



SMART
PanLee

LCD Module SPECIFICATION

液晶显示模组规格书

ZX3D50C3248RD024

0. Revision History (修订记录)

修订内容	时间	修订人	备注

深圳市启明智显科技有限公司

1. Application (应用)

This data sheet is to introduce the specification of ZX3D50C3248RD024 active matrix 16.7M color TFT LCD module. Main color LCD module is controlled by Driver IC ST7796U. If any problem occurs concerning the items not stated in this specification, it must be solved sincerely by both parties after deliberation. As to basic specification of driver IC refer to the IC specification and handbook.

本规格书是为了介绍 ZX3D50C3248RD024 有源矩阵 16.7M 彩色 TFT LCD 模块的规格。主彩色液晶显示模块由驱动芯片 ST7796U 控制 本规范未尽事宜如有问题，双方必须认真协商解决。驱动 IC 的基本规格参照《IC 规格书》和相关《手册》。

2. Construction and Outline (结构与大纲)

Construction: LCD panel, Driver (COG), FPC with electric components, 6 White LED lump, prism sheet, diffuser, light guide and reflector, plastic frame to fix them mechanically. There shall be no scratches, stains, chips, distortions, and other external drawbacks that may affect the display function. To realize thin module structure, double-sided adhesive tapes are used to fix LCD panels. As these tapes do not guarantee to permanently fix the panels, LCD panel may rise from the module when shipped from factory. So please make sure to design the system to hold the edges of LCD panel by the soft material such as sponge when LCD module is assembled into the cabinet.

结构:液晶面板，驱动或 COG，带电子元件的 FPC，6 个白光 LED 块，棱镜片，扩散器，导光器和反射器，塑料框架机械固定。不应有可能影响显示功能的划痕、污迹、芯片、畸变等外部缺陷。为了实现薄型模块结构，采用双面胶带固定液晶面板。由于这些胶带不能保证永久有效固定面板，LCD 面板在出厂时可能会从模块内移动。所以在液晶模块组包装和进柜时，请务必将包装结构设计成用海绵等软材料支撑液晶面板的边缘。

3. Mechanical Specification(参数规格) Table 1(表 1)

Item(项目)	Specifications(规格)	Unit(单位)
Screen size(屏幕尺寸)	3.5	inch
Display mode(显示模式)	Normally Black	-
Active area(显示范围)	48.96 (H) X 73.44 (V)	mm
Display format(分辨率)	320 (H)* RGB x 480 (V)	-
Pixel configuration(像素)	0.1497 (H)*RGB*0.1462 (V)	mm
Outline Dimensions(外形尺寸)	60*92*3.75 (不含 FPC 及焊锡厚度)	Note 1
View Angle(视角)	FULL	
Base color Notes(基色)	Black	-
Weight(重量)	TBD	
Driver IC(驱动 IC)	ST7796U	

Note 1: Not include FPCs & Bezel extrude structure.

备注 1: 不包括排线和面板构造

4. LCD Module Outline dimensions (模组外形图)

A

版本	图纸名称	物料编码	备注

B

C

D

项目	变更原因	深圳市启明智显科技有限公司	
设计	日期	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND
审核	日期	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND
批准	日期	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND
	联系人:	1. GND 2. GND 3. GND 4. GND 5. GND 6. GND 7. GND 8. GND 9. GND 10. GND 11. GND 12. GND 13. GND 14. GND 15. GND 16. GND 17. GND 18. GND 19. GND 20. GND 21. GND 22. GND 23. GND 24. GND 25. GND 26. GND 27. GND 28. GND 29. GND 30. GND 31. GND 32. GND 33. GND 34. GND 35. GND 36. GND 37. GND 38. GND 39. GND 40. GND	

EPC INTERFACE

1	1.00
2	1.00
3	1.00
4	1.00
5	1.00
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10	1.00
11	1.00
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33	1.00
34	1.00
35	1.00
36	1.00
37	1.00
38	1.00
39	1.00
40	1.00

5. Interface signals(接口信号) Table 2(表 2)

Pin No.	Symbol	Description	Remark
1-3	IMO-IM2	The MCU interface mode select.	
4	LEDK	LED1+	
5	LEDA	LED1-	
6	VCC	Power supply voltage	
7	I0VCC	Power supply voltage	
8	GND	GROUND	
9	RESET	Reset Signal Input Pin	
10	CS	Chip selection Low enable.	
11	RS	Display data/command selection pin	
12	WR	Write enable in MCU parallel interface.	
13	RD	Power supply voltage	
14	TE	Tearing effect signal	
15	LCD-ID	ID check.	
16	SDO	SPI interface output pin.	
17	SDA	Serial Data Transport Interface	
18	GND	GROUND	
19-34	DB0-DB15	16bit data bus	
35	GND	GROUND	
36	CTP_INT	Touch panel interrupt output	
37	CTP_SDA	Touch panel I2C data	
38	CTP_SCL	Touch panel I2C clock	
39	CTP_RST	Touch panel reset	
40	CTP_VCI	Touch panel power supply	

6. ELECTRICAL CHARACTERISTICS(电气特征)

6.1 ABSOLUTE MAXIMUM RATINGS(极限参数) Table 3(表 3)

Parameter of absolute maximum ratings 参数	Symbol 符号	Min 最小值	Max 最大值	Unit 单位	Remark 备注
Operating temperature 操作温度	Top	-10	60	°C	
Storage temperature 储存温度	Tst	-20	70	°C	
Humidity 湿度	RH	/	90% (Max60°C)	RH	
Power Voltage 电源电压	VDD	-0. 3	+6. 0	V	
	VDDIO				

6.2 ELECTRICAL CHARACTERISTICS(模块电气特性) Table 4(表 4)

Parameter of DC characteristics 参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Supply voltage for logic 逻辑电压	VDD	2. 5	2. 75	3. 3	V
I/O power supply I/O 口电压	VDDIO	1. 65	1. 8	3. 3	V
Input Current 输入电流	Idd	-	TBD	-	mA
Input voltage 'H' level 输入高电平	VIH	0. 7*VDDIO	-	VDDIO	V
Input voltage 'L' level 输入低电平	VIL	0	-	0. 3*VDDIO	V
Output voltage 'H' level 输出高电平	VOH	0. 8*VDDIO	-	VDDIO	V
Output voltage 'L' level 输出低电平	VOL	0	-	0. 2*VDDIO	V

6.3 BACKLIGHT SPECIFICATION(背光电气特性) Table 5(表 5)

Item of backlight characteristics 项目	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位	Condition 条件
Forward voltage 正向电压	Vf	2.8	3.0	3.4	V	If = 6*20mA
Luminance 亮度	Lv	-	-	-	cd/m ²	If = 120mA
Backlight uniformity 均匀度	No less than 80% (不低于 80%)					
Number of LED LED 数量	-	6			Piece	
Connection mode 连接模式	S/P/M	6P			-	

7. LED back light(背光灯) Table 6(表 6)

At main panel the back light uses 8 pcs edge light type white LED. 在背光的主面板用 8 颗白色 LED 灯

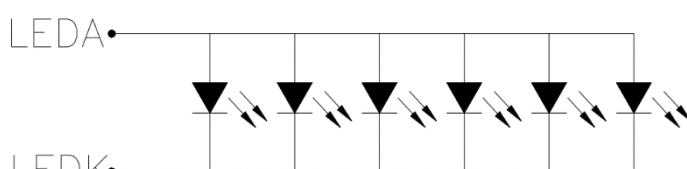
Parameter of DC characteristics 参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Supply voltage for logic	VDD	2.5	2.75	3.3	V
I/O power supply	VDDIO	1.65	1.8	3.3	V
Input Current	Idd	-	TBD	-	mA
Input voltage 'H' level 输入高电平	VIH	0.7*VDDIO	-	VDDIO	V
Input voltage 'L' level 输入低电平	VIL	0	-	0.3*VDDIO	V
Output voltage 'H' level 输出高电平	VOH	0.8*VDDIO	-	VDDIO	V
Output voltage 'L' level 输出低电平	VOL	0	-	0.2*VDDIO	V

Note:

*8 pcs of LED

*Please consider Allowable Forward Current on used temperature *8 颗灯

* 请考虑允许范围内的正向电流的使用温度



If=120mA, Vf=2.8~3.4V

Fig. 3*Schematics drawing of lighting (绘制照明图 图. 3)

8. Optical Characteristics(光学特征) Table 7(表 7)

Item of electro-optical characteristics 项目	Symbol 符号	Condition 条件	Min 最小值	Typ 典型值	Max 最大值	Unit 单位	Note 备注
LCM Surface Luminance 模组表面亮度	Lv	--	280	320	--	cd/m ²	Note 4
Contrast Ratio 对比度	CR	--	800	1000	--	--	Note 2
Response time 响应时间	Tr+Tf	--	--	25	35	msec	Note 3
Color chromaticity (CIE 1931) 色彩饱和度	White	X	$\theta = 0^\circ$ $\phi = 0^\circ$ $T_a = 25^\circ C$	-0.03	0.292	+0.03	Note 4 Note 5
		Y			0.316		
	Red	X			0.632		
		Y			0.339		
	Green	X			0.309		
		Y			0.608		
	Blue	X			0.147		
		Y			0.042		
Viewing angle 视角范围	Ver.	$\theta Y+$	$CR \geq 10$	80	85	--	deg Note 1
		$\theta Y-$		80	85	--	
	Hor.	$\theta X-$		80	85	--	
		$\theta X+$		80	85	--	

9. General Precaution (一般注意事项)

9.1 Safety

1. Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
2. If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
3. If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

9.2 Storage Conditions

1. Store the panel or module in a dark place where the temperature is $23\pm5^{\circ}\text{C}$ and The humidity is below $50\pm20\%\text{RH}$.
2. Store in anti-static electricity container.
3. Store in clean environment, free from dust, active gas, and solvent.
4. Do not place the module near organics solvents or corrosive gases.
5. Do not crush, shake, or jolt the module.

9.3 Handling Precautions

1. Avoid static electricity which can damage the CMOS LSI.
2. The polarizing plate of the display is very fragile. So, please handle it very carefully.
3. Do not give external shock.
4. Do not apply excessive force on the surface.
5. Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
6. Do not use ketonic solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
7. Do not operate it above the absolute maximum rating.
8. Do not remove the panel or frame from the module.
9. When the module is assembled, it should be attached to the system firmly, be careful not to twist and bend the module.
10. Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining and discoloration may occur.
11. If the liquid crystal material leaks from the panel, it should be kept away from the eye so mouth in case of contact with hands, legs or clothes, it must be head way thoroughly with soap.

9.4 Warranty

1. The period is within twelve months since the date of shipping out under normal using and storage conditions.
2. Do not repaired or modified the LCM. It may cause function to lose efficacy, Starry does not warrant the LCM.
3. All process and material comply ROHS.

10. Contact information (联系信息)

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样品购买地址: <https://shop212317088.taobao.com/>

微信公众号: 启明智显

