



# Product specification

(Outdoor soft module series)

## Outdoor Flexible LED Module


Product name: Outdoor full-color LED display screen soft module

product model : P3.076

Specification: R-104\*52-13S-1516

document number : \_\_\_\_\_

version number : V1.1

fiction :	examine and verify :	Ratification: (Seal)
		


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		document number	
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## 1. scope of application

1.1 Scope of Use for the Specification Book: This technical manual is exclusively applicable to the Soft Module Series: Outdoor Full-color LED Display Screen Soft Module P3.076-R-104\*52-13S-1516. The following are the standard product parameters. Customization is available upon request. In the event of a specification update, the latest version will be adopted without prior notice.

### 1.2, Product application scope: [magnetic installation mode](#), [box installation mode](#)


Especially under the following installation conditions:

- ① The screen has curvature requirements, including but not limited to inner arc display surface, outer arc display surface, corner arc display surface.
- ② The screen requires high brightness and waterproof requirements.
- ③ The screen has a shape, and the shape and practical effect need to be perfectly combined.
- ④ Screen Consider cost performance and use a combination of hard modules and soft modules for the screen.

## 2. matters need attention

project	description	
Environmental precautions	Environmental requirements	Storage temperature range: -10 -30 , more than 30 need to be cooled. Working temperature range: -20 -40 , other temperature ranges, need to install temperature control equipment. Module working lamp Surface temperature: 85 , if the temperature exceeds the standard, temperature control equipment should be installed.
	temperature requirement	Storage humidity range: 10%RH-60%RH, if the humidity exceeds 60%RH, dehumidification treatment is required. Working humidity range: 10%RH-90%RH, if the humidity exceeds the standard, dehumidification treatment of the environment should be carried out before normal use.
	Corrosion resistant gas	Corrosive gases in the air contain salt or acid gas environment, will cause electronic components corrosion, crystallization leakage and other phenomena.
	Electrical hazards, prevent lightning strikes	The metal components of the screen, the enclosure of the switching power supply and the box should be well grounded. Pay attention to the grounding resistance less than or equal to 10 and the zero-ground voltage less than or equal to 2V. Prevent the damage of static electricity to electronic devices and avoid the harm of leakage to human body.
Precautions	electrostatic pr-	The installation personnel must wear electrostatic wrist-

tions for use	otection	bands and electrostatic gloves, and all kinds of tools must be strictly grounded during the assembly process.
	Screen water resistance	After the installation of the whole screen is completed, it should be ensured that no water will enter the interior of the screen. Waterproof glue should be applied to the surrounding area of the screen, the box and the connection between the box to ensure strict waterproof treatment.
	Product batch control	Products with different batch numbers cannot be installed on the same screen, otherwise the display screen will produce color block (mosaic) phenomenon. There will be a certain ink color difference between old and new modules.
	Product wiring	The module cannot be directly connected to 220V, and the positive and negative poles of the module power supply should not be reversed. 5v and 4.5 volt power supply can be used in common, common cathode 2.8+3.8v and single 3.8v power supply can be used in common.
	Assembling and disassembling process	Do not throw, push, squeeze or press the module to avoid damaging the display screen. If you disassemble or return to the factory for maintenance in the middle, please use the original packaging and wrap it with pearl cotton strips. The light surface of the module must be isolated from the light surface; otherwise, please place them back-to-back.
	Install torque control	When connecting the power supply, it is necessary to ensure that the terminal joint screws are tightened to prevent the joint position from loosening, resulting in high contact resistance and causing wire burning or product damage. The torque of M4 screws is 6.0-8.0 Kgf.cm, and that of M3 screws is 4.0—6.0 Kgf.cm。

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Do not work live	It is forbidden to assemble modules under power supply. The modules should be assembled on the wall when the main power input is disconnected, and it is not allowed to assemble modules with inserted power lines and signal lines.
Selection of playback system	The module matches the market general control card, including but not limited to Lingxingyu/Novo/Gray/Calate, etc. For other control cards, please consult the control card manufacturer, chip manufacturer and module manufacturer
Load program selection	It is required to use the corresponding system card for debugging, and upgrade the control card as required. You can ask the salesman to send the corresponding configuration file for quick debugging to avoid performance anomalies generated in the debugging process.
play control	Do not display only static pictures or text for a long time, which will cause serious attenuation of lamp tube brightness, inconsistent brightness of the line or batch dead light problem. Please play scrolling pictures or text.
environmental monitoring	At the installation site of the display screen, a temperature and humidity meter should be installed. A smoke sensor should monitor the environment around the screen in real time. After heavy rain, promptly check for moisture, water droplets, or dampness inside the screen. In hot weather, regularly check the internal temperature of the screen. Regularly inspect and maintain the aging condition of all cables to eliminate potential risks.
Avoid secondary construction	After the installation of the LED display, no further construction is allowed to prevent the LED display from being affected by large current impact and dust, such as electric welding, chainsaw and other equipment operation.

### 3. product description

3.1. The display screen is mainly composed of red LED chip, green LED chip and blue LED chip packaged into a pixel point to form a matrix, and then fixed on the plastic kit;

3.2. The display screen contains a driver chip and an input buffer chip, which can be connected to the LED display control system to display video, image and text information;


3.3. Through the system control of driving red LED, green LED and blue LED driver chip, 43980 billion color changes can be formed;

3.4. **At present, the outdoor soft module is only limited to any horizontal splicing. There will be a risk of water leakage in inverted or vertical**

## installation. Please pay attention.

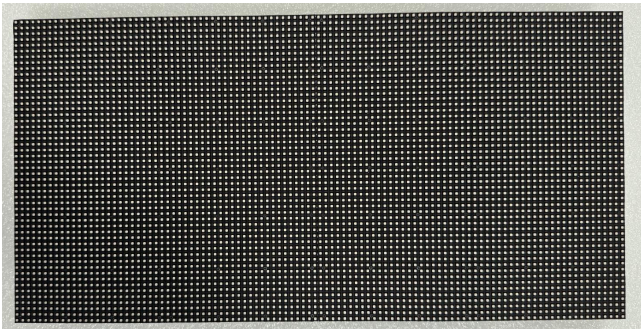
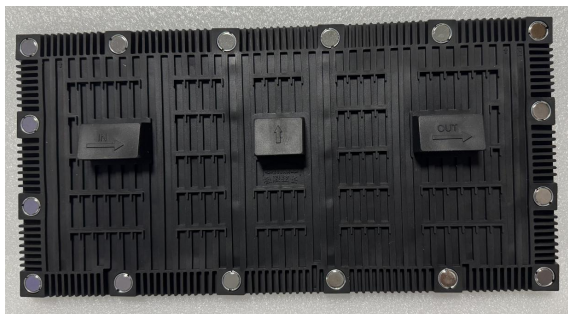
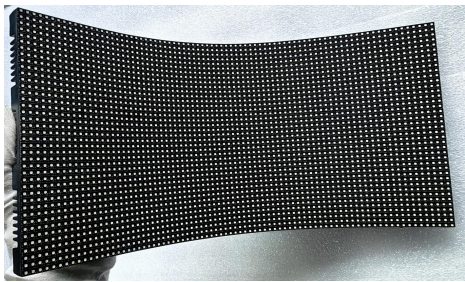
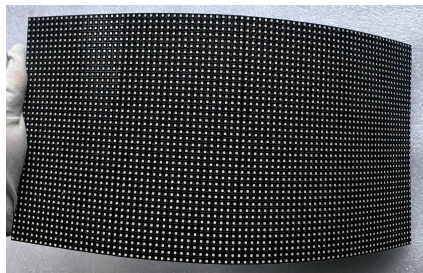

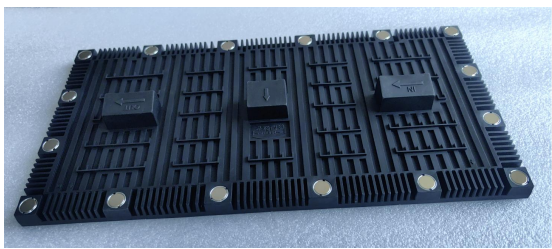
### 3.5. Product features:

- Outdoor soft module high quality lamp beads, efficient lamp tube brightness utilization, and at the same time ensure the service life of the lamp tube. The lamp bead brand includes but is not limited to Guoxing, JingTai, Hongsheng (Ruisheng), Xinda. Standard Hongsheng (Ruisheng) lamp beads.
- Outdoor soft modules are equipped with private board circuit boards, optimized design of the circuit, thickened plates, increased copper circuit layout, effectively avoid the hidden danger of through-hole blockage, and enhance the function of heat conduction and electrical transmission.
- The outdoor soft module is equipped with an LLR private mold kit, featuring high-quality silicone material to enhance stability and flexibility. The mask is specially designed to effectively prevent the expansion and contraction of plastic parts caused by extreme cold and heat, which can lead to issues like light pulling, color deviation, and dead lights.
- Outdoor soft modules are driven by well-known IC driver chips to drive LEDs. The products have good effects, including but not limited to Mingwei, Jichuang, Fumeng, Juyi, etc., and the standard is Mingwei chip.
- The outdoor soft module has a waterproof back cover and a signal and power wiring port, which not only effectively solves the hidden danger of water entering the back, but also facilitates wiring.
- High contrast can achieve good display effect.


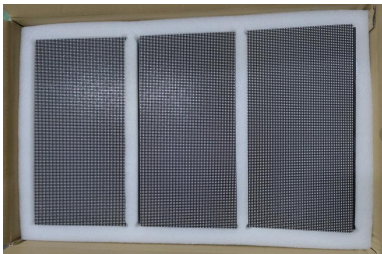
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- The weight is easy to install and disassemble.
- Customizable safety rope to prevent falling from a height.
- Single point and single lamp maintenance can be carried out at low cost.


### 3.6. Module image:

front elevation	dorsal view
	
Inner arc diagram	The outer arc diagram
	
Side view looking up	Side view
	



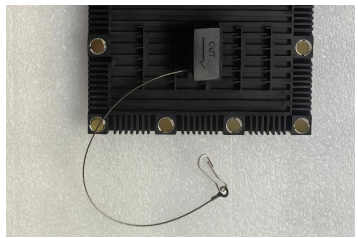
### 3.7, Packaging schematic diagram:

Outer packing box	Inside view of the box	Packaging parameters	
		carton size	L59*W38*H28.5 cm
		Weight of the whole box	17 kg
		Number of modules	30 fix
		Packaging of accessories	Pack separately

		Number of accessories	30 wiring lines + 15 power lines
			weight kg

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fittings of a machine :

standard configuration : 1 Zhang's module is equipped with 1 row line +0.5 "one to two" power lines	Optional: (customizable only) 1 Use 1 safety rope for the mold assembly
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>排线 (1条)</p> </div> <div style="text-align: center;">  <p>电源线 (一拖二)</p> </div> </div>	

#### 4. Product technical requirements


##### 4.1. Screen technical parameters:

Lumiance	$\geq 4000 \text{cd/m}^2$	Brightness uniformity	$> 0.95$
Screen horizontal viewing Angle	$140 \pm 10$ degrees	The screen has a vertical view	$130 \pm 10$ degrees
optimum viewing distance	$\geq 3\text{m}$	service environment	outdoors
Maximum power per square module	$\leq 586 \text{W/m}^2$	Average power per square module (1/3)	$\leq 196 \text{W/m}^2$
Distribution power (maximum power per square divided by 78% divided by 85%)			$\leq 884 \text{W/m}^2$
grey scale	Red, green, and blue are 14-16bits each	display color	439.8 billion
repetition frequency	60 frames per second	Refresh frequency	Normal 960Hz-1920Hz high 1920Hz-3840Hz
control method	Computer control, point by point correspondence, video synchronization, real-time display	brightness control	256 Level manual/automatic
incoming signal	DVI/VGA/HDMI/DP, composite video signal, S-VIDEO, YpbPr (HDTV)		
life length	More than 10,10,000 hours	mean free error time	More than 10,000 hours
Decay rate (3 years of operation)	$\leq 15\%$	Continuous out-of-control point	0
Discrete out-of-control points	$< 0.0001$ , factory value is 0	Blind spot rate	$< 0.0003$ , factory is 0
operating temperature range	$-20 \sim 40^\circ\text{C}$	Working humidity range	10%~90%RH
barrier property	Overtemperature/overload/power failure/image compensation/various correction techniques/overcurrent/overvoltage/antenna protection		

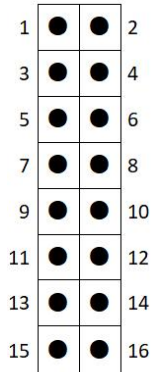
	(optional)		
Screen flatness	<1mm/m <sup>2</sup>	Screen vertical flatness	<1mm/m <sup>2</sup>

#### 4.2. Module technical parameters:

Pixel pitch	3.076mm	Pixel density	105625 Dots/m <sup>2</sup>
Pixel composition	1R1G1B	Tube packaging	SMD1516 (1415)
Size (length * width * thickness)	320*160*12.85mm	weight	0.52kg±0.01kg
design feature	Light drive on	Module resolution	104*52=5408 Dots
Input voltage (DC)	5±0.1V	maximum current	≤6A
Module power	≤30W	Driving mode	1/13, constant current drive
40A power supply with module number	4-5 sheets	50A power supply with module number	5-6 sheets
60A power supply with module number	5-7 sheets	The 80A power supply has a number of modules	7-9 pages

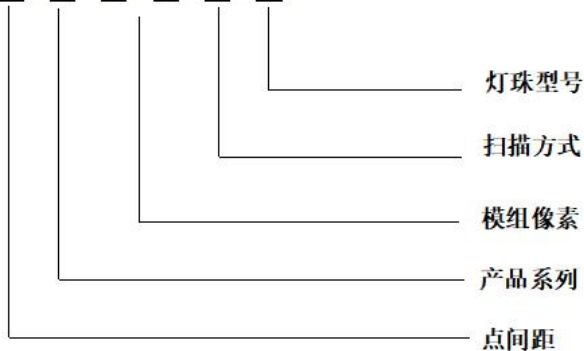
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#### 4.3. Module signal interface definition: (HUB75 interface)

		pin	signal	function	pin	signal	function
1	2	1	RD1	Red data signal	2	GD1	Green data signals
3	4	3	BD1	Blue data signal	4	GND	Power ground
5	6	5	RD2	Red data signal	6	GD2	Green data signals
7	8	7	BD2	Blue data signal	8	GND	Power ground
9	10	9	A	Control power supply signal	10	B	Control power supply signal
11	12	11	C	Control power supply signal	12	D	Supply power signal
13	14	13	CLK	clock signal	14	LAT	Data latch signal
15	16	15	OE	enable signal	16	GND	Data ground

#### 5. Product model naming rules

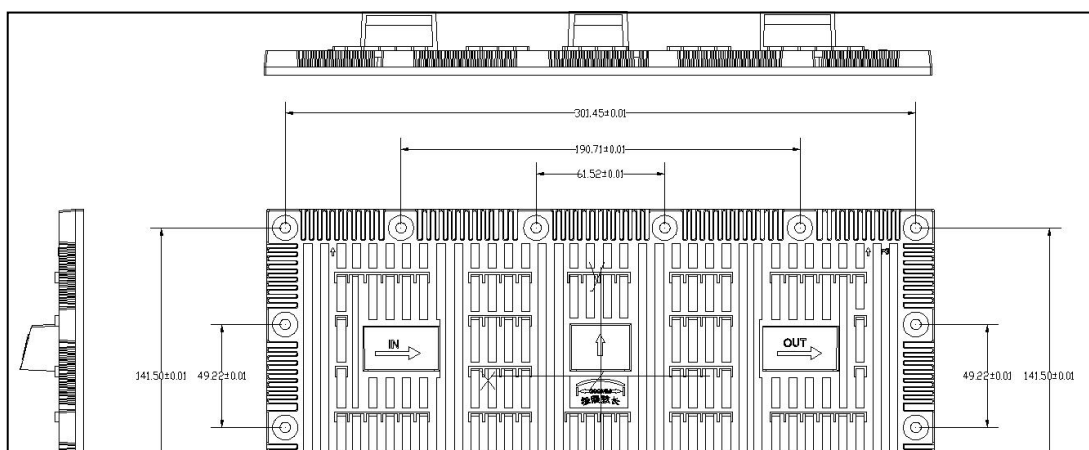
X-X-X\*X-X-X

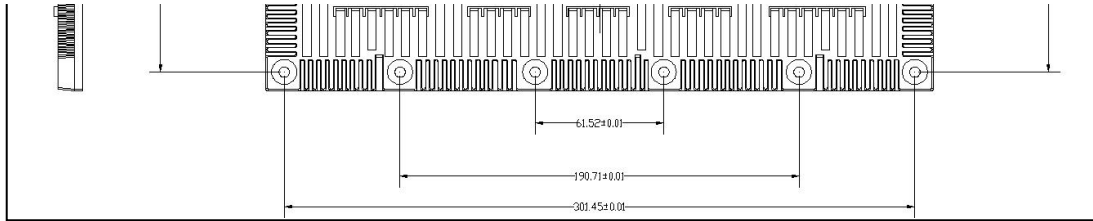



for instance :

Outdoor full-color LED display module P2.5-HG  
-128\*64-16S-1516 Interpretation: P2.5= spacing of 2.5mm  
HG=Back cover series (HG back cover, ECO energy saving, R soft module, MT door head, PRO superior, missing represents the norm)  
128\*64= module pixel W128\*H64 dot  
16S=Scan at constant current drive of 1/16s  
1516= The lamp bead is SMD1516 type

#### 6. Module hole map





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Note: "If there is a box to be made, please inform the business in advance and confirm the hole position diagram of the order product. Please refer to the CAD for details." All sizes are in mm.

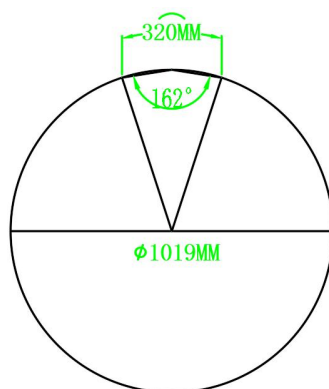
## 7. Installation instructions

7.1 Reference data for magnetic suction installation and box installation (Magnetic suction model: M4-1417 enhanced magnet)

Module thickness (excluding back cover)	Module thickness (light surface-magnet surface)
	

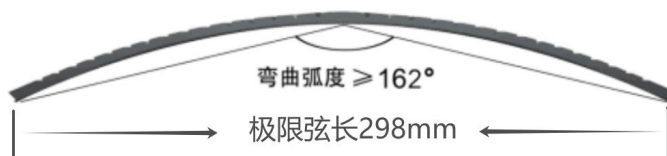
## 7.2. Curved arc range:

A, the inner arc and outer arc are composed of 12 modules with a minimum cylindrical diameter of 1222.34mm



最小弯曲直径  
Minimum bending diameter


B. Schematic diagram of module bending radius: the inner arc and outer arc can be bent at least  $162^\circ$ , and the limit length of the outer arc chord is less than or equal to 298mm.



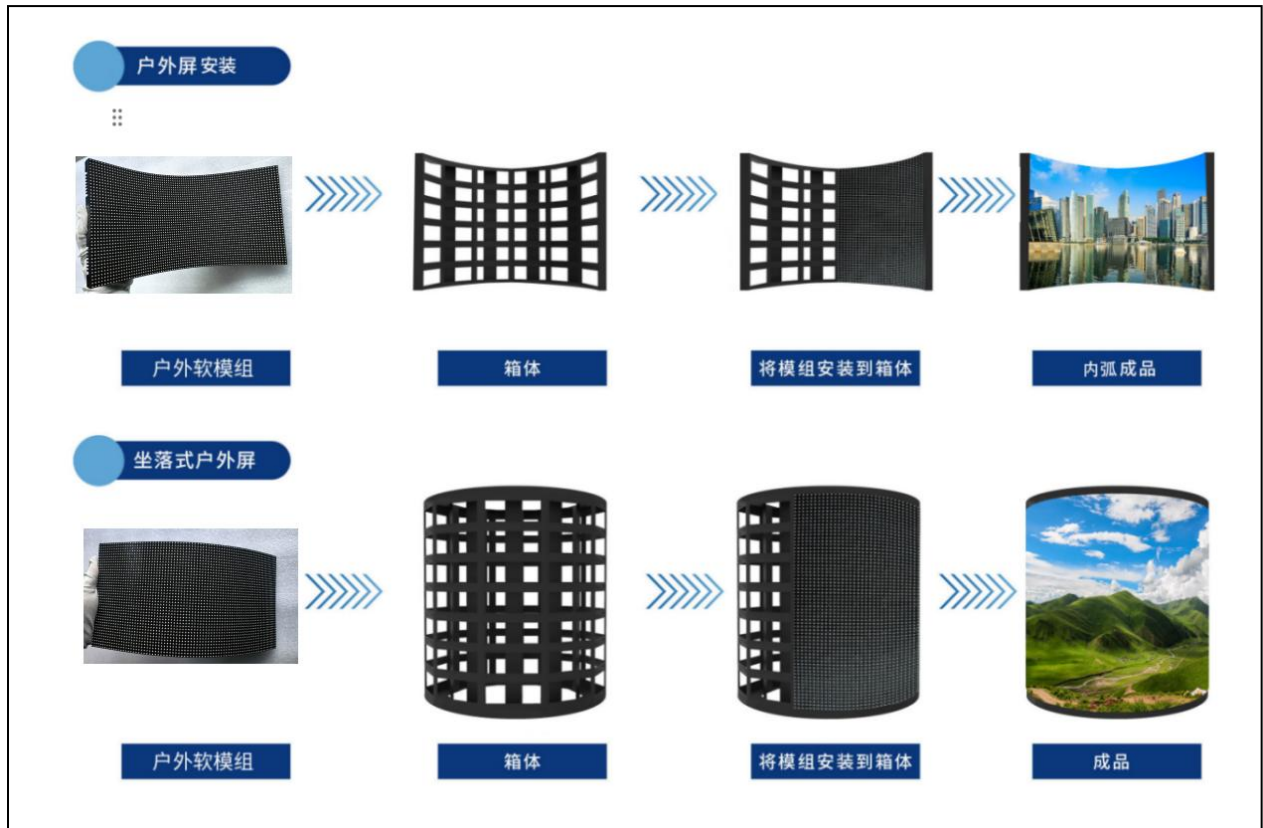
Note: Do not bend too much to prevent module damage!

Due to waterproofing requirements, vertical assembly is prohibited!



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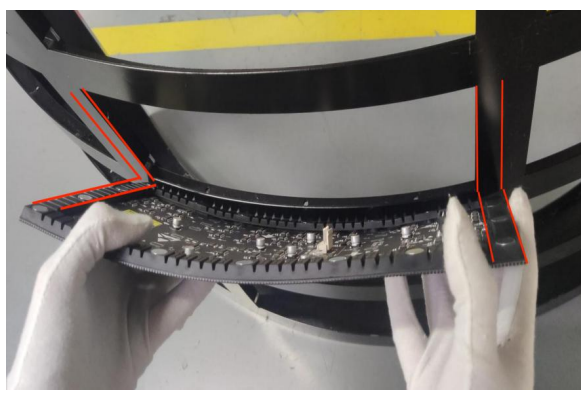
### 7.3 Installation diagram:




### 7.4 Module installation and disassembly instructions:

**Set up the module**

When the soft module is installed, the magnet should be aligned with the installation position of the box frame to ensure that the magnet can be evenly attached to the box and not suspended.



**Remove the module**

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Step 1:  
Select the middle part of the module near the edge, and press gently until the module is bent




Step 2:  
Use your hand to gently bend the module at the toe



Step 3:  
Gently remove the soft module from the screen until the module is completely removed from the screen. Do not pull violently during the process of removing the module! And pay attention to avoid squeezing with surrounding modules to cause bumping.









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**Special note:**



		
禁止外弧暴力弯曲	禁止内弧暴力弯曲	禁止在方通管上暴力拉扯

7.5 Other safety accessories and precautions:

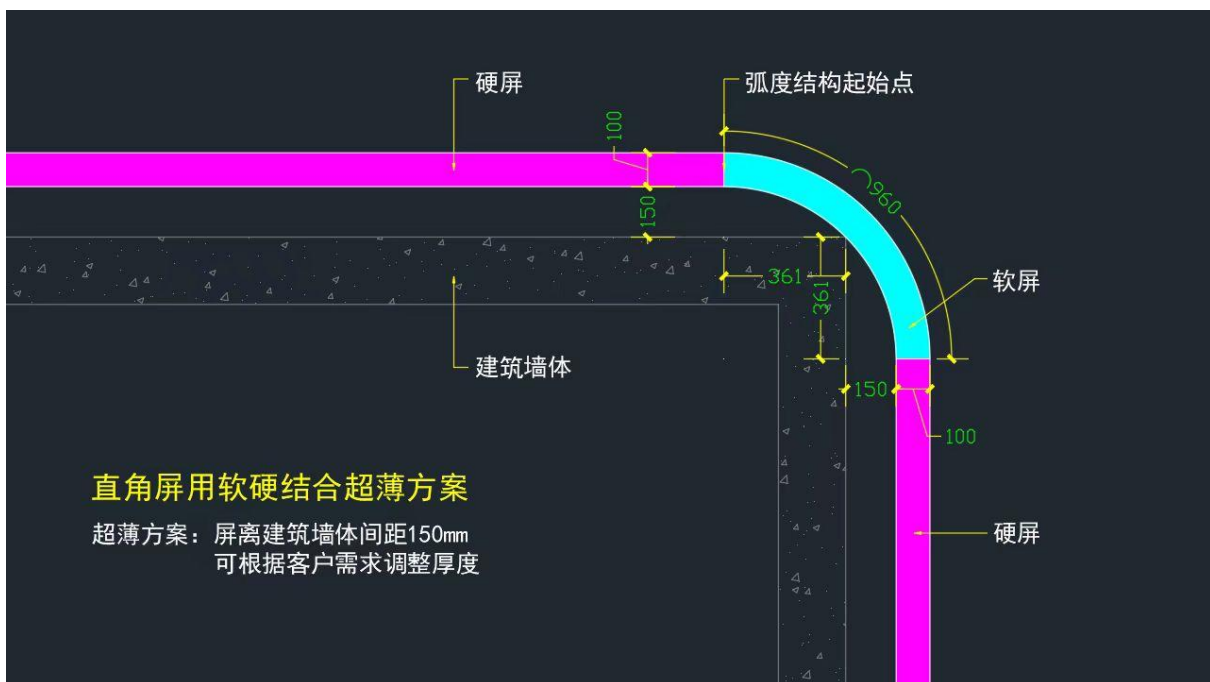
project	Specifications (for reference only)	picture	remarks
source	input voltage	AC 110/220V	 We recommend using our rainproof power supply directly
	service frequency	50HZ/60HZ	
	output voltage	Conventional DC 5V/ energy saving 3.8+2.8V	
	output power	200W/ 300W	
Outer dimensions	It can be a conventional power supply with built-in size <math>L190*W82*H30</math>		Due to the structural characteristics of the soft module, the front and back of the module can be waterproof. However, the module gap will be water, and there will be water in the box, so the power supply must be waterproof.
navar	Send a card	Lingxingyu / Nova / Callate / Gray, etc	

	Receiver card	Lingxingyu / Nova / Callate / Gray, etc		<p>Due to the structural characteristics of the soft module, the front and back of the module can be waterproof.</p> <p>However, water will enter the module gap and there will be water in the box, so it is recommended that the receiving card be waterproof. You can purchase our rainproof card box.</p>
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processor	Two-in-one view Frequency processor	Lingxingyu / Nova / Callate / Gray, etc		
box	Sheet metal box iron chest	Cylindrical box/curved box/corner screen box		The top of the box body should be sealed to prevent water from being sprayed directly.

7.6 Suggestions for the installation of corner screen using a combination of soft and hard modules: (3 soft modules can be curved into a right Angle of 90 degrees)



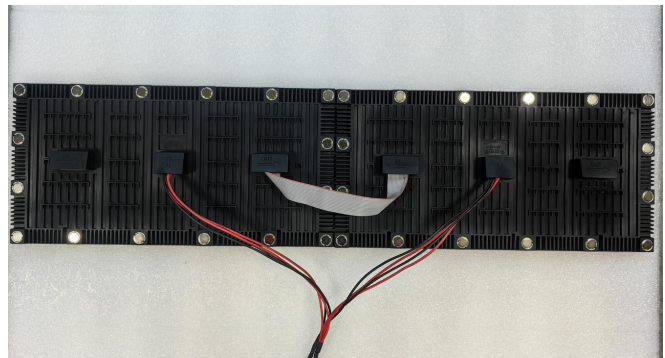
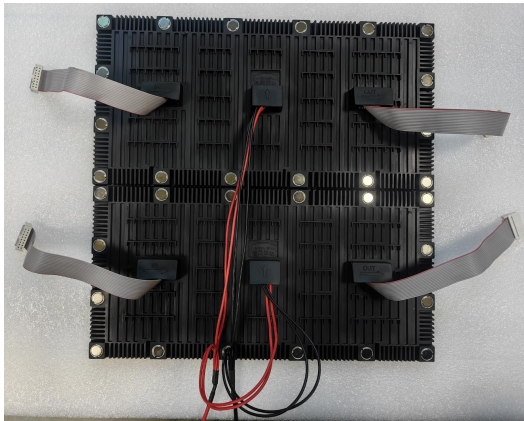
Note: 1. Energy saving products can not consider heat dissipation problems.  
 2. Non-energy saving products must be well ventilated and cooled.

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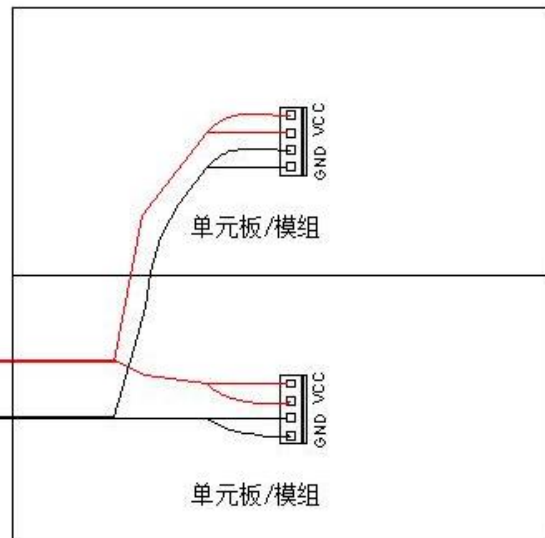
7.7 Module wiring diagram: (one drag two power lines as an example)

Recommended use: the upper and lower modules share a line

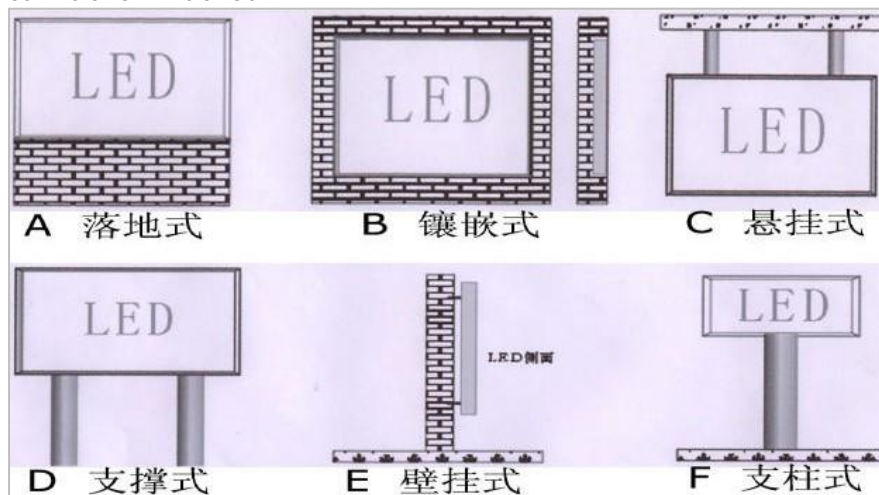
Not recommended: share a line between the left and right modules




接线说明：按2个模组一组电源线到电源来组装



7.8 Box installation method



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Note: The above are the six commonly used installation methods for display screens. For indoor displays, the A, B, C, and D methods are typically used, while all of these methods can be applied to outdoor displays. When installing the cabinet, start from the bottom layer and avoid incorrect or disordered installation, as this can affect the display quality. Ensure the bottom layer is installed very flat before installing the upper layers. Waterproof sealant should be applied at the joints between cabinets. After the entire screen has been debugged, the entire perimeter of the screen structure must undergo strict waterproofing treatment.

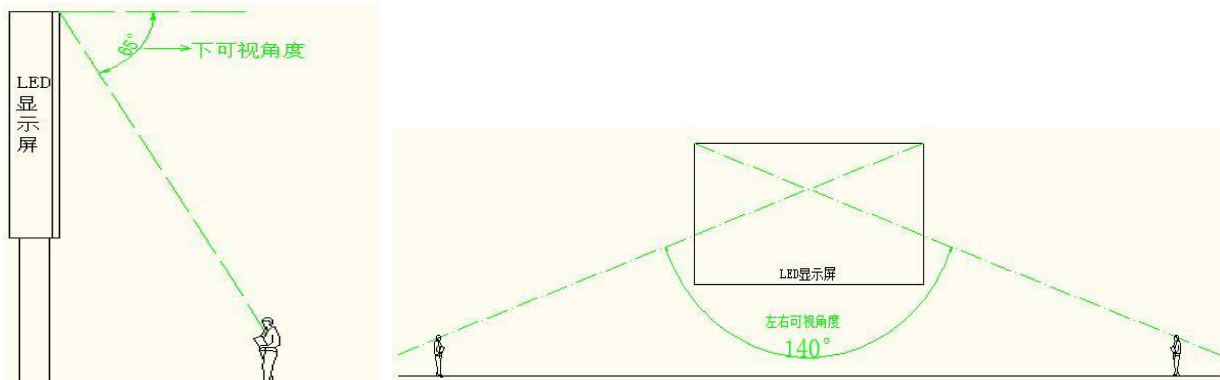
## 8. Display acceptance requirements and methods:

### 8.1 Screen brightness:

Set the screen to full brightness and adjust the brightness of the test software on your computer to 100%. Use a light gun to measure the screen's brightness within 10 minutes. To ensure accurate measurements, align the light gun with the screen, ideally keeping it level. Ensure that the black area of the observation window covers at least 16 pixels, and adjust the focus for accurate measurements. After completing the test, set the brightness back to the system's default value, which is typically 76%.

### 8.2 Angle of view:

During measurement, the person stood at the position of  $140^\circ$  on both sides of the screen and watched from the position of  $65^\circ$  below the screen. It was required that there were no obvious black spots or dark blocks on the screen.



Left and right views of the screen

Screen top and bottom view

8.3. Grounding: the switch power supply shell, box and screen structure should be correctly grounded, the grounding point should be correctly marked, and the inspection should be carried out every six months;

8.4. Lightning protection: the building is required to have lightning rod or lightning belt facilities and effective grounding, the distribution box is required to have surge protector, for lightning protection facilities, a spot check is required every six months.

Note: Our company will continue to upgrade and improve the existing products. If the specifications are changed, we will not give further notice. The right of interpretation belongs to our company.

This version is V1.1, updated on April 15, 2025.

This series of products are patented products of our company, please do not infringe!  
Product patent number: ZL202021995128.3/ZL202330806988.0/ZL202330806936.3/ZL  
202330807024.8