Reshine Display (HK) Technology Co., Limited

PRODUCT SPECIFICATIONS

For Customer:_____

Customer Model No._____

Module No.: RXL050131-B

Date : 2019.12.09

Version :V0

■Preliminary Product SPEC

☐ Final Product SPEC

For Customer's Acceptance:

Approved By	Comment

Approved by DIV	Reviewed by QA	Reviewed by RD

. Revision Record

Date	Rev. No.	Page	Revision Items	Prepared
2019.12.09	**V0**		**The first release**	**YJ**

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1. General Specifications

RXL050131-B is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC, a back light unit. The 5.0′′ display area contains 800 x 480 pixels and can display up to 16M colors. This product accords with RoHS

.

Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16M		1
Viewing Direction	FREE	O'Clock	
Operating temperature	-20~+70	℃	
Storage temperature	-30~+80	℃	
Module size	120.7*75.8*2.83	mm	2
Active Area(W×H)	108x64.8	mm	
Number of Dots	800×RGB×480	dots	
Power Supply Voltage	3.3	V	
Outline Dimensions	Refer to outline drawing	-	
Backlight	12-LEDs (white)	pcs	
Brightness(LCM)	600	CD/M^2	
Data Transfer	RGB	-	

environmental criterion

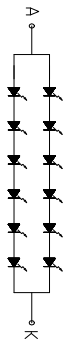
Note 1: Color tune is slightly changed by temperature and driving voltage.

Note 2: Without FPC and Solder，but with eight bumps。

2.Outline.Drawing

基本规格：

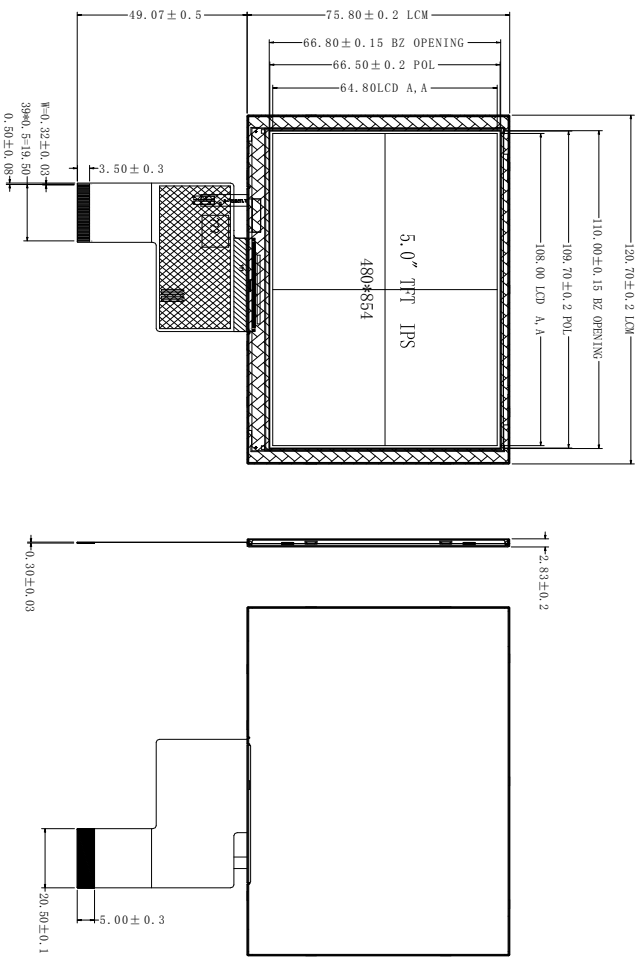
产品规格		
DISPLAY TYPE:	5" TFT	
	NORMALLY BLACK	
	TRANSMISSIVE	
RESOLUTION:	800(RGB)*480	
Driver IC:	ST7262	
Viewing Angle(U/D/L/R)	80/80/80/80	
LCM BRIGHTNESS:	600CD/M^2(TYP);550CD/M^2(MIN)	
Chromaticity:	(x=0.27±0.03,y=0.32±0.03)	
Homogeneity:	80% typ	
BLICKLIGHT:	12pcs,6串2并40mA(20mA/LED)	
Interface:	RGB	
OPERATING TEMP:	-20° C ~ 70° C	
STORAGE TEMP:	-30° C ~ 80° C	
电压:	VCI: 3.3V	
上偏光片	0.15 IPS 砂片	
下偏光片	0.15 IPS 光面	



LED:6串2并

NOTE:

1. GENERAL TOLERANCE: ±0.2.
2. (...) IS REFERENCE DIMENSION.
3. * CRITICAL DIMENSION
4. COMPLIABLY RoHS.



RoHS

PIN	SYMBOL	FUCTION
1	VLED-	
2	VLED+	
3	GND	
4	VDD	
5	R0	
6	R1	
7	R2	
8	R3	
9	R4	
10	R5	
11	R6	
12	R7	
13	G0	
14	G1	
15	G2	
16	G3	
17	G4	
18	G5	
19	G6	
20	G7	
21	B0	
22	B1	
23	B2	
24	B3	
25	B4	
26	B5	
27	B6	
28	B7	
29	GND	
30	PCLK	
31	DISP	
32	HSYNC	
33	VSYNC	
34	DE	
35	NC	
36	GND	
37	XR	
38	YD	
39	XL	
40	YU	

VER.	AMENDMENT	DESIGN	DATE
01	First issue	YJ	2019.12.09

DRAWN: YJ
ME. CHECKED:
EE. CHECKED:
APPROVED:

TITLE: MODULE SPEC.

DRAWING NO.: RXL050131-B

UNIT: mm | SCALE: FIT | 3rd Angle | SHEET 1OF 1

Reshine Display (HK) Technology Co., Limited

3 Interface signals

Pin No.	Symbol	Function
1	LED_K	Backlight LED Ground
2	LED_A	Backlight LED Power
3	GND	GND
4	VDD	Power supply
5-12	R0-R7	Red data bus
13-20	G0-G7	Green data bus
21-28	B0-B7	Blue data bus
29	GND	GND
30	PCLK	Data clock
31	DISP	Standby mode select pin
32	HSYNC	Line SYNC signal
33	VSYNC	Frame SYNC signal
34	DE	Data Enable Input
35	NC	NC
36	GND	GND
37	XR	Touch Panel Control Pin
38	YD	
39	XL	
40	YU	

4. Absolute Maximum Ratings(Ta=25℃)

4.1 Environmental Absolute Maximum Ratings.

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30℃	80℃	-20℃	70℃	1,2
Humidity	-	-	-	-	3

1. The response time will become lower when operated at low temperature.

2. Background color changes slightly depending on ambient temperature.

   The phenomenon is reversible.

3. Ta<=40℃:85%RH MAX.

   Ta>=40℃:Absolute humidity must be lower than the humidity of 85%RH at 40℃.

5. Electrical Specifications and Instruction Code

5.1 Electrical characteristics(Vss=0V ,Ta=25℃)

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Note
Power supply		VCC	Ta=25℃	-	3.3	3.6	V	
Input voltage	'H'	V_{IH}	V_{CC}=2.8V	0.8V_{CC}	-	V_{CC}	V	
	'L'	V_{IL}	V_{CC}=2.8V	0	-	0.2V_{CC}	V	

Note:

1:When an optimum contrast is obtained in transmissive mode.

5.2 LED backlight specification(VSS=0V ,Ta=25℃)

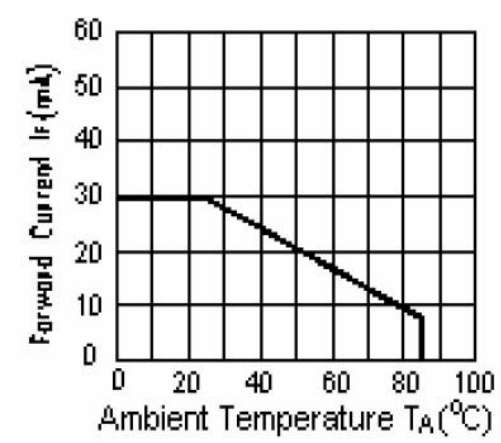
Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage		-	-	-	19.2	-	V	1
Supply current		I_f	-	-	40	-	mA	2
Forward current	Normal	I_{pn}	12LEDS	-	40	-	mA	
	Dimming	I_{pd}		-	-	-		

Note:

1: $V_{LED}=V_{LED}(+)-V_{LED}(-)$.

2:The current of LED is 20mA.
A LED drive in constant current mode is recommended.

3: LED power consumption is around 0.77 W.



CIRCUIT DIAGRAM

6. Optical Characteristics

Item	Symbol		Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	550	600	-	Cd/m²	1
Uniformity	⊿Bp			75	80	-	%	1,2
Viewing Angle	3:00		Cr≥10	-	80	-	Deg	3
	6:00			-	80	-		
	9:00			-	80	-		
	12:00			-	80	-		
Contrast Ratio	Cr		θ=0° Φ=0°	640	800	-	-	4
Response Time	T_r+T_f			-	30	-	ms	5
Color of CIE Coordinate	W	x	θ=0° Φ=0°		0.325		-	1,6
		y			0.348		-	
	R	x			0.620		-	
		y			0.328		-	
	G	x			0.334		-	
		y			0.544		-	
	B	x			0.136		-	
		y			0.143		-	
NTSC Ratio	S			-	50	-	%	

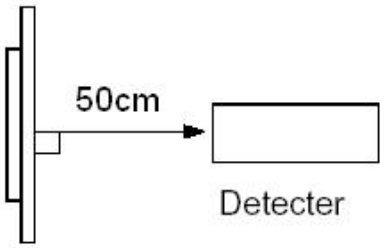
Note：The parameter is slightly changed by temperature, driving voltage and materiel

Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment PR-705 (Φ8mm)

Measuring condition:

- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25℃.
- Adjust operating voltage to get optimum contrast at the center of the display.

Measured value at the center point of LCD panel after more than 5 minutes while backlight turning on.

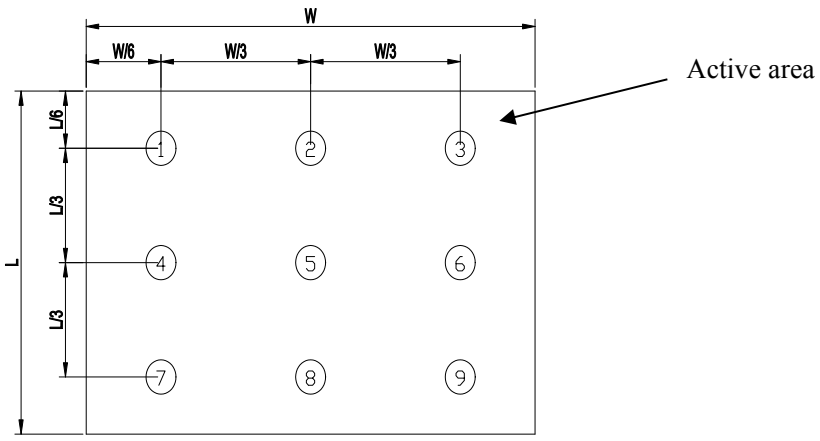


Note 2: The luminance uniformity is calculated by using following formula.

⊿Bp = Bp (Min.) / Bp (Max.)×100 (%)

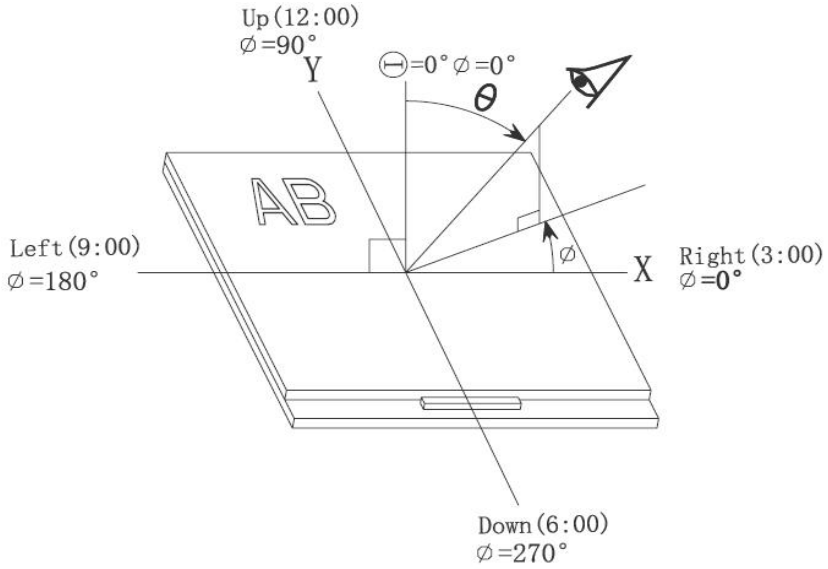
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots.

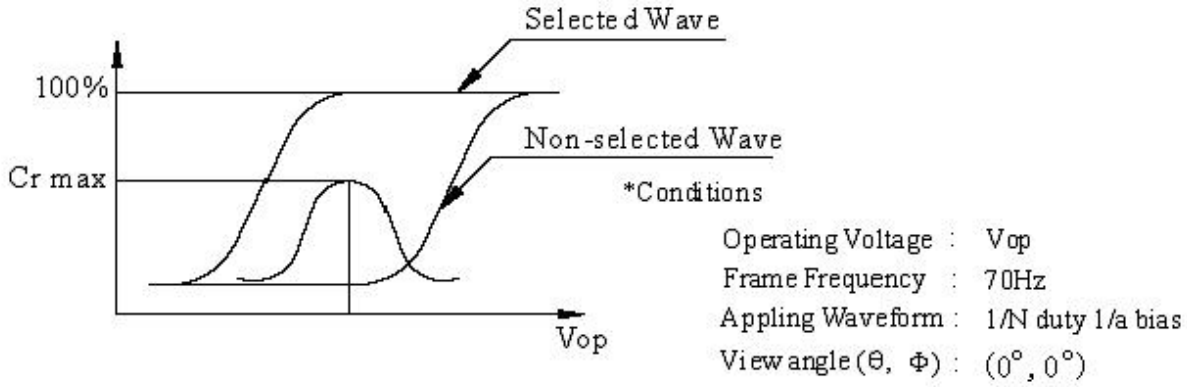


Note 3: The definition of viewing angle:

Refer to the graph below marked by *θ* and *Φ*



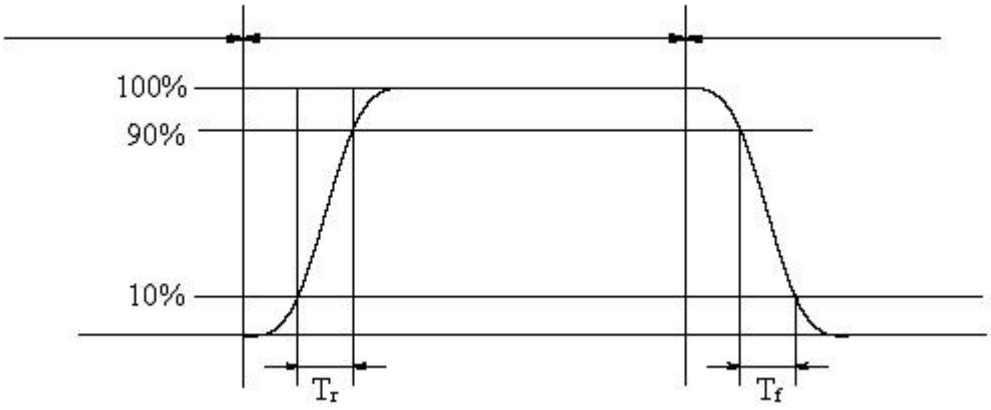
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



$$Contrast\ ratio(Cr) = \frac{Brightness\ of\ selected\ dots}{Brightness\ of\ non-selected\ dots}$$

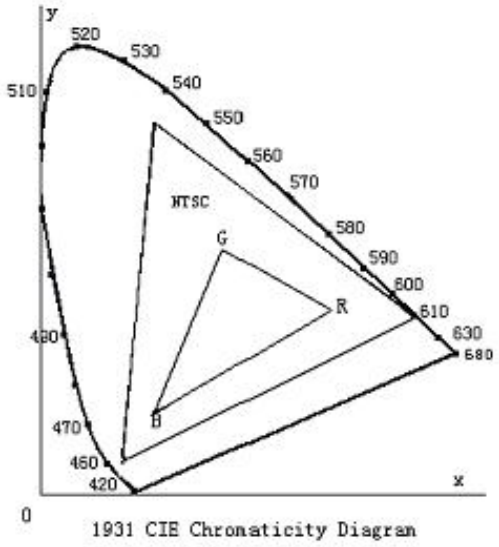
Note 5: Definition of Response time. (Test LCD using DMS501):

The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes.Refer to figure as below.



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.



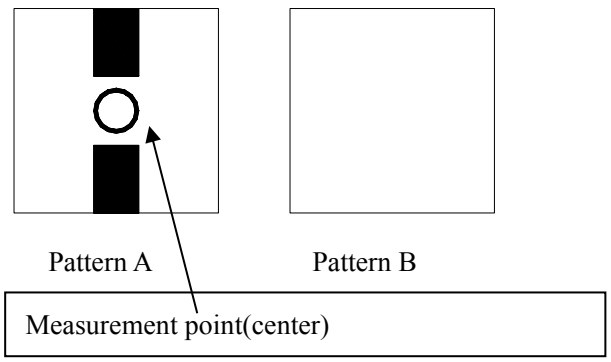
1931 CIE Chromaticity Diagram

Color gamut:

$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

Note 7: Definition of cross talk.

Cross talk ratio(%)=|pattern A Brightness-pattern B Brightness|/pattern A Brightness*100



Electric volume value=3F+/-3Hex

7. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	80℃±2℃ 96H Restore 2H at 25℃ Power off	1. After testing, cosmetic and electrical defects should not happen. 2. Total current consumption should not be more than twice of initial value.
2	Low Temperature Storage	-30℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	70℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	-20℃±2℃ 96H Restore 4H at 25℃ Power on	
5	High Temperature/Humidity Operation	60℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	–30℃←————→80℃ 30min 5min 30min after 5 cycle, Restore 2H at 25℃ Power off	
7	Vibration Test	10Hz~150Hz, 100m/s^2, 120min	Not allowed cosmetic and electrical defects.
8	Shock Test	Half- sine wave,300m/s^2,11ms	
9	ESD Test	Air discharge:+/-8KV, Contact discharge:4KV	

Note: Operation: Supply 2.8V for logic system.

The inspection terms after reliability test, as below

ITEM	Inspection
Contrast	CR>50%
IDD	IDD<200%
Brightness	Brightness>60%
Color Tone	Color Tone+/-0,05

8 Quality level

As Quality department <<Product Cosmetic SPEC>>.

9. Precautions for Use of LCD Modules

9.1 Handling Precautions

9.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

9.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

9.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

9.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

9.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

— Isopropyl alcohol

— Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

— Water

— Ketone

— Aromatic solvents

9.1.6 Do not attempt to disassemble the LCD Module.

9.1.7 If the logic circuit power is off, do not apply the input signals.

9.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

a. Be sure to ground the body when handling the LCD Modules.

b. Tools required for assembly, such as soldering irons, must be properly ground.

c. To reduce the amount of static electricity generated, do not conduct

assembly and other work under dry conditions.

d. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

9.2 Storage precautions

9.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

9.2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃

Relatively humidity: ≤80%

9.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

9.3 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.