



厦门强力巨彩光电科技有限公司

Xiamen QiangLi JuCai Opto-Electronic Technology Co.,Ltd.

Product Specification

Product Name: P10 Outdoor Full Color Module, Constant Current 1/4 scan

Item No. : Q10C4V4H

Version: 1.1

Prepared:	Checked:	Approved

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Item No.:	Q6E8V3
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1. Application

This technical manual applies only to outdoor Q10C4V4H (32* 16),constant current 1/4 scan.

2. Product Description

2.1 Outdoor full color Q10 1/4 scan module is composed of a pixel matrix, which is dominated by red LED chip, green and blue LED chip ,then fixed on the plastic package.



2.2 This module contains drive IC and input buffer IC, connected to the LED display control system .It can display videos, images, texts etc.

2.3Through OE signal to drive RGB's drive IC, the screen can form 4,398,000,000,000 kinds of colors.

2.4 The module can be assembled both in horizontal and vertical direction, so that customer can get different sizes display screen accordingly.

2.5 Module Characteristics:

- super bright LED and high quality plastic parts
- high contrast display can achieve good results
- Light weight: easy installation and removal
- can be a single point, single-lamp maintenance, low cost
- using constant current drive LED, light uniformity, low power consumption
- pixel pitch of 10.0mm, a total of 32* 16 pixels , each pixel is composed of 1R1G1B

Front View		Remark: With SSOP package constant Current drive IC.
Back View		



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2. Specification

2.1. LED Lamp Specification:

Package	Color	Brand	Specification	Brightness	wavelength	Quantity
SMD 3535	R			≥660mcd	615-630nm	1
	G			≥1800mcd	515-530nm	1
	B			≥400mcd	460-475nm	1

2.2. Display Specification

Module	Pixel Pitch	10.0mm	Pixel Density	10000Dots/m ²
	Configuration	1R1G1B	Resolution	32*16=512Dots
	Size (Width*height*Depth)	320.0*160.0*19.1mm	Net Weight	0.48kg±0.05kg
	Structure	Led and ICs in same PCB	Plastic Kit	Polycarbonate material
	Input Voltage(DC)	4.5±0.1V	Maximum Current	6.59A±0.1A
	Module Power	≤29.7W	Driving method	Constant Current 1/4 scan
Cabinet	Cabinet Dimensions(Width*Height*Depth)		960mm*960mm*90mm	
	Pixel Density		96*96=9216 Dots	
	Square Meters		0.9216 m ²	
	Cabinet Weight		28.6±0.05kg	
	Power consumption		533w (max)	
	Power consumption		266w (average)	
	Distribution power (78% power efficiency)		684W/m ²	
Display Screen	Brightness	≥ 4000 cd/m ²	Brightness uniformity	>0.95
	Viewing angle-Horizontal	140±10 degree	Viewing angle-Vertical	130±10 degree
	Best viewing distance	≥10.0m	Pixel failure	< 0.0003
	Max Power Consumption	≤579W/m ²	Operation environment	Outdoor
	Distribution power (78% power efficiency)	≤873W/m ²		
Control System	Gray Scale	12-16bits	Display Color	4398 billions
	Frame frequency	≥60 frames/sec	Refresh Rate	≥1920Hz
	Control Mode	Computer-controlled, point-by-point, correspondence, video synchronization	Brightness adjustment	256 grade manual/automatic



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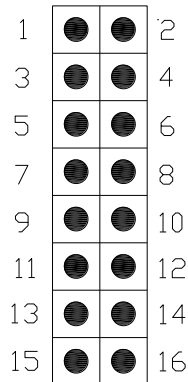
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Life Span:	≥100,000 hrs	Average Failure Free Time	≥10,000 hrs
Attenuation (3 years later)	≤15%	Operating Humidity	10%---90%RH
Input Signal	DVI/VGA, Video (multiple formats) RGBHV, Composite video signal, S-VIDEO YpbPr (HDTV)		

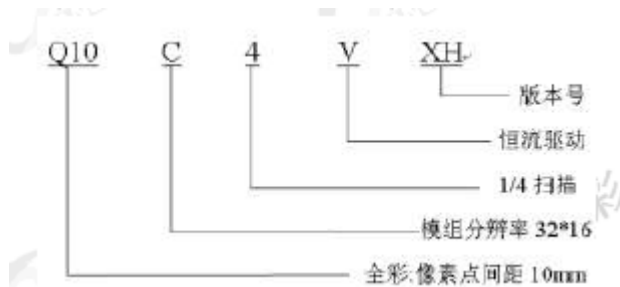
3. Signal Pin

HUB75C



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

Remark: This module can use HUB75C



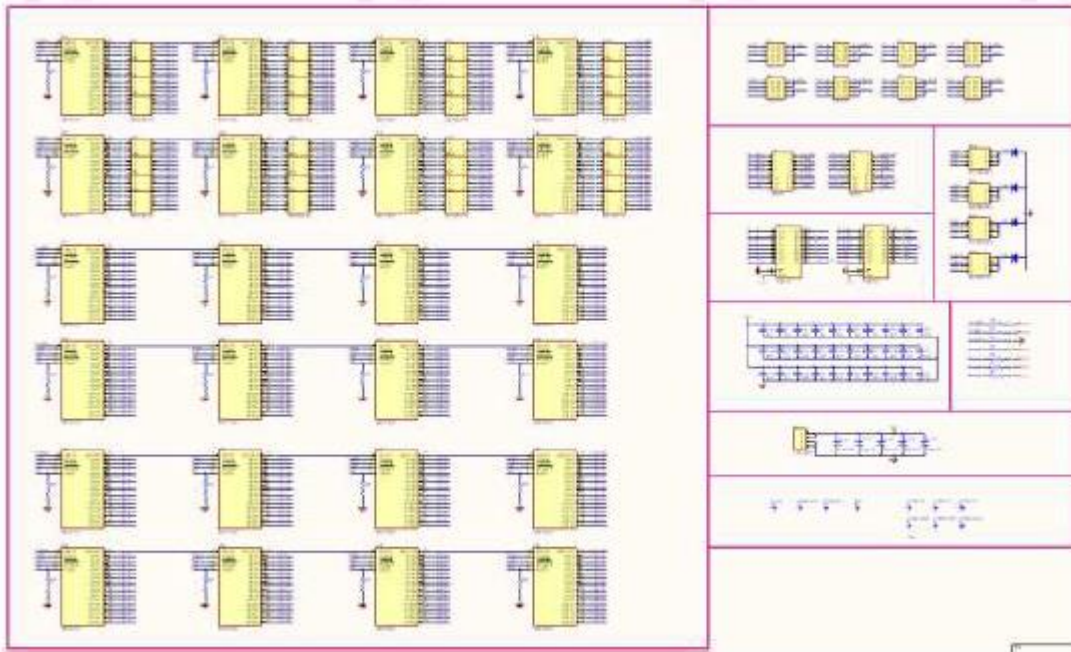
6. Schematic Circuit



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7. IC SMT Sketch

Component	Location	Component	Location
74HC245(ssop)	U1-U2	Capacitor 104P	C1-C40
74HC138(SOP)	U5-U6	74HC123D(SOP)	U7
Constant current IC (SSOP)	UR1-UR8 UG1-UG、UB1-UB8	4953(SOP)	T1-T16
CD4051(TSSOP)	UH1-UH4	MOS Tube	Q1



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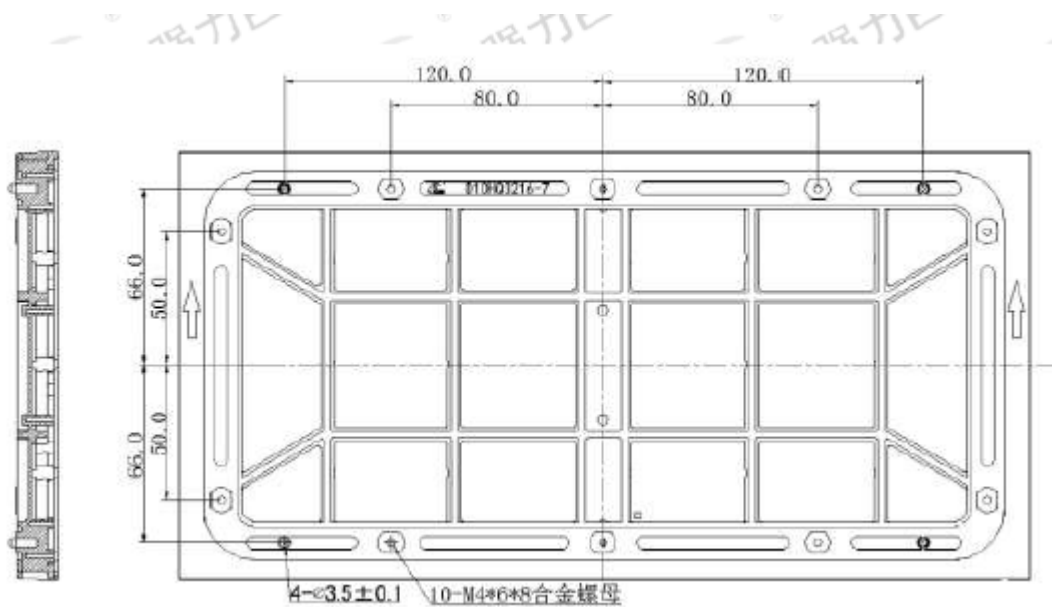
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Resistor122, 1.2KΩ	RR1-RR8	Resistor 44B, 2.8 KΩ	RG1-RG8
Resistor55B, 3.65 KΩ	RB1-RB8	Resistor 66B, 4.7KΩ	ROE
Resistor 152, 1.5 KΩ	RC2-RC5	Resistor 102, 1 KΩ	RC1
Resistor 01D, 100 KΩ	R1	SMD Pin	JIN,JOUT
SMD power outlet VH3.96-4P	DH1-DH2	SMD Capacitor	CA1-CA11

8.Cabinet Holes Bitmap

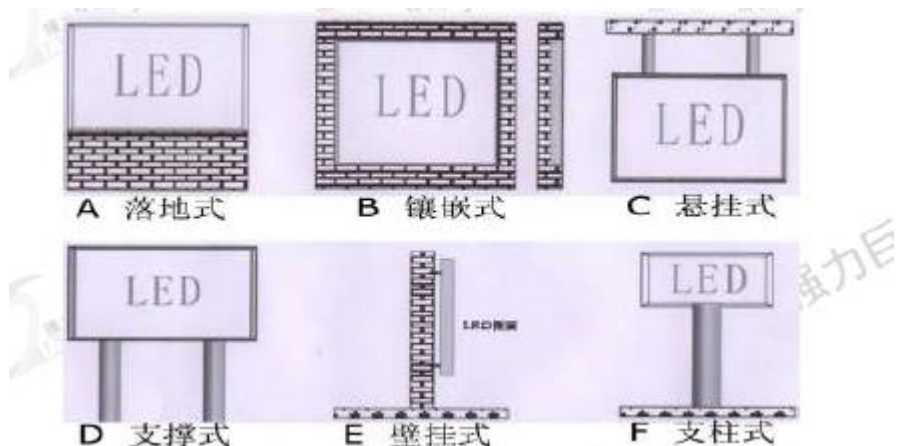
8.1 Module holes bitmap:



Remark:: All dimensions are in mm; All dimension tolerance is ± 0.1 .

9. Installation Guide Way

9.1 Cabinet Installation show:





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9.2 Before installing display, should be checked:

- Whether the underlying structure is solid;
- Whether the width and height of the structure is accurate, generally higher than the screen size is large 20mm-50mm is appropriate;
- The distance square tube and square tube from the bottom to the top must be strictly consistent, otherwise the body of the screen during the installation will produce cracks, severe upper difficult to install or not to install the cause rework;
- Check the structure inside the channel position is appropriate, the cabinet will not block the rear door, or in the body of the screen after installed, the cabinet rear door can not be opened;
- Screen holes on both sides of the alignment will not be blocked.

10. Computer Standard Configure

10.1 Operating system:

- Windows98/ me/ 2000/NT/ XP/ Vista/ Win7

10.2 The configuration of computer hardware:

- CPU: Pentium 2.6GHz above;
- Memory: above 1024MHz;
- Special Display Card VGA/DVI Dual output display mode, video card memory above 512 MHz

10.3 Relevant software installation

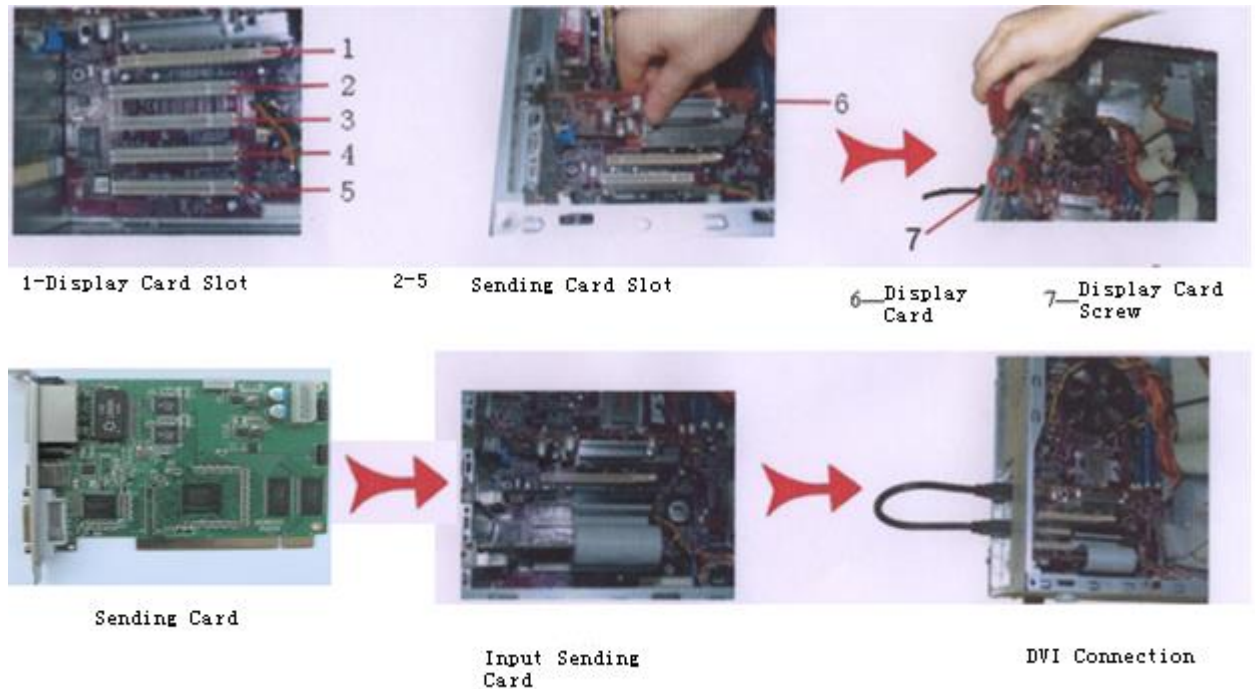
- Microsoft Media Player, Office 2000-2007, RealPlayer.

11. Installation method and steps:

Power off computer then open the computer case cover, put display card into the AGP slot
Put sending card into the PCI slot then close the computer case cover

Power on computer then operate the CD into the CE-ROM install related software

1. Power off computer then open the computer case cover, put display card into the AGP slot
2. Put sending card into the PCI slot then close the computer case cover
3. Power on computer then operate the CD into the CD-ROM install related software



12. Precaution

12.1. LED welding. Use manual soldering iron:

- Recommended to use less than 25W or less soldering iron, soldering iron when the temperature must be kept below 315 °C, and only once for each electrode welding, soldering each time shall more than 3 seconds; When first time cannot do well, before they can be welded must wait 10S; second not good, must be replaced with new SMD lamps.
- Rigorous grounding switch power supply enclosure, cabinet, screen, etc.;
- Electric soldering iron cannot touch the epoxy portion;
- When well done after welding, cool it to a temperature below 40 °C can packaging;

12.2 LED cleaning:

- Do not use an unknown chemical liquid cleaning SMD LED, unknown chemical liquids may damage SMD LED; cleaning when necessary, the SMD LED immersed in alcohol, less than one minute at normal room temperature and dry naturally for 15 minutes, then began to use;
- Recommended after welding washed with alcohol, at a temperature of not higher than 30 °C for 3 minutes under the condition of not higher than 50 °C for 30 seconds. Before using other similar solvents to clean, make sure the solvent used is not part of the package and the epoxy LED causing damage;
- ultrasonic cleaning is also an effective method, generally should not exceed the maximum power of 300W, otherwise it may cause damage to the LED; pre-tested before use LED wash



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whether the conditions would cause damage; do not recommend using;

12.3 LED anti-moisture packing:

- In order to avoid moisture absorption during transport and storage, SMD LED bags with moisture aluminum packaging bags and bags which contain desiccant .Desiccant bag packaging mainly played humidity control. Humidity card is mainly from monitor packaging bag humidity;

12.4 LED Storage:

- This product uses sealed moisture-proof anti-static bag, together with desiccant, unopened products have six months to save time. When the need to bake more than the retention period; before opening, the product must be stored at a temperature not higher than 30 °C, humidity no higher than 60% RH environment;
- After opening , the product must be stored at a temperature not higher than 30 °C, humidity no higher than 10% RH environment, and should be within 168 hours (7 days) are finished;
- working environment temperature is not higher than 30 °C, humidity is not higher than 60% RH. Must run in 24 hours reported in the dry seasons. When in the wet season, must be used in this 12 hours , otherwise should be done baking before use;

12.5 Static :

- Electrostatic (ESD) and surge (EOS) will result in product characteristics change, such as the forward voltage drop, etc., if severe situation may even damage product seriously, it must take effective anti-static measures in the use of anti-static;
- all associated equipment and machinery should be properly grounded , and must take other measures to prevent static electricity and surges;
- Use an anti-static wrist strap, anti-static mats, anti-static overalls, work shoes, gloves , anti-static container , are effective measures to prevent static electricity and surge;

12.6 pick:

- Direct hand pick products, not only contaminate the surface of the encapsulating resin, may also be due to static electricity and other factors lead to changes in product performance; excessive pressure inside the package may have a direct impact on the die and gold thread, so do not exert excessive pressure on the product, especially when the product is in high temperature condition, such as reflow soldering process;

12.7 Module

12.7.1 Lot ID:

- Throughout the production process, the cell board must have a clear batch identification ;

12.7.2 Packaging:

- When aging test is done, product packaging should be at a temperature less than 30 °C, humidity less than 60% RH of the environment;
- Each carton should be placed not less than 500g bag of desiccant or moisture;
- Considering the stockpile and the resurgence of the weather, the packaging should be as tight, avoid direct contact with the air, it is best to sealed;
- Carton should be marked on the product model number and production batch number, different batches of the product cannot be installed in the same carton, otherwise the display will be used to produce color (mosaic) phenomena;

12.7.3 Storage:

- Packaged product should be placed relatively dry environment, the humidity should be



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controlled at 70% RH or less, especially in wet weather, warehouses cannot appear resurgence ;

- If packaged products store for more than a month, it is recommended to do two hours of aging test, and then packaging and storage ;

12.8 Display

12.8.1 Display installation:

- When assemble one screen, should choose a same batch unit. If use two or more batches of cell boards , should report to tech. Dept.;

12.8.2 Caution:

- This type SMD display cannot be used in severe wet conditions, especially in the resurgence of weather products preservation. If display and storage is bad, will cause LED lights burn , dark light, short circuit, open circuit and the lamp body damage and cause appears string lights on the display .To improve the life of the display screen and LED products , please follow the methods of using and storage , the best ambient humidity can be controlled below 70% RH;

12.8.3 Fixed class display:


- Suggested in the dry season , at least open the display one day each week;
- Within 60% ~ 80% RH relative humidity range, recommended open once every day, at least 2 hours to remove moisture on the display. The best time is between 7:00 am to 10:00 or between 18:00 to 10:00 ;
- If the humidity is higher than 80% RH or resurgence of the weather , it is recommended to play the video more than 8 hours each day .And shut the doors and windows at night, to prevent the resurgence of serious adverse night; especially the resurgence of days ,play 24 hours video if allowed;

12.8.4 Rental screen display:

- After using it , require immediate loading of each air box, if stained water on the screen, it must be placed in the dryer after it , and cover air cover;
- In each flight case , place not less than 500g bag of desiccant or moisture;
- In the dry season ,taken out to play video for 2 hours at least more once a month, Within 60% ~ 80% RH relative humidity, play video 2 hours every half month. If more than 80% RH relative humidity, taken out to play video for 2 hours each week. After finished, you need to put in flight case immediately, sealed preservation (Please check whether the invalidation of the desiccant or moisture. More desiccant can improve dryness;
- When renting, do not have rain on front side. If there is water on, light on the display as soon as possible , relying on heat lamps and IC rainwater evaporate;

12.9 Outdoor LED Display Environment

Item	Description
Temp.	Screen operating temp.: 0-40℃。 Other temperature ranges, need to install temperature control equipment.
Humidity	Humidity range: 10 % -95 %; conditions: humidity exceeds 80%, the display normally required to work 8 hours / day.
Dust	Outdoor product protection class is IP30 or without. The display should not be exposed in a dirty environment, such as studio renovation, alteration etc., which require special protection for LED display. Especially when decorating, it cannot be installed.

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Corrosive gas	Gas contains corrosive salts or acid gas in the air. It will cause corrosion of the electronic components, the leakage phenomenon crystallization.		
Electromagnetic Radiation	Screen should not be placed in the environment of electromagnetic radiation and radio frequency radiation field intensity exceeds 5V / m interference source.		
Avoid glare direction	Glare will affect the effect of screen, and after long-time watching, the human eye will cause decreased acuity, glare, blindness and other short-term phenomenon.		
Away from water	There is low protection level in outdoor products. Water can short circuit, damage circuit components, so keep away from water.		
Electrostatic hazard	Metal components should be connected with ground well, grounding resistance is less than 4 Ω . Preventing wet environments, static electricity damage electronic devices, while avoiding static electricity on the human body injury.		
Personal injury	The angle and height of installation should be suitable. Sharp corners should be packaged, and prevent tough corners damaging human body.		
Avoid re-construction after screen installed	LED display is strictly prohibited re- construction after installed. Prevent the display screen from a large current impact and dust effects, such as: welding, saws and other equipment operating.		