



深圳市一众显示科技有限公司

SHEN ZHEN TEAM SOURCE DISPLAYTECH. CO, TD.

LCM Module Specification

Module NO.: Pro024QVSTM-R2101

Version: V1.0

APPROVAL FOR SPECIFICATION

APPROVAL FOR SAMPLE

For Customer' s Acceptance:	
Approved by	Comment

Team Source Display:		
Presented by	Reviewed by	Organized by

Version No.	Date	Content	Remark
V1.0	2022-12-11	First Released	

1 Basic Information

Pro024QVSTM-R2101 LCD module is a serial communication TFT color display module based on STM32 main chip development platform. Through optimization algorithm, the main chip and the display can cooperate quickly to make it have excellent screen refresh rate and dynamic display effect. The module has the advantages of simple structure, simple circuit and high adaptability to environment, and is suitable for various display products requiring serial communication.

communication mode	serial port
Display specification	2.4"/IPS/240*320
storage mode	128Mbit norFlash(customizable)
Touch type	CTP ports are reserved
protective treatment	PCBA components are coated with UV three anti-adhesive

1. Technical Information

1.1 Appearance

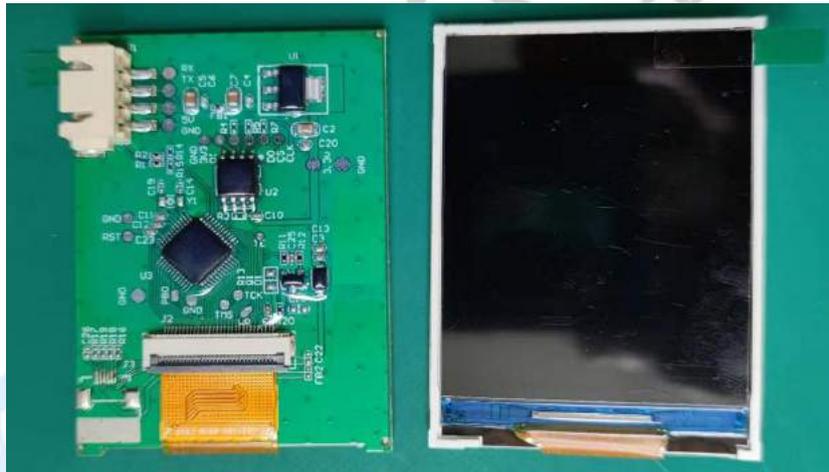
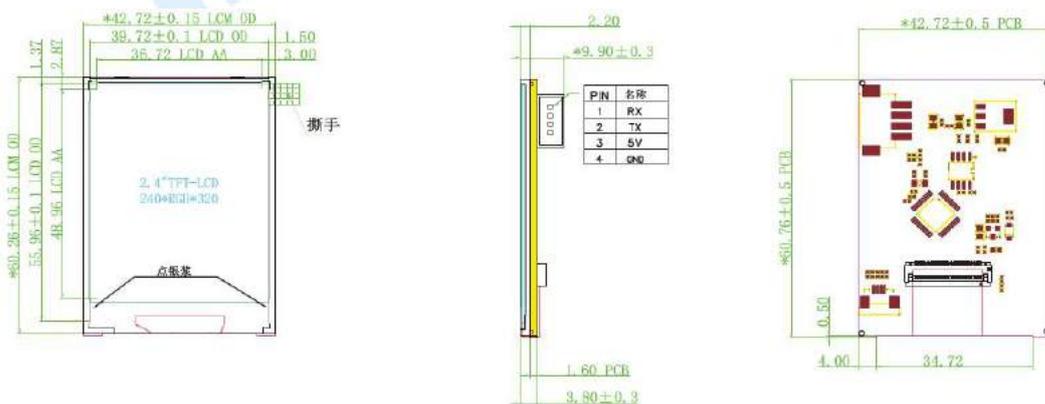


Figure: Appearance

1.2 Overall Dimensions



1.3 Basic Structure

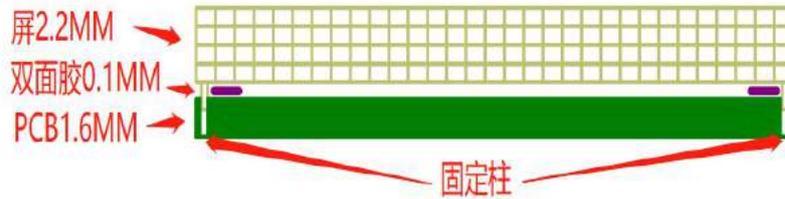


Figure: Part structure

1.4 Labels

Power-on automatic power-on display TSD LOGO

1.5 Interface Definition

PIN	name	definition	remark
1	GND	ground connection	
2	5V	input power	4.5~9V, typical value 5V/150mA
3	TX	Communication output	3.3V/5V
4	RX	Communication input	3.3V/5V

1.6 Technical Specifications

1.6.1 basic parameter

performance parameter	technical requirements	remark
working voltage	4.5V ~ 9V, typical value: 5V	
working current	50mA ~ 150mA, typical value 108mA	
display colour	65K color	
display resolution	240 (W) *320 (H)	
angle of view	80° /80° /80° /80°	
communication mode	UART	
operating temperature	-20°C ~70°C	
storage temperature	-30°C ~80°C/96h	

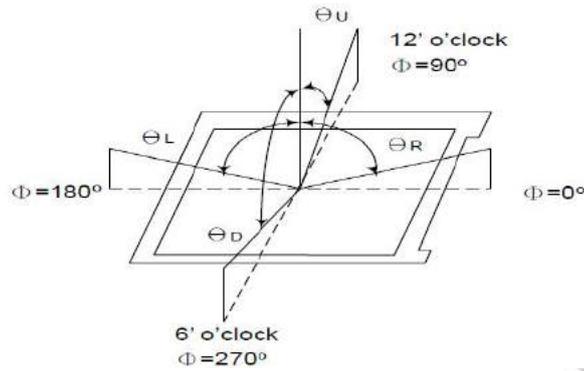
1.6.2 Optical characteristics

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Contrast Ratio	C/R	$\theta = 0^\circ$	1000	1500	-	-	Note(4)
NTSC Ratio	S	$\theta = 0^\circ$	-	70	-	%	Note(7)
Luminance	L	$\theta = 0^\circ$	-	300	-	cd/m ²	Note(5)
Luminance uniformity	U _w	$\theta = 0^\circ$	75	80	-	%	Note(3)
Response Time	T _R + T _F	25 °C	-	12	24	ms	Note(2)
Color Coordination	W _X	$\theta = 0^\circ$ (Center) Normal viewing angle B/L On	-0.04	0.27	+0.04	NTSC (x,y)	Note(6)
	W _Y			0.31			
	R _X			0.652			
	R _Y			0.322			
	G _X			0.276			
	G _Y			0.582			
	B _X			0.141			
	B _Y			0.091			
Viewing Angle	θ_L	C/R>10	70	80	-	Degree	Note(1)
	θ_R		70	80	-		
	θ_U		70	80	-		
	θ_D		70	80	-		

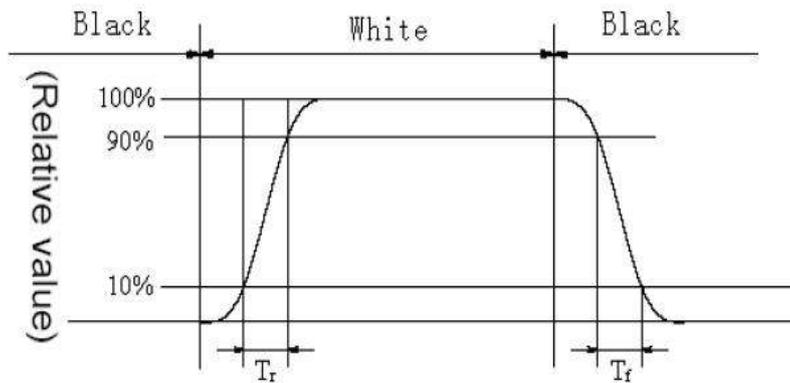
Test conditions:

- 1 The ambient temperature is +25°C
- 2 Refer to Note8 for the test system

Note1: Definition of Viewing Angle: The viewing angle range that the CR>10

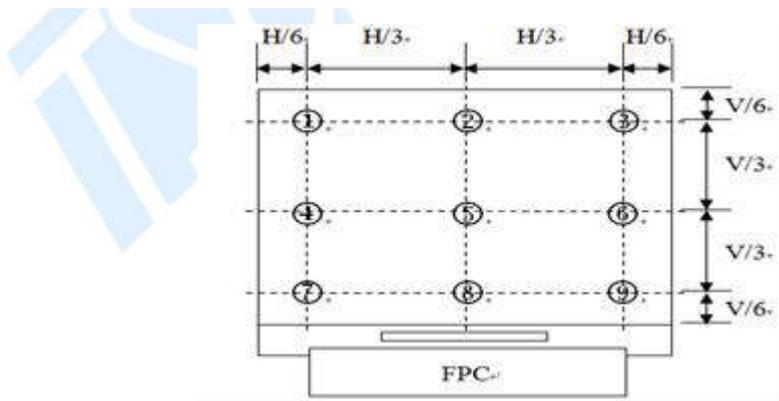


Note2: Definition of Response time: Sum of T_R and T_f



Note 3: Definition of Luminance Uniformity: Active area is divided into 9 measuring areas, every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity} = \frac{\text{Min Luminance of white among 9-points} \leftarrow}{\text{Max Luminance of white among 9-points} \leftarrow} \times 100\%$$



Note4: Definition of Contrast Ratio (CR): measured at the center point of panel

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

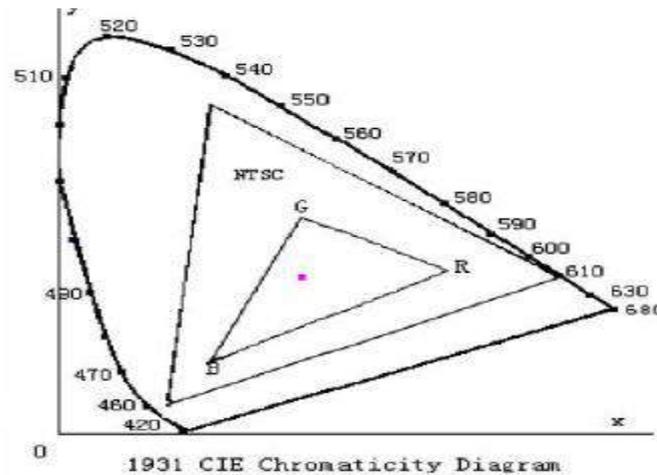
Note 5: Definition of Luminance: Center Luminance of white is defined as luminance values of 1 point average across the LCD surface.

Note 6: Definition of Color Chromaticity (CIE 1931)

Color coordinates of white & red, green, blue measured at center point of LCD.

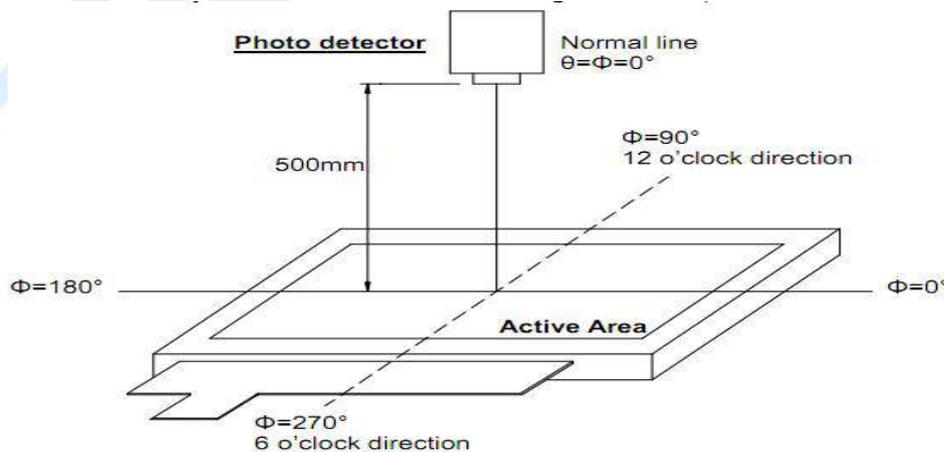
Note 7: Definition of NTSC ratio:

$$\text{NTSC ratio} = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}}$$



Note 8: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, Field of view: 1°/Height: 500mm.)



RELIABILITY

Item	Test Condition	Remark
High Temperature Storage	Ta =+80°C / 96Hours	Note1,2,3
Low Temperature Storage	Ta =-30°C / 96Hours	Note1,2,3
High Temperature Operating	Ta =+70°C / 96Hours	Note1,2,3
Low Temperature Operating	Ta =-20°C / 96Hours	Note1,2,3
Temperature Cycle storage Test	-30°C/30min Δ+80°C /30min for 30cycles,Transfer time less than 5min	Note2,3
Thermal humidity storage Test	60°C x 90%RH / 96Hours	Note2,3
Package Vibration Test	Frequency: 10Hz~55Hz,Amplitude:1.5mm, 1 hrs for each direction of X, Y, Z	Note2
<p>Inspection after Test: Note1:Ta is the ambient temperature of samples. Note 2: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but doesn't guarantee all the cosmetic specification. Note 3: Before cosmetic and function tests , the product must have enough recovery time, at least 2 hours at room temperature.</p>		

1.1 Precautions for use

Use temperature range: -20°C ~ 70°C, long-term high temperature work will lead to failure.

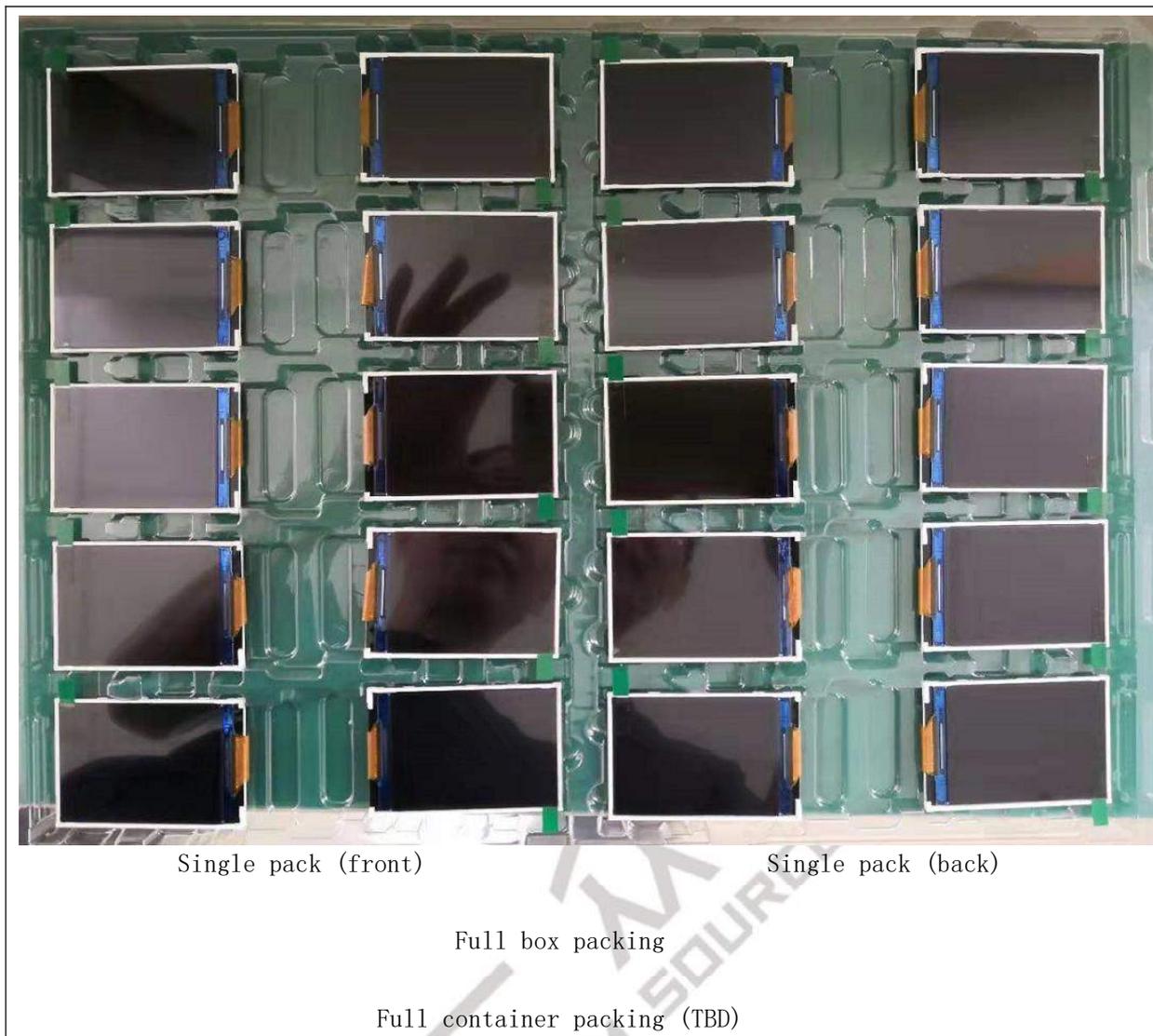
The main control board is electrostatic sensitive and must be handled with an ESD wrist strap, especially the main control chip.

Sample inspection test DC power supply voltage should not be greater than 8V, to prevent the power supply contact jump surge breakdown or damage to the voltage regulator chip.

2. Packaging, transportation and storage

2.1 Packaging Method

One box is packed with 300pcs, packed in stacking layer, each layer 4*5=20pcs, placed vertically, one box is stacked with 15 layers.



1.1 Label of the packing case

1, the internal and external packaging clearly marked; Include the supply label (should be the name of the supplier. Product name. Specification model. Quantity. Date of manufacture), breakability, etc.

2, it is required to use anti-static packaging, | electrostatic voltage | ≤ 0.2kV.

1.2 Transport Regulations

1, transportation should avoid rain, snow, direct or indirect shower and mechanical damage or moisture, in order to prevent damage to the package.

2, transportation or handling should avoid heavy fall or heavy pressure to avoid damage or deformation of the pin.

1.3 Storage Environment and Strips

1. It should be stored in an environment with good ventilation, temperature of -15°C ~ +25°C, relative humidity of 40%-65%, and no acid, alkali or other harmful gases around.

2. During storage and transportation, the height of each stack shall not exceed 5 boxes.

project	normal parameter	absolute rating	Material availability	remark
temperature	25°C	85°C	no abnormalities	
humidity	65%	95%	no abnormalities	