

Produce Taste regulation grid Book

SP ECIFICATION

product name: Outdoor P 3.91 full color module

Production unit: Shanxi Gaoke Huajie
Photoelectric Technology Co., Ltd.

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scope of application

The product specification is only applicable to the outdoor P391 full-color module, specification model

PM 3.91-O.

Product Description

This product uses self-packaged SMD1921 lamp beads, red, green, One each of the blue chips. The 1921 lamp bead is welded on the PCB board through surface mount technology (SMT).

This product uses a dual latch driver IC chip and the integrated row driver chip through the computer Control ; wide display viewing angle, pure and consistent color, stable and uniform brightness, text, graphics The image and video are clear.

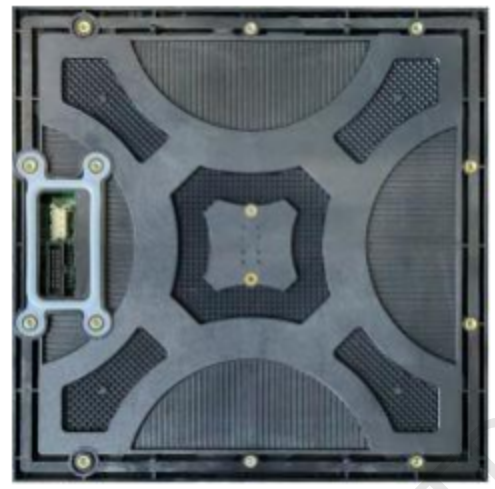
The lamp beads and chips are mounted on the PCB board to form a unit board, and then installed on the bottom case to form a into modules. It has the characteristics of preventing direct sunlight, dustproof, waterproof and high temperature resistance, and its appearance is exquisite Beautiful, strong and durable.

The bottom case has M4 threaded holes for installing modules . Screws can be used to fix the module to the case

On the body, and then splicing the cabinets into a whole screen.



Module front

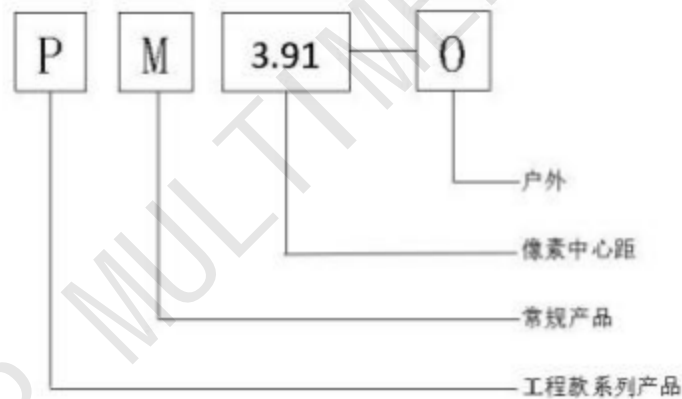


Module back

interface definition

R1	1	2	G1	pin	Signal	Function	pin	Signal	Function
B1	3	4	GND	1, 2 3	R1	first group RGB data	4, 8 16	GND	signal ground
R2	5	6	G2		G1				
B2	7	8	GND		B1_				
A	9	10	B						
C	11	12	D.	5, 6 7	R2	second group RGB data	9, 10, 11, 12	A, B, C, D	row control Signal
CLK	13	14	LAT		G2				
OE	15	16	GND	13	CLK	clock signal	14	LAT	Latch letter Number
				15	OE	enable signal			

Definition of specifications and models



Module technical parameters

serial number	project name	Parameters and indicators
Unit module		
1	LED packaging method	SMD 1921 surface mount three in one
2	horizontal viewing angle	1 70° ±5°
3	vertical viewing angle	1 70° ±5°
4	pixel composition	1 R 1 G1B
5	dot pitch	3.91 mm
6	scan method	1/16 scan

7	drive mode	Constant current drive
8	Module resolution	64 × 64 points
9	Module size	250 mm × 250 mm × 16.5 mm
10	Module weight	6.74 g ± 5 g
11	Mod type	Light drive in one

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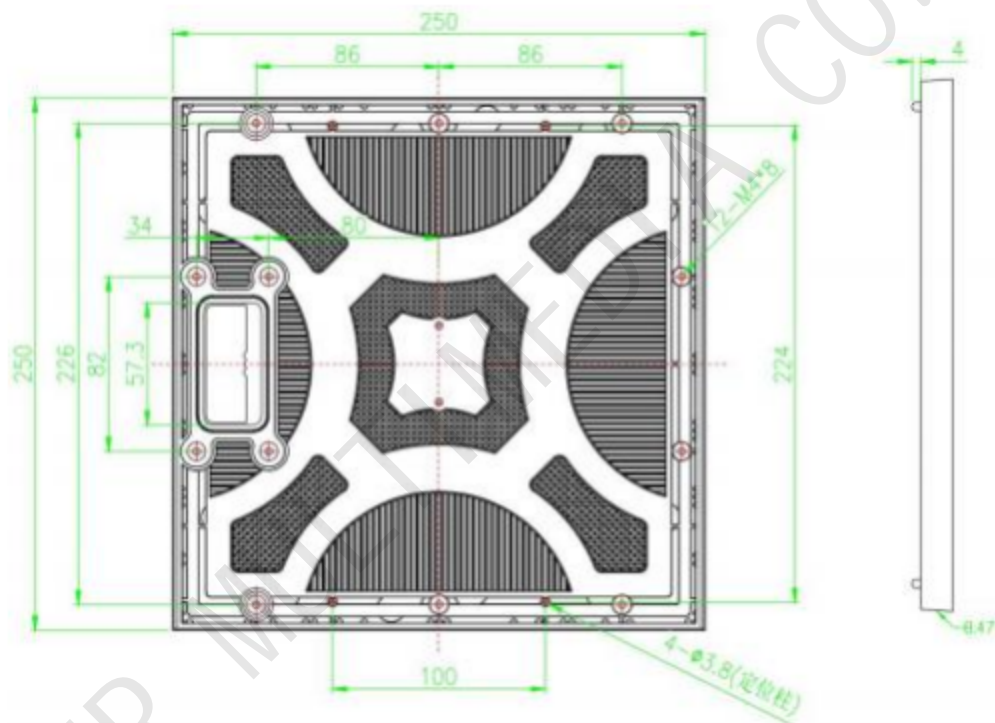
1 2	Module working voltage	5V _
1 3	Module average power	1 8W
1 4	Module maximum power	35W
full screen		
1	use environment	the outdoors
2	white balance brightness	$\geq 4500 \text{ cd / m}^2$
3	color temperature	3000-18000K
4	average power	2 80 W / m ²
5	maximum power	560 W / m ²
6	Uniformity of brightness	$\geq 9.8.5\%$
7	Color uniformity	$\pm 0.002 \text{ Cx , Cy within}$
8	Pixel density (dots/square meter)	6 5 536
9	power supply	AC 20 0-240V , 50 / 60Hz
1 0	Earth leakage current	$\leq 3.5\text{mA / m}^2$ _
1 1	working environment temperature	- 20℃~+60℃ Support up to -40° C by adding heating facilities
1 2	working environment humidity	1 0%~80%
1 3	storage ambient temperature	- 20℃~60℃
1 4	storage environment humidity	1 0%~80%
1 5	frame rate	60Hz _
1 6	refresh rate	$\geq 1.920 \text{ Hz}$
1 7	best line of sight	$\geq 3.91\text{m}$ _
1 8	Signal Processing Depth	163 84
1 9	Brightness adjustment software	software 16-level adjustment/16-level automatic
2 0	control method	Synchronized display with computer display

2 1	Effective communication distance without relay	of unshielded twisted pair is 100 meters, more Mode fiber transmission distance up to 500 meters, single mode fiber Transmission distance up to 15 km
2 2	computer operating system	Windows (XP , Vista), Win 7 , Win8, Win10
2 3	video signal	VGA , DVI , RF , S - Video , RGBHV YUV , YC , COMPOSITION , etc.
2 4	MTBF	$\geq 1\ 0000$ hours
2 5	life span	$\geq 100\ 000$ hours
2 6	Full screen pixel out of control rate	$\leq 1/10000$
2 7	Area pixel out of control rate	$\leq 3/10000$

2 8	stability	Support 7* 24H continuous work
2 9	Flame Retardant (Fireproof)	PCB reaches UL 94 V-0 level
3 0	kit material	PC + Fiber
3 1	decay rate (working for 3 years)	≤1 5%

Installation guide

Module installation hole map



Unit : mm

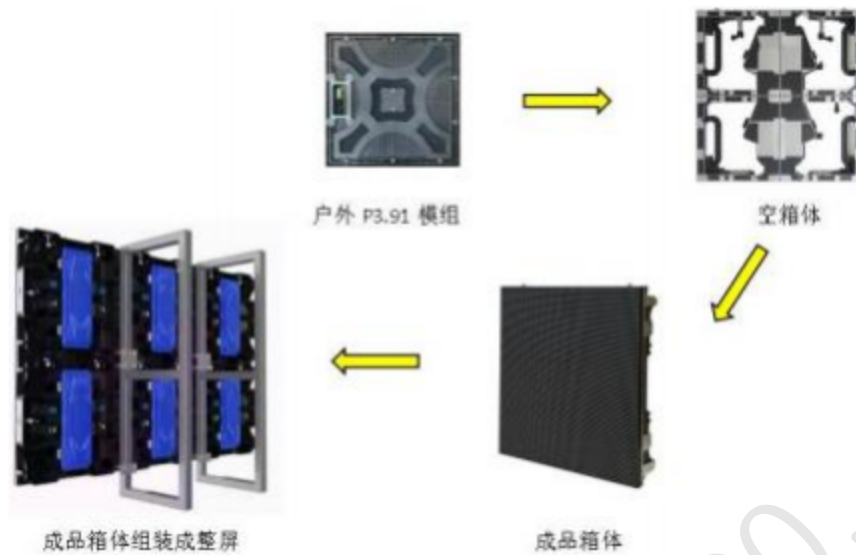
Module Installation Requirements

Cabinet installation

The upper direction of the module is consistent with the upper direction of the box, and the threaded holes on the back of the module correspond to the box. Align the mounting holes, and fix the module on the box from the inside of the box with M4 screws. Module must be arranged neat and the surface of the module is flat.

After the box is installed, install the box on the steel frame to assemble the display, as shown in the figure below.

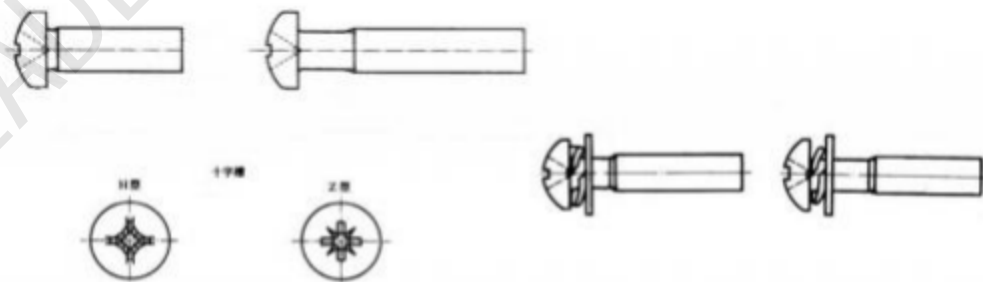
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Fixed module screws

Use M4 screws to fix the module, and the length of the screws after passing through the box is ≤ 5 mm. use GB 9074.4 Screws (as shown in the figure below, spring pads, washers and screws are inseparable), can be By fixed modules. The box structure restricts the parts where GB9074.4 screws cannot be used, but can be used

GB818 screws (see the picture below). For screw selection and naming methods, refer to the corresponding national standards.



M4 GB818 盘头螺钉

M4 GB9074.4 带锁紧螺钉

Module Clearance Requirements

When the module is in use , the LED heats up, and the mask absorbs heat and expands. When installing the cabinet, leave

space between the modules. gap . The installation gap between modules is generally 0.2 mm ~ 0.3 mm It is advisable to pay attention to the processing of the box When installing the openings of the modules, the spacing of the openings is to reserve gaps between the modules.

a metal sheet with a thickness of 0.2 mm to 0.3 mm to sandwich the adjacent modules when assembling the box , and then pull out the metal sheet after the modules are fixed with screws.

Module signal line connection method

to install the split connection of the signal cable , as shown in the figure below. Each row of modules is connected to the receiving card using a long cable. Folio style provides taller brush

The new rate, the display effect is better, and if conditions permit, it should be connected in a split mode.

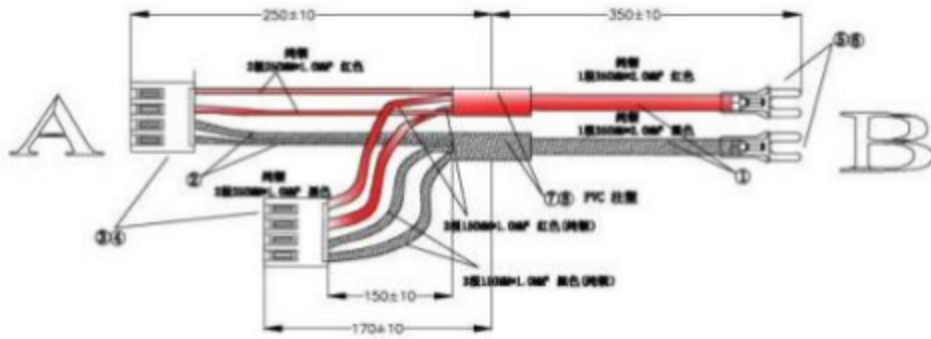


Schematic diagram of module split connection

Module power configuration

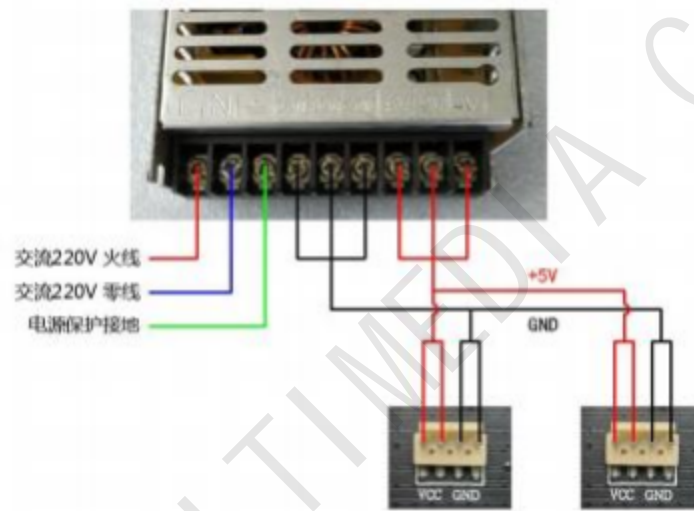
switching power supply	single module current	Number of modules
5V 40A _ _	8.3A	4

Power cord model: one for two 60 cm -25 cm /15 cm VH 4
crimping bar type connecting wire (pure copper or copper-
clad aluminum) .



Power Cord Diagram

power connection



Power Connection Diagram

Precautions for display installation

waterproof, moisture-proof

Before the display screen is installed, it is necessary to check whether there is any dripping water or serious damage to the installation site of the display screen. The hidden danger of moisture, the display is wet or severely damp may cause a short circuit or even cause a malfunction. fire .

the joint between the screen body and the building must be strictly waterproof and leak-proof; the screen body must have good drainage. water measures.

ventilation , cooling

When the display screen is working, it will generate a certain amount of heat. If the ambient temperature is too high and the heat dissipation is bad, the integrated circuit may not work properly, or even be burned, so that the display system is useless. not work normally .

It is required to install ventilation equipment to cool down, so that the internal temperature of the screen is between -20°C and 50°C . It is recommended to install remote monitoring and protection facilities for installation methods that are not easy to repair and maintain .

software installation

Display control and program production software, with software instruction manual, from the control system official Party website to download . Install and use the software according to the software instruction manual, and have doubts about the use of the software Please consult with our company after-sales service or with the control system manufacturer for after-sales service.

The receiving card program used by the control system can be downloaded from the official website of Gaoke Optoelectronics . different models set of column driver ICs May require different versions of control and programming

software, or To upgrade the firmware of the receiving card to the specified version. Control and program production software and receiving card If the version of the software is incorrect , the display will be abnormal or the performance cannot be debugged to the ideal state. specific For requirements, please refer to the prompts on the official website of Gaoke Optoelectronics or consult the after-sales service telephone of Gaoke Optoelectronics.

security requirements

Module use safety requirements

Install ESD Protection Requirements

led During the module installation process, strict attention should be paid to electrostatic protection, and personnel who touch the module must wear Anti- static wrist strap or anti-static gloves.

Installation grounding requirements

To prevent lightning or surge from damaging the chip or LED. During the module assembly process, various electric The tool must be well grounded, and the switching power supply shell and screen in the box must be properly grounded (with communicate 220V mains ground must be separated).

Module Cleaning Requirements

To clean the module, use a clean soft rag dipped in alcohol to gently wipe the surface of the module. No It can be wiped with an unknown chemical liquid, so as not to damage or corrode the plastic parts of the module, the LED shell or LED lamp surface colloid. After cleaning, wait until the surface of the module is completely dry before powering on and using the display screen .

maintenance request

Repair LEDs When making modules , use a constant temperature electric soldering iron or a constant temperature heat gun and ground them well. burn The iron tip generally uses a knife-shaped soldering iron tip.

led When soldering surface drive components, the temperature of the electric soldering iron is generally 300 ~ 360 ° C. The welding time should not exceed 3s, and the number of welding should not exceed three times; when the lamp surface is repaired, the temperature of the air gun should generally be set to

Set at about 260 ~ 280 °C, point the air gun to the lamp bead and shake slightly clockwise until the solder paste is completely

After melting, perform maintenance operations .



Knife tip



Tapered tip

Anti- collision requirements

During the installation and transportation of the module , do not drop, push, squeeze or press the package to prevent the module from falling Dropping and bumping, in order to avoid the breakage of the kit, the falling off of the lamp bead, the damage of the lamp bead, the falling off of the solder pad, and the Parts fall off and so on.

Safety requirements for display screens

Ambient temperature requirements

In order to ensure the stable operation of the display and achieve the designed service life, the surface temperature of the module is required to be $\leq 70^{\circ}\text{C}$ when the module is working, and the air temperature inside the display body is $\leq 50^{\circ}\text{C}$. According to the actual work of the display In the operating environment, take necessary cooling measures, such as adding suction and exhaust fans to form heat dissipation air ducts or installing Install air conditioning and refrigeration.

display content requirements

In order to avoid severe attenuation or dead lights of local LED lamp beads, make the display screen reach the set It is not allowed to display static pictures or texts for a long time, but must play dynamic pictures or dynamic text.

Power Connection Requirements

must use Special switching power supply for LED display, multiple modules connected by a single switching power supply The total current of the group shall not exceed 80% of the rated maximum output current of the power supply. Connect the module to the The wires of the source need to use high-quality copper wires, and ensure that the voltage U at the power socket of the module is in the range of $U \pm 0.2V$.

connecting the power supply, you must pay attention to the positive and negative of the 5V power socket of the module and the 5V output terminal of the switching power supply. If the positive and negative poles are reversed, the module will be burned ,or even a fire will occur.

The module must not be connected to AC 220V, will cause the module to be burned immediately .

When wiring the power supply, ensure that the plug and socket of the module are connected reliably, and the power socket of the switching power supply is connected Tighten the end screws . Loose plugs, sockets and screws will increase the contact resistance and cause burning or Product damage issues.

The ground terminal of the power input must be connected to a qualified ground wire. Poor grounding can produce signal. The number is abnormal, the display is unstable, and even short-circuit burns the screen.

Full screen acceptance requirements and methods

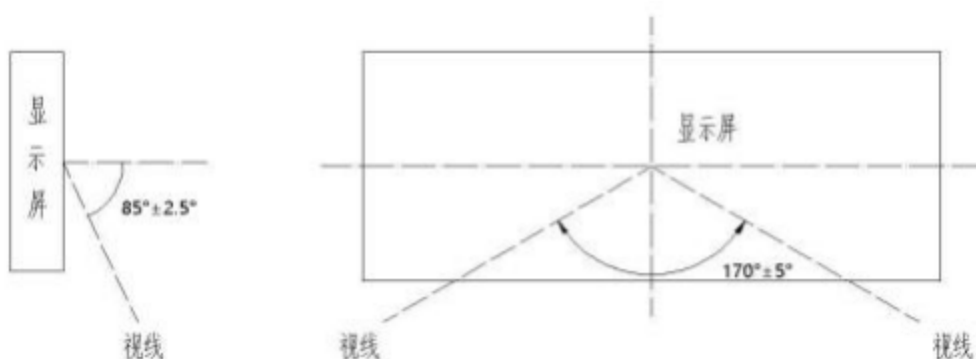
Display brightness acceptance

Turn the display to full brightness, and use a luminance meter to measure the brightness of the display within 5 minutes. When measuring brightness, the optical axis of the brightness meter is required to be perpendicular to the screen. Adjusting the Luminance Meter and Display Make sure that the black dot or circle in the eyepiece of the luminance meter covers more than 16 pixels, adjust the focal length so that the LED light beads can be clearly seen in the eyepiece, and then measure and read the brightness data.

Viewing Angle Acceptance

85° left and right of the screen body, and a viewing angle of 85° below the display screen.

It is required that the screen body has no obvious black spots and no obvious dark blocks.



ground check

Switching power supply casing, cabinet, and display frame must be well grounded, requiring grounding resistance $\leq 10 \Omega$, check the grounding resistance every six months.

Inspection of Lightning Protection Facilities

It is required that buildings have lightning rods or lightning protection belt facilities and be reliably grounded, and distribution boxes are required to have distribution

Surge protectors, lightning protection facilities, checks every six months. Thunderstorms should be avoided Use the display .

Anti-burn screen operation requirements

standard operation

5V when the whole screen is powered off Power cord, check the connection is good and then Power on the whole screen , if the display is found to be bad, immediately power off the whole screen, rectify the wiring and then power on the whole screen for inspection test .

Live installation operation

is required , it must be operated in the following order: first connect the signal input cable, and then Connect to the signal output cable, and finally connect to 5 V power plug. The modules must be installed and debugged one by one. It is necessary to continuously install multiple modules that display abnormalities before debugging.

The display is abnormal when the whole screen is in use

finds that the display is abnormal during use, especially if the whole line is highlighted , immediately That is, check and repair after the whole screen is powered off to avoid long-term power supply in this case.