Product Specification

Product: Indoor Full Color Q4 1/20 Scan Module

Item No.: Q4-20S-E-2020

Version: 1.0

1. Scope of Application

This technical manual is only applicable to the indoor Q4-20S-E-2020 module , the following are conventional product parameters, and can be customized if you have special requirements.

2.Application Precautions

Project		Description
Environmental Considerations	Temperature requirement	Storage temperature range: -10°C-30°C, if it exceeds 30°C, cooling treatment is required. Operating temperature range: -20°C-40°C, other temperature ranges need to be equipped with temperature control equipment. When the unit board is working, the temperature of the lamp surface: ≤60℃, if the temperature exceeds the standard, it needs to install temperature control equipment.。
	Humidity requirements	Storage humidity range: 10%RH-60%RH, if the humidity exceeds 60%RH, dehumidification is required. Working humidity range: 10%RH -65%RH, if the humidity exceeds the standard, it can be used normally only after dehumidification of the use environment.
	Storage overdue treatment	The product is stored for more than one month, and it can be used normally after 6 hours of aging before use. The aging method is: full brightness setting 10% 1H, full brightness setting 30% 1H, full brightness setting 60% 2H, full brightness setting 80% 1H, full brightness setting 100% 1H (brightness gradually increases and aging).
	Dust-proof requirements	Indoor products have no protection level or IP30, and the display screen should not be exposed to dusty environments, such as studio decoration, renovation, etc., special protection for the display screen is required. The LED display cannot be installed during special decoration.
	Corrosive gas resistance	Corrosive gases in the environment containing salt or acid gas in the air will cause corrosion of electronic components, crystal leakage and other phenomena.
	Anti-electromagnetic radiation	The display screen should not be placed in an environment where electromagnetic radiation and radio frequency radiation exceed the field strength of 5V/m interference sources
	Avoid strong light exposure	Strong light will affect the display effect of the display screen and affect the life of the product, so avoid installing it in the direction of direct sunlight for a long time.

	keep away from water	The protection level of indoor products is low, and water conduction can short-circuit the circuit, resulting in damage to circuit devices, so it needs to be kept away from water sources.
	Static hazard, prevent lightning strike	The metal components of the screen, the shell of the switching power supply, and the box should be well grounded, pay attention to the grounding resistance ≤10 Ω, and the zero-to-ground voltage ≤2V. Prevent electrostatic damage to electronic devices, while avoiding leakage of electricity to the human body.
	Bodily injury	The installation angle and height of the display screen should be suitable, and the sharp corners should be packaged to prevent the damage to the human body caused by the tough shell.
	Special environment	Display screens used in special environments (1. Seaside, swimming pools, bathing places, basements, tunnels; 2. Chemical environments, vulcanization environments, halogen environments; 3. Sand and dusty environments; 4. Strong ultraviolet environments; 5 , strong electromagnetic field environment; 6, less than -20 degrees, greater than +40 degrees environment), you need to go through the review process before placing an order.
Precautions for use and operation	electrostatic protection	The installer must wear an electrostatic wristband and electrostatic gloves, and various tools must be strictly grounded during the assembly process
	Product batch number control	Products with different batch numbers cannot be installed on one screen, otherwise there will be color blocks (mosaic) on the screen.
	Product wiring	The module cannot be directly connected to 220V, and the positive and negative poles of the power supply of the unit board cannot be reversed
Precautions for use and operation	Disassembly and transportation process	Do not drop, push, squeeze or press the module to avoid damage to the display screen;
	Disassembly and maintenance liquid protection	During disassembly and assembly, no sweat or other liquids should drip onto the display screen. If it drips onto the display, alcohol needs to be cleaned to prevent the liquid from corroding the product.
	Mounting torque control	When connecting the power supply, make sure that the terminal connector screws are tightened to prevent the connector position from loosening, which may lead to high contact resistance and lead to wire burning or product damage. The torque of M4 screw is 6.0-8.0 Kgf.cm, and the torque of M3 screw is 4.0-6.0 Kgf.cm
	Prohibition of live work	It is forbidden to assemble the unit board when the power is on. The unit board should be assembled on the wall with the main power input disconnected. It is not allowed to assemble the power cord and signal line.

	Prohibition of live touch		When the screen is lit, it is forbidden for personnel to touch and touch the LED display, so as to avoid the static electricity generated by the friction of the human body from breaking down the LED lights and chips and other components
	Loading program file selection		It is required to use the system card officially recommended by QiangLi Jucai and the loader in the one-key debugging of the official website to avoid abnormal performance during the debugging process.
	Parameter settings		The refresh frequency is required to be set according to the specified value in the specification to protect the normal service life of the lamp
	Play Control		Do not display still pictures, text or fixed backgrounds for a long time, to avoid serious attenuation of lamp brightness or batch dead lights, please play scrolling pictures or text
	Product use environment		It is strictly forbidden to use the indoor screen in an outdoor or sub-outdoor environment
	Environmental check		The installation site of the display screen needs to be equipped with a temperature and humidity meter to monitor the surrounding environment of the screen in time. After the heavy rain, it is necessary to check whether there are moisture, water droplets, moisture and other problems inside the display screen in time.
	Product requirements for moisture-proof use	Fixed installation display	The relative humidity of the application environment is in the range of 10%~65%RH. It is recommended to turn on the display screen once a day, and use it for more than 4 hours each time to remove the moisture on the display screen;
			If the relative humidity of the application environment exceeds 65%RH, the use environment needs to be dehumidified. It is recommended to use it normally for more than 8H every day, and close the relevant doors and windows at night to prevent the display screen from being damaged by moisture.
			When the display screen has not been used for a long time, it is necessary to preheat and dehumidify the whole screen for 8H before use, so as to avoid damage to the lamp after working with moisture. The dehumidification method is: full brightness setting 10% 1H, full brightness setting 30% 2H, full brightness setting Set 60% 2H, full brightness set 80% 2H, full brightness set 100% 1H (brightness gradually increases aging).
		Rental screen	After each use, it should be put into the air box immediately, and the air box cover should be sealed and packaged.
			In each air box, please put no less than 50g of desiccant or moisture absorption bag
			In the relative humidity range of 10%~65%RH, take out and play the video for more than 2H every half month. If it exceeds 65%RH and in the weather of resurgence, the video must be taken out and played for more than 2H

			every week. In the box, sealed and stored (please pay attention to check whether the desiccant or hygroscopic bag in the flight is invalid, and it needs to be replaced every 2 months. In addition, adding more desiccant can improve the dryness in the box);
			When the display screen has not been used for a long time, it is necessary to reduce the brightness of the whole screen by 50% in advance and play it for 12 hours, and preheat for "dehumidification" for 12H to prevent the LED screen from being damaged by work after being damp.
			When renting, do not let water touch the display screen. If there is water, make sure to dry the water on the screen. After placing it for 2H, turn on the display screen for 2H, and rely on the lamp and IC heat to evaporate the water.
			It is strictly forbidden to use indoor rental screens as outdoor rental screens, especially in open-air environments;
	Avoid construction on the installed LED display		After the LED display is installed, construction is strictly prohibited to prevent the LED display from being affected by high current impact and dust, such as electric welding, chainsaw and other equipment operations.

3.Product Specification

3.1. The indoor full color display has a clearer and more detailed display, and the resolution can reach above 1080P; it can achieve high refresh rate, high grayscale and higher lamp utilization. And it has the functions of no afterimage, anti-caterpillar, low power consumption, low surge, etc.

3.2.The indoor full color display is mainly composed of a red LED chip, a green LED chip and a blue LED chip packaged into a matrix of pixels, and then fixed to a plastic package.

3.3.The indoor full color display contains driving IC and input buffer chip, which can display video, image and text information when connected to the LED display control system.

3.4. Through the system control to drive the red LED, green LED and blue LED driving IC, 4,398 billion color conversions can be formed.

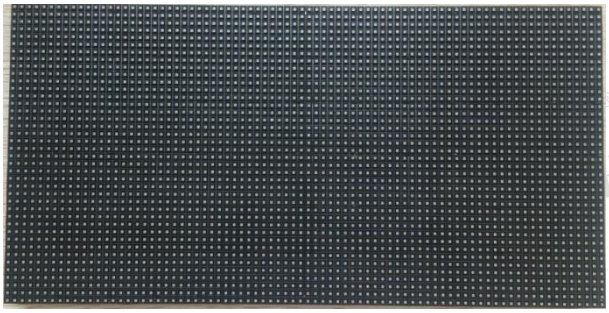
3.5.The panel and the cabinet can be spliced arbitrarily in the horizontal and vertical directions to form different sizes of display screens.

3.6.Features

- High-quality lamps, high-efficiency lamp brightness utilization rate, while guaranteeing lamp lifespan and high-quality plastic component
- High contrast can achieve good display effect.
- The weight is easy to install and disassembly.

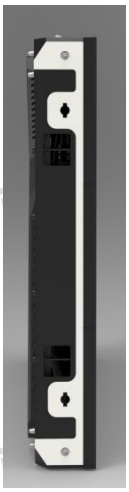
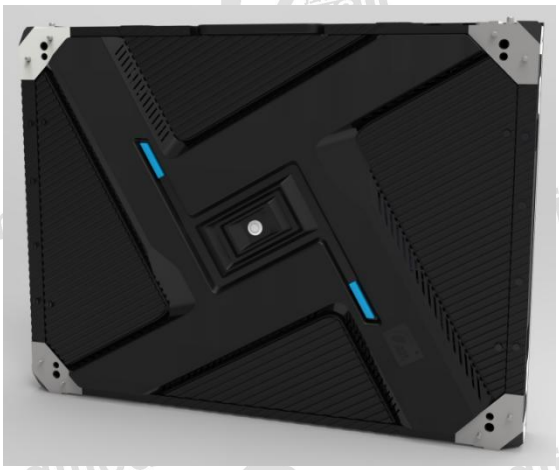
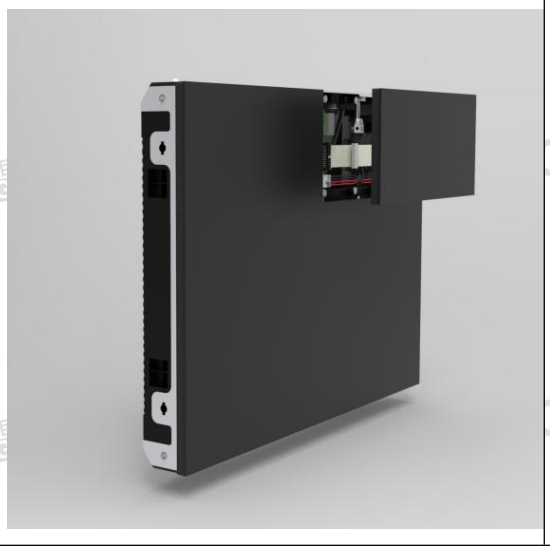
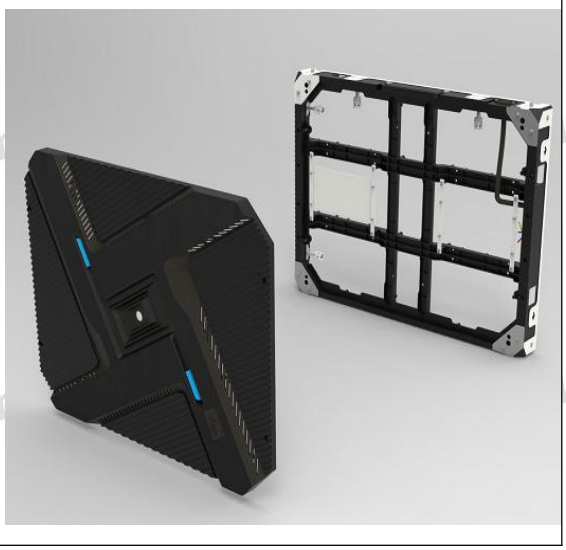
- Single point and single lamp maintenance can be carried out, with low cost.
- It is driven by a constant current, with uniform light emission and low power consumption.

3.7.Module Picture

Front View	Rear View
	

3.8.Suggestion Cabinet-(640*480 MG Cabinet)

	
Side view 1	Side view 2

	
Front Service	**Rear Service**
	

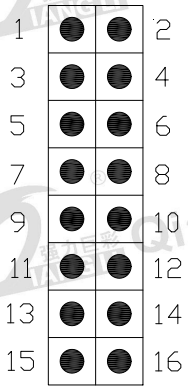
4.Technical Specification

Module	Pixel Pitch	4mm	Pixel Density	62500Dots/㎡
	Configuration	1R1G1B	LED Lamp	SMD2020
	Size (Width*Height*Depth)	320*160*14mm	Weight	0.35kg±0.01kg
	Structure	Lamp & IC in same PCB	Resolution	80*40=3200Dots
	Input Voltage (DC)	4.5±0.1V	Maximum Current	≤5.3A
	Power Consumption	≤24W	Driving Method	Constant Current 1/20 Scan
	40A Power Supply for	5-6 pcs module	50A Power Supply for	6-7 pcs module

	40A PFC Power Supply for	6-7 pcs module	80A Power Supply for	10-12 pcs module
Cabinet	Cabinet Size (Width*Height*Thickness)		640mm*480mm*84mm (Thickness including module、 cabinet and connecting piece)	
	Cabinet Pixel Density		160*120=19200Dots	
	Cabinet Area		0.307㎡	
	Cabinet Weight		6.95kg±0.05 kg	
	Cabinet Max Power Consumption		≤143W	
	Average Power Consumption (1/3 Max)		≤48W	
	Distribution Power (Power Supply Capacity 78%)		≤183W	
Screen	Brightness	≥500cd/㎡	Brightness Uniformity	＞0.95
	Horizontal Viewing Angle	140 ±10 degree	Vertical Viewing Angle	130 ±10 degree
	Best Viewing Distance	≥4m	Black Spot Ratio	< 0.0003； 0 when shipped from the factor
	Max Power Consumption	≤465 W/㎡	Operation Environment	Indoor
	Grayscale	14-16bits (RGB each)	Display Color	4398 Billion
	Frame Frequency	≥60 frame/sec	Refresh Frequency	≥1920 Hz
	Control Mode	Computer control, Point-to-point, Video synchronization, real-time display	Brightnes s Adjustme nt	256-grade manual / automatic
	Input signal	DVI/VGA/HDMI/DP, composite video signal, S-VIDEO, YpbPr(HDTV)		
	Life Span	≥100,000 hours	Average Failure Free Time	≥10,000 hours
	Attenuation (3 years later)	≤15％	Operating Humidity	10％-65％RH (No condensation)

5.Signal Pin

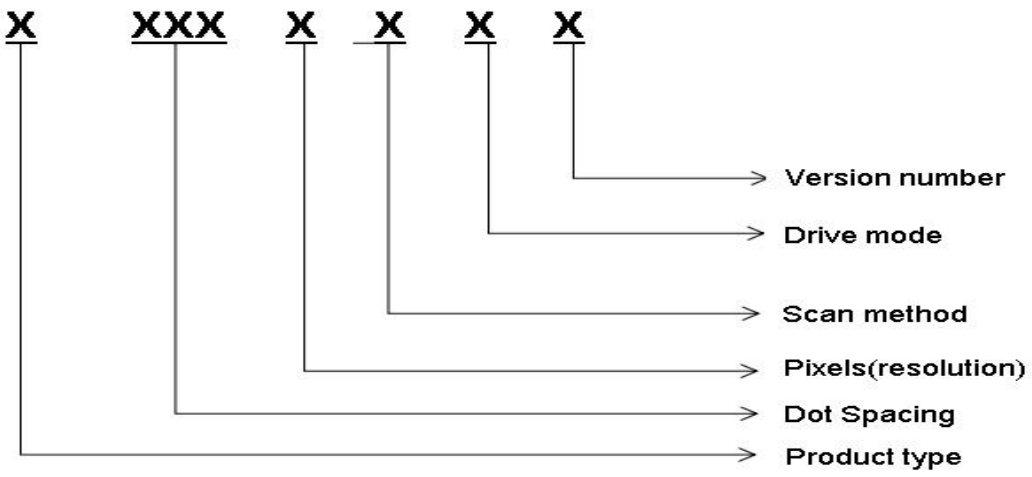
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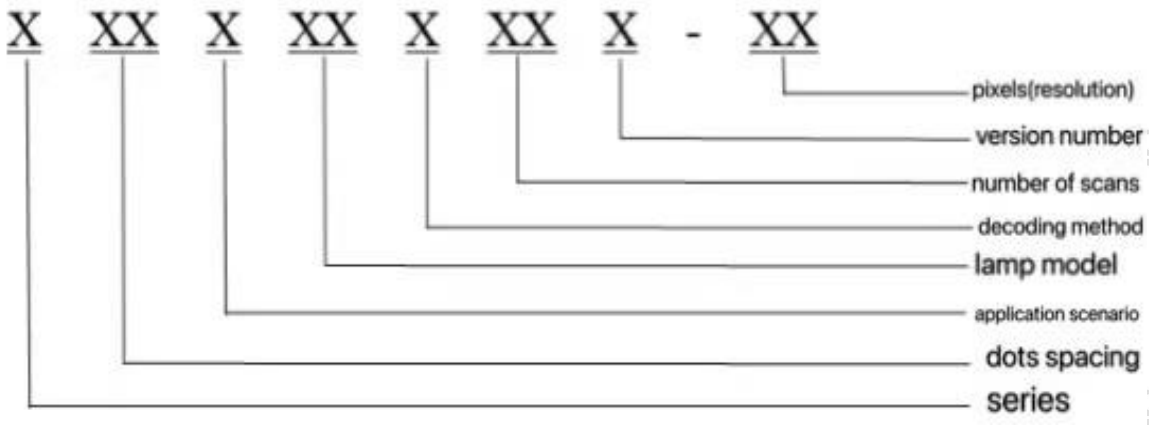
Pin	Signal	Function	Pin	Signal	Function
1	RD1	Red data signal	2	GD1	Green data signal
3	BD1	Blue data signa	4	GND	Power ground
5	RD2	Red data signal	6	GD2	Green data signal
7	BD2	Blue data signal	8	E	Row control signal
9	A	Row control signal	10	B	Row control signal
11	C	Row control signal	12	D	Row control signal
13	CLK	Clock signal	14	LAT	Data locking signal
15	OE	Enable signal	16	GND	Power ground

6.Product Model Naming Instructions

（1）Mode 1：

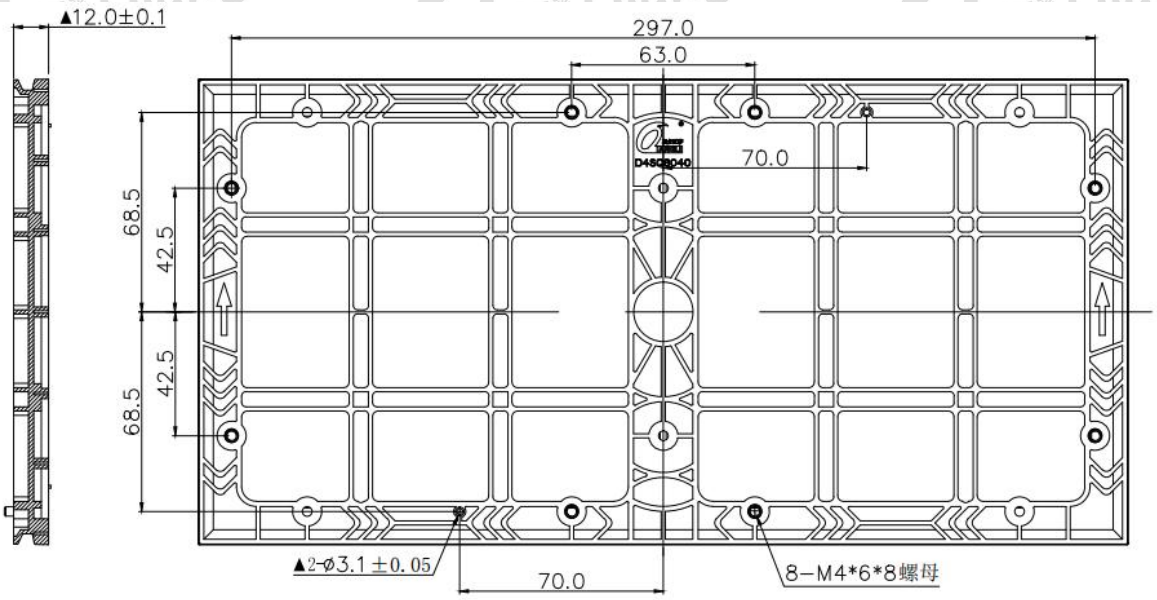


（2）Mode 2：



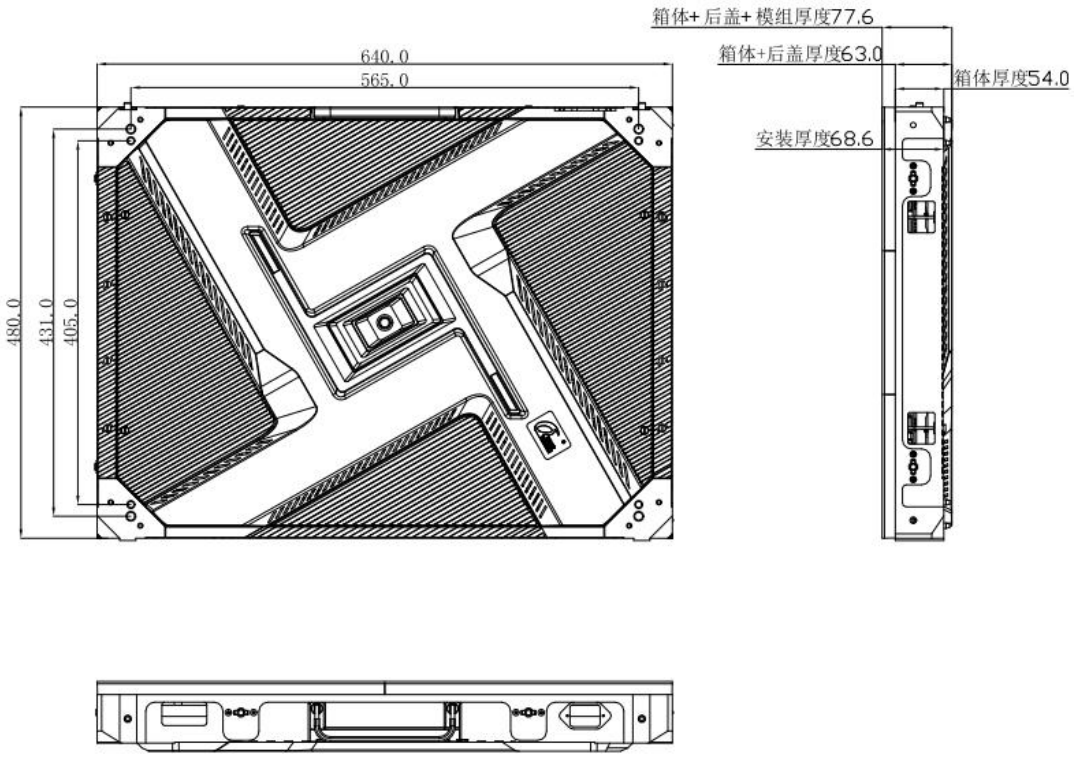
7. Mounting Hole Bitmap

7.1.Installation hole bitmap of panel:



Remarks: **"If you need to make a cabinet, please inform salesmen in advance and confirm the hole bitmap of the ordered product. Please refer to the CAD drawing for details."** All dimensions are in mm.

7.2.Recommended 640*480mm cabinet mounting hole map:

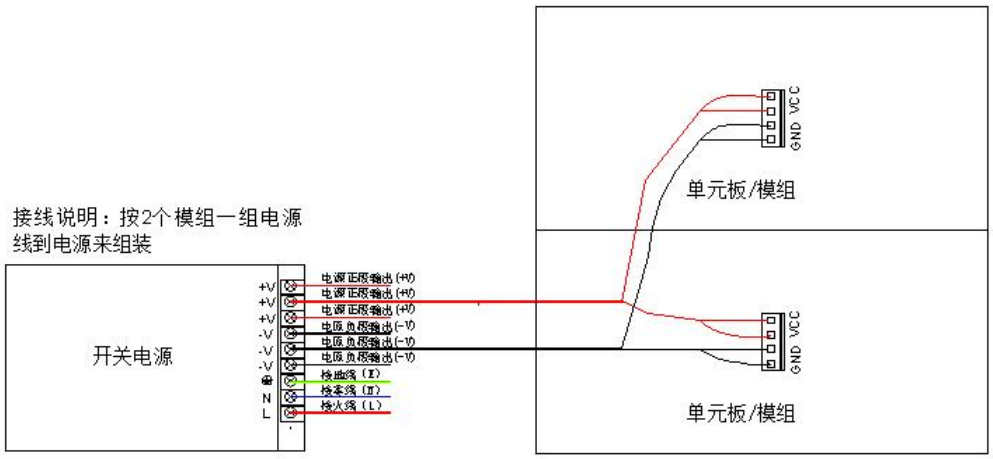


Remarks: All dimensions are in mm

The module and cabinet adopt magnetic attraction and front maintenance technology, which is convenient for disassembly and assembly

8. Installation Instructions

8.1.1Schematic diagram of power supply and module wiring (this figure is for reference only, the specific wiring method refers to the actual object):



8.2.Amplitude range

8.2.1. Screen installation method: It can be used as indoor rental, and supports fixed installation, hoisting and wall installation etc, to meet the needs of various indoor installation environments.

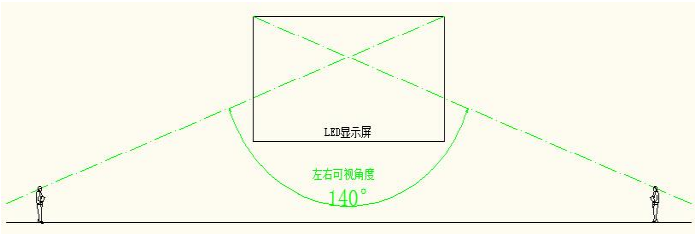


8.3.Screen acceptance requirements and methods:

8.3.1. Screen brightness: adjust the screen to full brightness, adjust the brightness efficiency in the test software to 80% on the computer, and use a light gun to measure the brightness of the screen within 10 minutes. Measuring the brightness requires that the light gun should be aimed at the screen body. It is best to measure the light gun to keep the screen body level, make sure that the black position of the observation window covers more than 16 pixels, and adjust the focal length for measurement.

8.3.2. Viewing angle: when measuring, people stand at a position of 140° left and right of the screen, and the viewing angle below the screen is 65°. It is required that the screen has no obvious black spots and no obvious dark blocks.





Screen upper and lower viewing angle

Left and right viewing angles of the screen

8.3.3. Grounding: The shell, box and screen structure of the switching power supply are properly grounded, the grounding point is correctly marked with the grounding mark, and a spot check is carried out every six months;

8.3.4. Lightning protection treatment: the building is required to have lightning rod or lightning protection belt facilities and be effectively grounded, and the power distribution box is required to be equipped with a surge protector, and the lightning protection facilities are required to be inspected every six months.