

Product Specification

Product Name: Indoor Full Color DM3.9 1/16 Scan Module

Specification Model: DM3.9-16S-2020 soft connection

File No: 16S-2020

Version number: 1.0

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1.Scope of application

This technical manual is only applicable to the outdoor large display DM3.9-16S-2020 module. The following are the general product parameters, which can be customized if there are special needs.

2. Precautions

Project		Description
Environmental Precautions	Temperature requirements	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 install temperature control equipment. The temperature of the lamp surface when the module is working: $\leq 60^{\circ}\text{C}$, and the temperature exceeds the standard, and temperature control equipment needs to be installed.
	Humidity requirements	Storage humidity range: 10%RH-60%RH, humidity over 60%RH needs to be dehumidified. Working humidity range: 10%RH -65%RH, humidity exceeds the standard and the use environment needs to be dehumidified before normal use.
	Overdue storage handling	The product has been stored for more than a month and needs to undergo 6 hours of aging before normal use. The aging method is: set the full brightness to 10% 1H, set the full brightness to 30% 1H, set the full brightness to 60% 2H, set the full brightness to 80% 1H, and set the full brightness to 100% 1H (gradually increasing brightness aging)
	Dust prevention requirements	Indoor products do not have a protection level or IP30, and the display screen should not be exposed to environments with high levels of dust, such as studio decoration, renovation, etc. Special protection measures should be taken for the display screen. LED display screens cannot be installed during special decoration..
Environmental Precautions	Anti corrosive gas	Corrosive gases can cause corrosion and crystallization leakage of electronic components in environments containing salt or acid gases in the air.
	Protection against electromagnetic radiation	The display screen should not be placed in an environment where electromagnetic radiation or radio frequency radiation exceeds the field strength of 5V/m interference sources
	Avoid strong light exposure	Strong light can affect the display effect of the display screen and affect the lifespan of the product. It should be avoided when installed in a direction with longer direct sunlight exposure.
	Stay away from water sources	Indoor products have a low level of protection, and water conductivity can cause short circuits in circuits, leading to damage to circuit components. Therefore, it is necessary to stay away from water sources.
	Static electricity hazards,	The metal components of the screen, the shell of the switching power supply, and the box should be well

	preventing lightning strikes	grounded, and attention should be paid to a grounding resistance of $\leq 10 \Omega$ and a zero ground voltage of $\leq 2V$. Prevent static electricity from damaging electronic devices, while also avoiding electric leakage from causing harm to the human body.
	Personal Injury	The installation angle and height of the display screen should be appropriate, and sharp edges and corners should be packaged to prevent harm to the human body from the tough shell.
	Special Environment	Display screens used in special environments (1. seaside, swimming pool, bathing area, basement, tunnel; 2. chemical environment, vulcanization environment, halogen environment; 3. dusty environment; 4. strong ultraviolet environment; 5. strong electromagnetic field environment; 6. environment below -20 degrees and above +40 degrees) must go through the review process before placing an order
Precautions for use and operation	Electrostatic protection	Installation personnel must wear electrostatic wristbands and gloves, and all tools must be strictly grounded during the assembly process
	Product batch control	Products with different batch numbers cannot be installed on the same screen, otherwise color blocks (mosaics) will appear on the display screen
	Product wiring	The unit board cannot be directly connected to 220V, and the positive and negative poles of the unit board's power supply cannot be reversed
Precautions for use and operation	Disassembly and transportation process	Do not drop, push, squeeze, or press the unit board to avoid damaging the display screen;
	Disassembly and maintenance of liquid protection	During disassembly and assembly work, no sweat or other liquids should drip onto the display screen. If they do, they should be cleaned with alcohol to prevent liquid corrosion and damage to the product
	Install torque control	When wiring the power supply, it is necessary to ensure that the terminal connector screws are tightened to prevent loosening of the connector position, which may cause wire burning or product damage due to high contact resistance. The torque of M4 screws is 6.0-8.0 Kgf.cm, and the torque of M3 screws is 4.0-6.0 Kgf.cm
	Prohibit live work	It is prohibited to assemble unit boards with power on. The unit board should be assembled on the wall with the main power input disconnected, and it is not allowed to assemble with power and signal lines inserted
	No touching	Personnel are prohibited from touching or touching LED display screens to prevent static electricity generated by human friction from penetrating LED lights, chips, and other components
	Loading program selection	Require the use of the system card recommended by the powerful Jucai official and the loading program in one click debugging on the official website to avoid performance abnormalities during the debugging process
	Parameter settings	Require the refresh rate to be set according to the specified value in the specification book to protect the normal service life of the lamp tube

	Play control	Please do not display still images, text, or fixed backgrounds for a long time to avoid serious attenuation of lamp brightness or batch dead lights. Please play scrolling images or text instead	
	Usage Environment	It is strictly prohibited to use indoor screens in outdoor or sub outdoor environments	
	Environmental Inspecton	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 a timely manner. After heavy rain, the interior of the display screen should be checked for moisture, water droplets, moisture, and other issues in a timely manner	
	Requirements for moisture-proof use of products	Fixed installation of display screen	The relative humidity of the application environment is within the range of 10% to 65% RH. It is recommended to turn on the display screen once a day and use it normally for more than 4 hours each time to remove moisture from the display screen;
			The relative humidity of the application environment exceeds 65% RH, and it is necessary to dehumidify the usage environment. It is recommended to use it normally for more than 8 hours every day, and close relevant doors and windows at night to prevent the display screen from getting damp and causing defects
			When the display screen is not used for a long time, it is necessary to preheat and dehumidify the entire screen for 8H before use to avoid damage to the lamp tube due to moisture. The dehumidification method is: set the full brightness to 10% 1H, set the full brightness to 30% 2H, set the full brightness to 60% 2H, set the full brightness to 80% 2H, and set the full brightness to 100% 1H (the brightness gradually increases and ages)
		Rental display screen	After each use, it is necessary to immediately put it into the aviation box and seal the packaging with the aviation box cover
			Please place no less than 50g of desiccant or moisture absorbing bags in each airline container
			Within the relative humidity range of 10% to 65% RH, videos must be taken out and played for at least 2 hours every half month. If the humidity exceeds 65% RH and in humid weather, videos must be taken out and played for at least 2 hours per week. After all videos are played, they must be immediately placed in an aviation box and sealed for storage (please pay attention to checking if the desiccant or

			moisture absorbing bag in the aviation box is ineffective, and replace it every 2 months. In addition, adding more desiccants can improve the dryness of the box);
			When the display screen is not used for a long time, it is necessary to reduce the brightness of the entire screen by 50% in advance, play for 12 hours, preheat and perform "dehumidification" for 12 hours to avoid damage to the LED screen after being damp and working to the lamp tube
			When renting out, do not let water get on the display screen. If water gets on, make sure to blow dry the water on the screen, leave it for 2 hours, and then light up the display screen for 2 hours. Use the light and IC heat to evaporate the water
			It is strictly prohibited to use indoor rental screens as outdoor rental screens, especially in outdoor environments;
	Avoid construction on installed LED display screens	After the installation of the LED display screen, it is strictly prohibited to continue construction to prevent the LED display screen from being affected by high current and dust, such as welding, sawing and other equipment operations.	

3. Product Description

3.1.The indoor full-color display screen has a clearer and more delicate effect, and the resolution can reach 2K/4K/8K or above; Realize high refresh rate, high grayscale, and high lamp utilization rate; No residual image, anti caterpillar, low power consumption, low burst and other functions

3.2. The indoor full-color display screen is mainly composed of red LED chips, green LED chips, and blue LED chips packaged into a pixel matrix, and then fixed to a plastic kit;

3.3. The indoor full-color 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, etc;

3.4. By controlling the driving chips of red LED, green LED, and blue LED through the system, 4398 billion color transformations can be formed

3.5. The unit board and box can be assembled horizontally and vertically to form different sizes of display screens (note: the left and right interfaces of this unit board are input interfaces, and cannot be cascaded without output interfaces);

3.6. Product features:

- High quality light tube, high efficiency light tube brightness utilization rate, same time guarantee light tube service life and high quality plastic parts.
- High efficiency ratio and good results

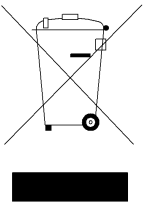
- Easy to install and disassemble due to its weight
- Available single pixel, single light, low price
- Constant flow type dynamic LED for glazing, uniform light, low wear and tear

3.7.logo Description

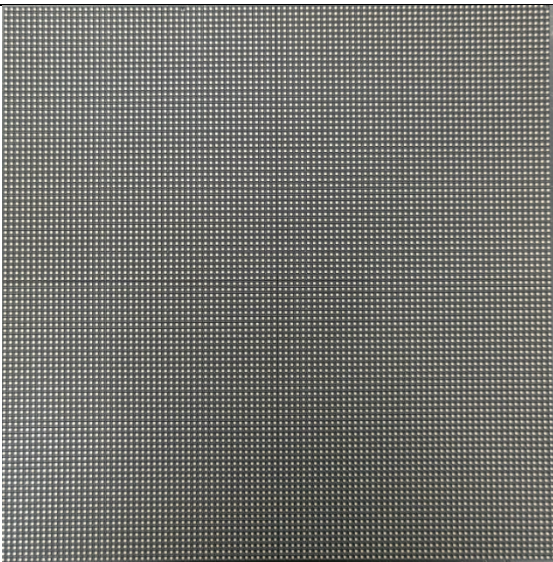
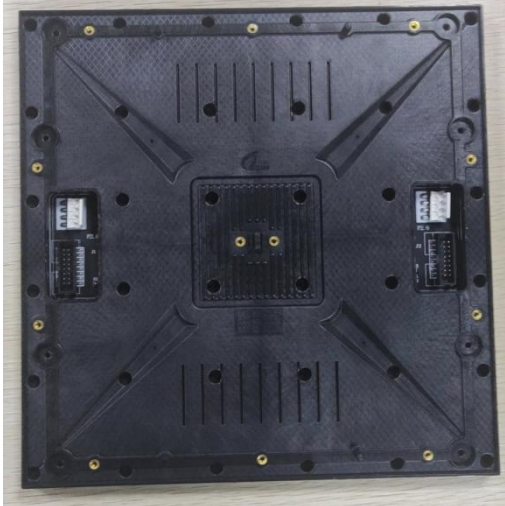


Product complies with the European Safety Regulations .

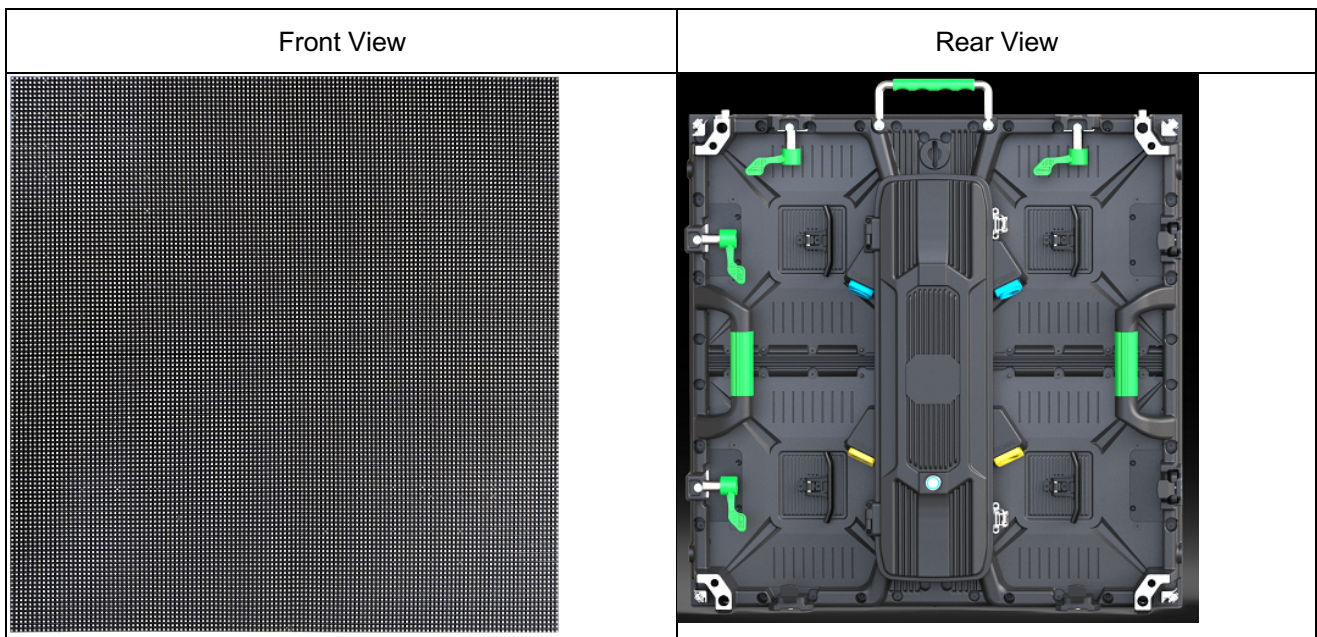
This marking indicates that this product should not be disposed with other household wastes throughout the EU.To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources.To return your used device, please use the return and collection systems or contact the retailer where the product was purchased.They can take this product for environmental safe recycling.



3.8.LED Module Picture

Front View	Rear View
	
Remark:The driving IC uses a SSOP packaged constant current driving chip.	

3.8.Suggestion Cabinet-(500*500 Cabinet)



4. Product technical requirements

4.1. Screen technical parameters

Brightness	$\geq 600\text{cd/m}^2$	Brightness uniformity	> 0.95
Screen horizontal viewing angle	140 ± 10 degrees	Screen vertical viewing angle	130 ± 10 degrees
Best viewing distance	$\geq 7\text{m}$	Usage environment	Indoors
Maximum power per square module	$\leq 336\text{W/m}^2$		
Distribution power (maximum power per square meter $\div 78\% \div 85\%$)	$\leq 507\text{W/m}^2$		
Grayscale	13-14 bits each for red, green and blue	Display color	4398 billion species
Frame change frequency	≥ 60 frames/second	Refresh frequency	6000Hz
Control method	Computer control, pixel-by-pixel correspondence, video synchronization, real-time display	Dimming	256 levels manual/automatic
Input signal	DVI/VGA/HDMI/DP, composite video signal, S-VIDEO, YpbPr (HDTV)		
Mean time between failures	≥ 5000 hours		
Range of working temperature	$-20\text{-}40^\circ\text{C}$	Usage environment	10%-65%RH
Protective properties	Over-temperature/overload/power-down/image compensation/various correction technologies/over-current/over-voltage/lightning protection (optional)		
Screen horizontal flatness	$< 1\text{mm/m}^2$		
Screen vertical flatness	$< 1\text{mm/m}^2$		

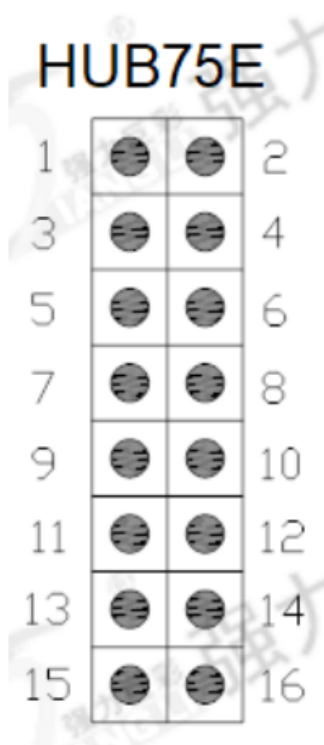
4.2. Cabinet technical parameters

Box specifications (length*width)	500mm*500mm
Cabinet resolution	128*128=16384 Dots
Panel area	0.25m ²
Panel weight	6kg
Maximum power consumption (module power * number of modules in a box)	$\leq 84\text{W}$
Average power consumption (1/3 of maximum power)	$\leq 28\text{W}$
Distribution power (power utilization rate 78%, that is, maximum power $\div 78\%$)	$\leq 108\text{W}$
Mounting height	Suspension mounting $\leq 10\text{m}$; less than 20 panels

4.3.Module technical parameters

Pixel spacing	3.9mm	Pixel density	65536Dots/m ²
Pixel composition	1R1G1B	Lamp packaging	SMD 2020
Dimensions (length*width*thickness)	250*250*17mm	weight	0.55kg±0.01kg
Structural features	Light driver in one	Module resolution	64*64=4096Dots
Input voltage (DC)	4.5±0.1V	Maximum current	≤4.5A
Module power	≤21W	Drive mode	1/16 constant current drive

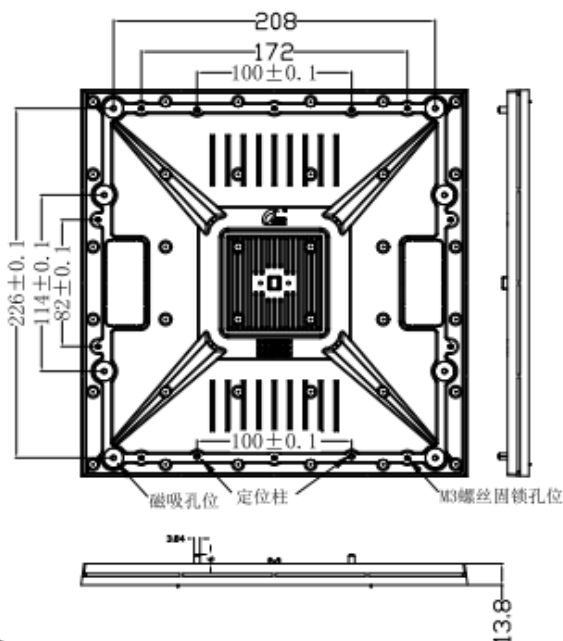
5.Module signal interface definition(**Note: This module does not have an output interface**)



Pin	Signal	Function	Pin	Signal	Function
1	RD1	Red data signal	2	GD1	Green data signal
3	BD1	Blue data signal	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

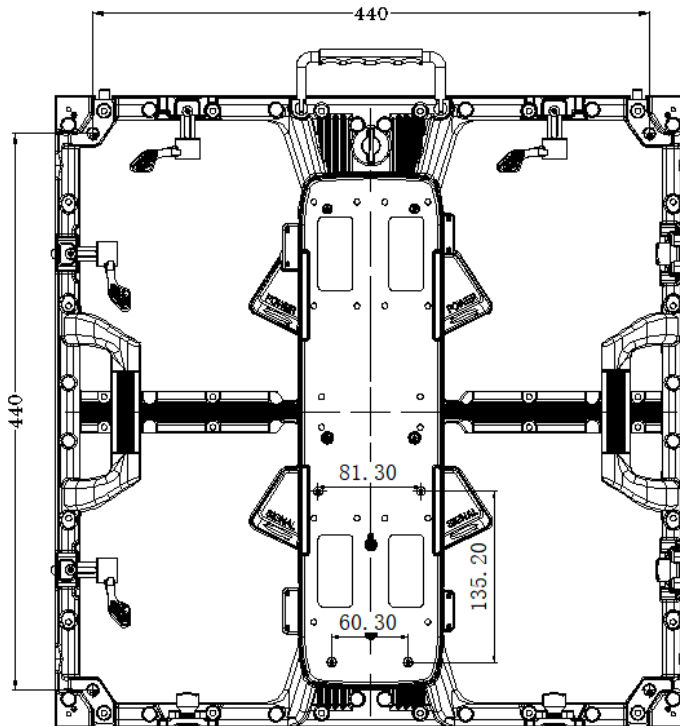
6. Installation hole location map

6.1.Module installation hole location:



Remarks: "If there is a box to make, please inform the office in advance and confirm the order product hole map, see CAD drawings for details,"
All dimensions are in mm.

6.2 Recommended 500*500mm cabinet mounting hole map:



Note: All dimensions are in mm

7. Installation Guide

7.1. Installation Introduction:

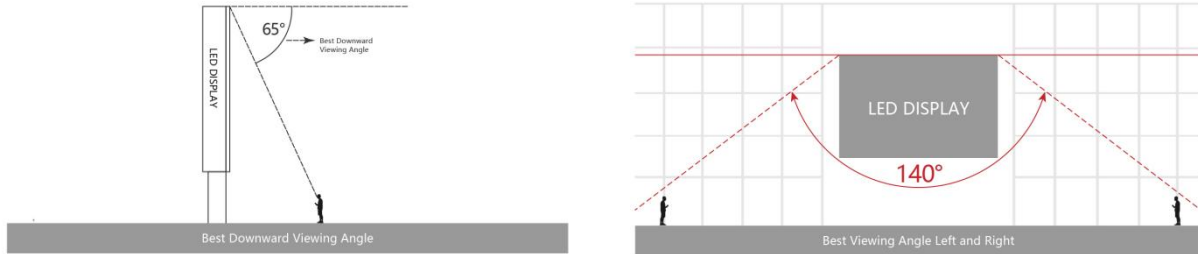
7.1.1. Display screen installation method: It can be used for indoor rental, and supports installation methods such as fixed installation, lifting, and wall mounting to meet the needs of various indoor installation environments.



7.2. Requirements and methods for screen acceptance:

7.2.1. Screen brightness: Set the screen to a fully lit state, set the brightness effectiveness rate in the testing software to 80% on the computer, and use a light gun to measure the brightness of the screen within 10 minutes. The brightness measurement requires the light gun to be aligned with the screen, and it is best to keep the light gun level with the screen during measurement, ensuring that the black position of the observation window covers more than 16 pixels. Adjust the focal length for measurement.

8.2.2. Viewing angle: When measuring, people stand at a position of 140° on the left and right of the screen, and watch at a 65° angle under the screen, and the screen is required to have no obvious dark spots and no obvious dark blocks.



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

7.2.4. 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.