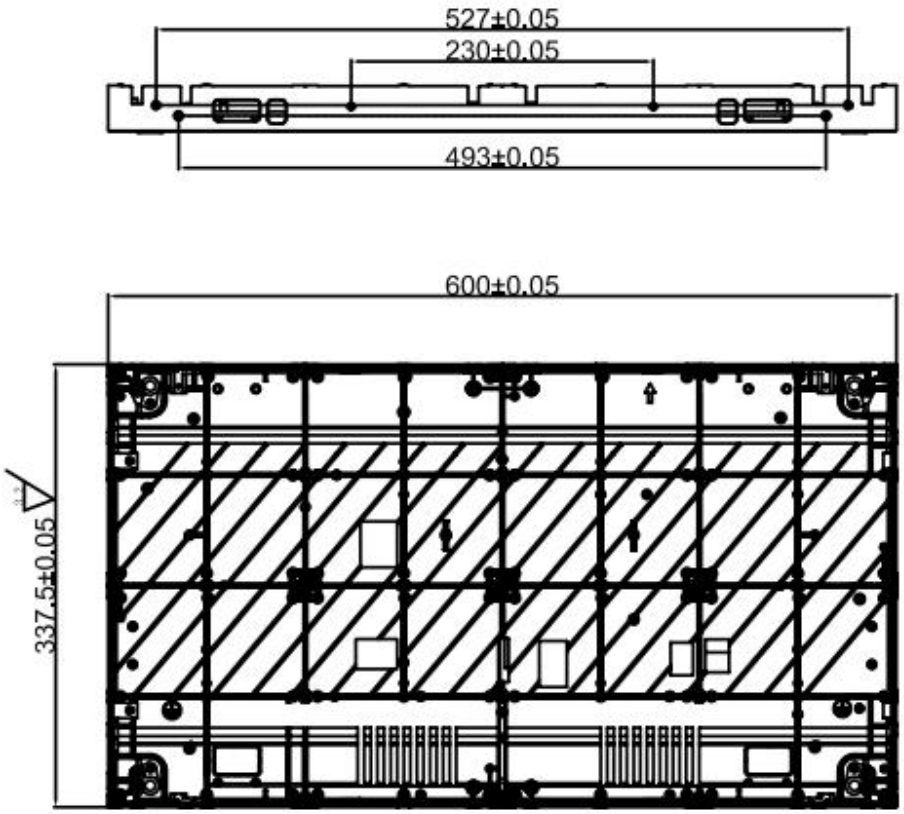
采用钢结构安装时使用

It is used when it is installed with steel structure



磐石箱体 Monolith series





采用钢结构安装时使用

It is used when it is installed with steel structure

磐石箱体（F 款）

Monolith series-F



磐石箱体（D 款）

Monolith series-D



6.3 箱体安装 Box Installation

首先采用 40×40 方钢搭建钢架结构，用水平尺调节钢架结构至水平（水平长 7m 内的平面度在±1mm 以内）；用激光水平仪对立柱进行垂直度的测量，确保钢架前端所有方钢面处于同一个平面上。

Firstly, use40×40 square steel to build the steel frame structure,and adjust it to the level with a level ruler (Flatness within ± 1mm over a horizontal length of 7m n mmm,mgfgfg). Measure the perpendicularity of the column with a laser level meter to ensure that all square steel surfaces at the front of the steel frame are on the same plane.

用箱体连接片将箱体拼接，从钢架结构中间放置第一个箱体，连接片紧贴钢架结构，扣上安装箱体方钢连接片，用 4-M6*12(4-M8*20) 螺栓将箱体和连接片锁紧，然后向两侧逐个放置箱体，箱体之间通过定位销定位，用 M6 螺丝锁紧，保证相邻箱体间缝隙≤0.1mm，直至第一层箱体固定安装完毕，以此类推完成剩余箱体的安装。

Use the box connecting piece to splice the box, place the first box from the middle of the steel frame structure, the connecting piece is close to the steel frame structure,buckle the installation box square steel connecting plate, use 4-M6*12 or 4-M8*20 bolts to lock the box and the connecting piece, and then place the box body one by one to both sides, the box body is positioned by the positioning pin, and locked with M6 bolts to ensure that the gap between adjacent boxes is≤0.1mm, until the first layer of the box is fixed and installed, and so on to complete the installation of the remaining box.

6.4 箱体信号/电源连接 Signal/power Connection

注意此箱体拼接与其它箱体是完全不同的，箱体拼接时，电源线和网线连接好之后要将线材通过箱体之间的过孔置于箱体内部，供电需采用专门配备的 3×2.5mm²

FV-LOCK 插头电源线，采用串接方式，当输入电压为 220V，串接箱体建议数量不超过 30 个；当输入电压为 110V 时，串接箱体建议数量不超过 15 个。

Note that the box splicing is completely different from other boxes,so when splicing the box, place the wire inside the box through the holes between the boxes after the power and network cables are connected. The specially equipped 3×2.5mm2 FV-LOCK power cable with plug is required for power supply, and is connected in series. When the input voltage is 220V, the recommended number of serial enclosures does not exceed 30; When the input voltage is 110V, the recommended number of serial cabinets is not more than 15.

箱体的信号连接采用专用配备的超五类网线，串接箱体数量不超过发送卡的单网口最大带载点数。

The signal connection of the box adopts the specially equipped super five network cables, and the number of connected boxes does not exceed the maximum number of load points of the single network port of the sending card.

6. 5 显示屏维护 Display Maintenance

箱体出现故障时可以进行前维护，前维护时必须使用专用的吸盘，操作时要求轻拿轻放，不得用力磕碰灯面，需特别留意防止拆装过程中模组跌落。

Box failure can be pre-maintenance that must use a special suction cup .Operation requires: Hold it lightly, do not knock the surface of the lamp and pay attention to prevent the module from falling during the dismounting process.

将吸盘紧贴垂直于单元板表面，启动吸盘施力抽取，即可将单元板从箱体上分离。

Place the suction cup firmly perpendicular to the surface of the unit plate, activate the cup to apply force to extract, then the unit board can be separated from the box.



6.5.1 显示屏安装注意事项 Display Installation Precautions

6.5.1.1 防水、防潮 Water-proof and Moisture-proof

电子设备被淋湿或严重受潮会引起短路甚至起火，引发故障甚至火灾，造成损失。

要求屏体与建筑的结合部必须严格防水防漏，避开通水管路。

Wet and damp seriously electronic equipment can cause short-circuit or even fire, so the combination of the screen body and the building must be strictly waterproof and leak-proof, avoiding the water pipes.

6.5.1.2 通风、降温 Ventilation and cooling

显示屏工作时本身就要产生一定的热量，如果环境温度过高且散热不良，集成电路可能工作不正常，甚至被烧毁，从而使显示系统无法正常工作。

When the display works,it will generates a certain amount of heat.so if the ambient temperature is too high and the heat dissipation is poor,the integrated circuit may not work properly or even be burned, thus preventing the display system from work.

要求安装通风设备降温，使屏体内部温度在-10℃～50℃之间。屏体背后上方安装温控风扇排出热量。

It is required to install ventilation equipment to cool down ,so that the internal temperature of the screen body is between -10 ℃ and 50℃ . A temperature-controlled fan is installed above the back of the screen body to expel heat.

不易维修、维护的安装方式建议安装远程监控保护设施。

Remote monitoring of protection facilities are recommended if the installation method is not easy to repair or maintain.

6.5.1.3 软件安装 Software installation

显示屏控制和节目制作软件按照软件使用说明书安装和使用。如果对软件使用有疑问，请向我公司售后服务或控制系统厂商售后服务咨询。

According to the software instruction manual,install and use the display control and program production software. If you have any questions about the software use, Please contact our company after-sales service or control system manufacturer after-sales service consultation.

不同的模组驱动 IC，可能需要不同版本的控制和节目制作软件，也可能需要将接收卡固件升级到指定的版本。控制和节目制作软件及接收卡固件版本不正确，会导致显示不正常， 或性能不能调试到理想状态。具体要求请见售后服务电话。

Different mod-driven IC may require different versions of control and programming software, and may require the receiving card firmware to be upgraded to a specified version.

Incorrect versions of control and program production software and receiving card firmware may result in abnormal display or performance debugging to the desired state. For specific requirements, please contact after-sales service.

7 安全要求 Safety requirement

7.1 单元板使用安全要求 Installation requirements for ESD prevention

7.1.1 安装静电防护要求

你们 m COB 单元板使用过程要严格注意静电防护，接触模组人员必须佩戴有接地的静电手环或静电手套。

Pay attention to the electrostatic protection when using the COB unit board , personnel who must wear a grounded electrostatic hand ring or gloves.

7.1.2 安装接地要求 Grounding requirements for installation

为防止雷击或浪涌损坏芯片，模组装配过程中，各种电动工具必须良好接地，箱体中的开关电源外壳、屏体等要求正确接地（与强电地必须分开）。

In order to prevent lightning strikes or surges from damaging the chip, during module assembly process, all kinds of power tools must be well grounded and the switching power supply shell and screen in the box must be properly grounded.(separated from the strong electric ground).

7.1.3 单元板清洁要求 Unit board cleaning requirements

清洁单元板要求使用干净的软碎布蘸取酒精轻轻擦拭模组表面，不可使用作用未知的化学液体擦拭，以免损坏或腐蚀单元板灯面胶体。清洁后，待模组表面完全晾干再通电使用显示屏。

To clean the unit board, use a clean soft rag dipped in alcohol to gently wipe the module surface, Do not use unknown chemical liquids to wipe so as to damage or corrode the cell board lamp face colloid. After cleaning, allow the module surface to dry completely before powering up the display.

7.1.4 维修要求 Maintenance requirement

COB 单元板出现故障需返厂维修。

Failure of COB unit board needs to be returned to the factory for repair.

7.1.5 防止磕碰要求 Protection against bumping requirements

COB 单元板四角与边缘均采用泡沫棉防护，运输过程中严禁用力摔、推、挤、压包装，搬运需轻拿轻放，防止跌落挤压；在拆开安装过程中需轻拿轻放，严禁跌落磕碰，以免发生套件破裂、刮伤边缘像素、胶面脱落、胶面破损、元器件脱落等问题。

The four corners and edges of the COB unit board are protected by foam. It is strictly prohibited to drop, push, squeeze or press the package, and the handling should be light to prevent falling and squeezing during transportation. In the process of disassembly and installation, it is necessary to handle gently. It is strictly prohibited to fall and knock, so as to avoid problems such as kit cracking, scraping edge pixels, rubber surface falling off, rubber surface damage, components falling off and so on.

7.2 显示屏使用安全要求 Display safety requirements

7.2.1 环境温度要求 Ambient temperature requirement

为保证显示屏工作稳定与达到设计的使用寿命，要求 COB 单元板工作时的表面温度<85℃，显示屏体内部空气温度<50℃。根据显示屏实际工作环境，采取必要的冷却措施，如增加抽、排风扇形成散热风道或安装空调制冷。

In order to ensure the stability of the display and achieve the designed service life, it is required that the surface temperature of the COB unit board is <85℃,and the air temperature inside the display body is <50℃when it is working. Take necessary cooling measures based on the actual operating environment of the display, for example, adding pumping and exhaust fans to form heat dissipation ducts or installing air conditioners to cool the display.

7.2.2 显示内容要求 Display content requirement

为避免出现局部亮度严重衰减或死灯，使显示屏达到设计使用寿命， 不可长期显示静止画面或静止文字，必须播放滚动画面或文字。

In order to avoid severe attenuation of local brightness or the dead lights and let the display reaches the design service life,can not display a static picture or static text for a long time, you must play a rolling picture or text..

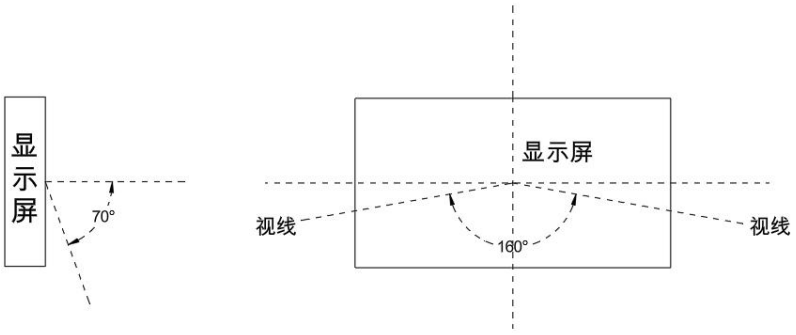
7.3 整屏验收要求及方法 Full screen acceptance requirements and methods

7.3.1 显示屏亮度验收 Screen brightness acceptance

将显示屏调成全亮状态，5 分钟后使用亮度计完成显示屏亮度测量。测量亮度时，要求亮度计光轴垂直于屏体。调整亮度计与显示屏距离，确保让亮度计目镜内黑色圆点

或圆圈覆盖 16 个以上像素点，调整焦距使目镜内可清晰看到 LED 灯珠，然后测量并读取亮度数据。可视角度验收如下图，在屏体左右 80°位置，和显示屏下视角 70°位置观看，要求屏体无明显黑斑、无明显暗块现象。

Turn the display to the full bright state,then 5 minutes later, use the luminance meter to measure the brightness of the display. When measuring brightness, the optical axis of luminance meter should be perpendicular to the screen.Adjust the distance between the luminance meter and the display screen,you should ensure that the black dots or circles in the eyepiece of the luminance meter cover more than 16 pixels. Adjust the focal length so that the LED beads can be clearly seen in the eyepiece, and then measure and read the brightness data. Viewing Angle acceptance as shown in the figure below. Viewing Angle at 80° around the screen body and 70° under the display screen should be observed without obvious black spots or dark patches.



7.3.2 接地检查 Grounding check

外壳、箱体、显示屏外框必须良好接地，要求接地电阻≤10 欧，钢架结构接地电阻≤5 欧，每半年检查一次接地电阻。

The switching power supply shell, box and display screen frame must be well grounded.The grounding resistance is required to be ≤10 ohms and the grounding resistance of steel structure is required to be≤5 ohms . The grounding resistance is checked every six months.

7.3.3 防雷设施检查 Check lightning protection facilities

要求 LED 显示屏可靠接地，要求配电箱有配浪涌保护器，对避雷设施，每半年进行一次检查。雷雨天气应避免使用显示屏。

The LED display should be grounded reliably, the distribution box should be equipped with a surge protector, and the lightning protection facilities should be inspected every six

months. The display screen shouldn't be used in a thunderstorm

7.4 防烧屏操作要求标准操作 Anti-burnout screen operation requires standard operation

整屏断电情况下连接网线和电源线，检查连接良好后再给整屏上电，发现显示不良立即整屏断电，整改接线后再整屏上电检验。

If the whole screen is powered off, you should connect the network cable and the power cable. The user can power on the whole screen after checking that the connection is good. If the display is not good, power off the whole screen immediately. Then, rectify the cable connection, and power on the whole screen again.

7.4.1 带电安装操作 Live installation operation

模组必须逐张安装调试，不得连续安装多张显示不正常模组后再调试。

Modules must be installed and debugged one by one, instead of installing multiple modules with abnormal display.

7.4.2 整屏使用中显示不正常处理 The treatment of display abnormally in use

用户在使用过程中发现显示不正常，特别是有整行高亮现象，立即整屏断电后检修，避免在此情况下长时间供电。

When users find the display is abnormal in the process of use, especially the highlighting phenomenon of the whole line , they should immediately repair the whole screen after cutting up the electricity, so as to avoid power supply for a long time in this case.

8.声明：Statement

警告：在居住环境中，运行此设备可能会造成无线电干扰。 Warning: In a residential environment, running this device may cause radio interference.