Shenzhen Leadtek Electronics Co.,Ltd

PRODUCT SPECIFICATION

TFT-LCD MODULE

Module No：LTK070WV50CYW-V0

☑ Preliminary Specification

☐ Approval Specification

Designed by	Checked by	Approved by
		

Final Approval by Customer

Approved by	Comment

※The specification of “TBD” should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

1.Document Revision History

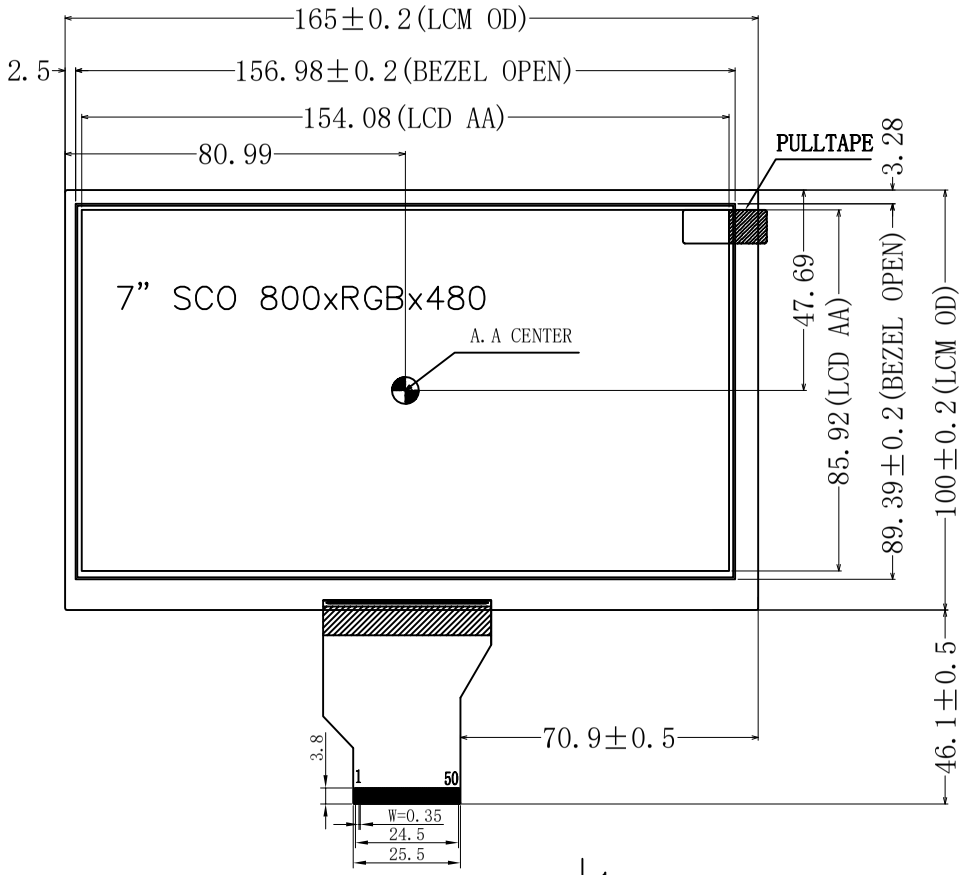
Version	Contents	Date	Note
V0	New	2023.12.07	

2. General Description

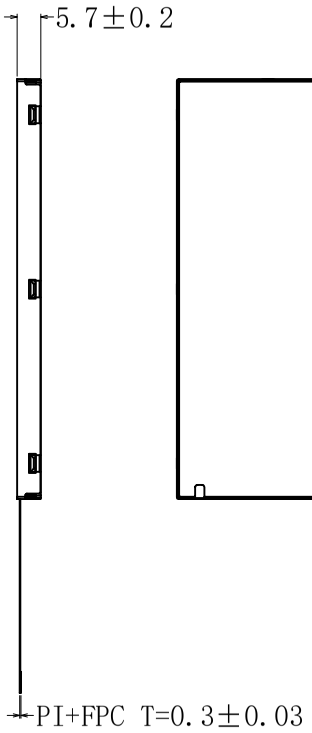
N0	Item	Specification	Unit	Remark
1	LCD Size	TFT" 7.0	inch	-
2	Panel Type	TN	-	-
3	Number of pixels	800RGB (H) x 480 (V)	pixel	-
4	Display mode	Normally white	-	-
5	Display colors	16.7M	-	-
6	Viewing Direction	6 o'clock	-	-
7	Contrast Ratio	500	-	
8	Luminance	250	nit	
9	Module Size	165 (H) x 100 (V) x5.7(D)	mm	Note
10	Active Area	154.08 (H) x 85.92 (V)	mm	Note
11	Pixel Pitch	0.0642 (H) x 0.1790 (V)	mm	-
12	Weight	TBD	g	-
13	Driver IC	-	bit	-
14	Light Source	White LED	-	-
15	Interface	RGB-24bit	-	-
16	Operating Temperature	-10~+60	℃	-
17	Storage Temperature	-20~+70	℃	-

3.EXTERNAL DIMENSIONS

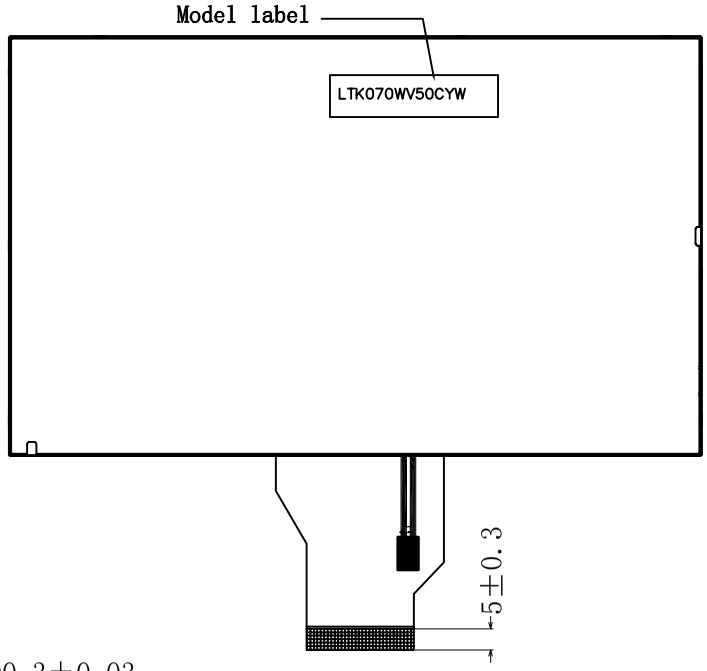
FrontView



Side View

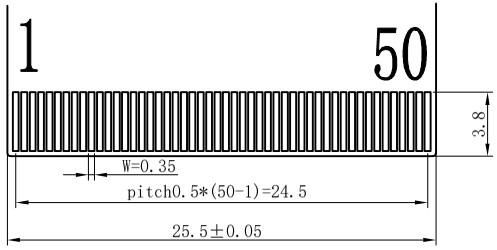


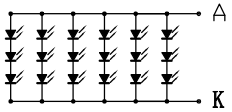
Back View



PIN NUMBER	NAME
1	LED+
2	LED+
3	LED-
4	LED-
5	GND
6	VCOM
7	DVDD
8	MODE
9	DE
10	VS
11	HS
12	B7
13	B6
14	B5
15	B4
16	B3
17	B2
18	B1
19	B0
20	G7
21	G6
22	G5
23	G4
24	G3
25	G2
26	G1
27	G0
28	R7
29	R6
30	R5
31	R4
32	R3
33	R2
34	R1
35	R0
36	GND
37	DCLK
38	GND
39	L/R
40	U/D
41	VGH
42	VGL
43	AVDD
44	RESET
45	NC
46	VCOM
47	DITHB
48	GND
49	NC
50	NC

A (4:1)





IF=120mA, VF=9.6V(TYP)

Notes:
1. Display : 7.0", TFT
2. Resolution: 800xRGBx480
3. LCD Viewing Direction: 6 o' clock
5. Display Mode: Normally White
6. LCM Brightness: 250 cd/m²(TYP)
7. unmark Tolerance:±0.2
8. OPERATING TEMP: -10° C~+60° C
9. STORAGE TEMP: -20° C~+70° C
10. Requirements on Environmental Protection: ROHS

REV	DESCRIPTION	DATE	NAME
3			
2			
1			
0	NEW	2023.12.14	IAN

Shenzhen Leadtek Electronics Co.,Ltd

SCALE:1/1	UNIT:mm	PAGE:1/1		Approve	Check	Drawn
Part No:	LTK070WV50CYW		VER:V0	KEVIN	JONA	IAN
Customer No:						

4.0 Interface Pin Connection

4.1 TFT LCD Module

FPC Connector is used for the module electronics interface. The recommended model is FH12A-50S-0.5SH manufactured by Hirose.

Pin No.	Symbol	I/O	Function	Remark
1	V_{LED+}	P	Power for LED backlight (Anode)	
2	V_{LED+}	P	Power for LED backlight (Anode)	
3	V_{LED-}	P	Power for LED backlight (Cathode)	
4	V_{LED-}	P	Power for LED backlight (Cathode)	
5	GND	P	Power ground	
6	V_{COM}	I	Common voltage	
7	DV_{DD}	P	Power for Digital Circuit	
8	MODE	I	DE/SYNC mode select	Note 1
9	DE	I	Data Input Enable	
10	VS	I	Vertical Sync Input	
11	HS	I	Horizontal Sync Input	
12	B7	I	Blue data(MSB)	
13	B6	I	Blue data	
14	B5	I	Blue data	
15	B4	I	Blue data	
16	B3	I	Blue data	
17	B2	I	Blue data	
18	B1	I	Blue data	Note 2
19	B0	I	Blue data(LSB)	Note 2
20	G7	I	Green data(MSB)	
21	G6	I	Green data	
22	G5	I	Green data	
23	G4	I	Green data	
24	G3	I	Green data	
25	G2	I	Green data	

26	G1	I	Green data	Note 2
27	G0	I	Green data(LSB)	Note 2
28	R7	I	Red data(MSB)	
29	R6	I	Red data	
30	R5	I	Red data	
31	R4	I	Red data	
32	R3	I	Red data	
33	R2	I	Red data	
34	R1	I	Red data	Note 2
35	R0	I	Red data(LSB)	Note 2
36	GND	P	Power Ground	
37	DCLK	I	Sample clock	Note 3
38	GND	P	Power Ground	
39	L/R	I	Left / right selection	Note 4,5
40	U/D	I	Up/down selection	Note 4,5
41	V_{GH}	P	Gate ON Voltage	
42	V_{GL}	P	Gate OFF Voltage	
43	AV_{DD}	P	Power for Analog Circuit	
44	RESET	I	Global reset pin.	Note 6
45	NC	-	No connection	
46	V_{COM}	I	Common Voltage	
47	DITHB	I	Dithering function	Note 7
48	GND	P	Power Ground	
49	NC	-	No connection	
50	NC	-	No connection	

I: input, O: output, P: Power

Note 1: DE/SYNC mode select. Normally pull high.
When select DE mode, MODE="1", VS and HS must pull high.
When select SYNC mode, MODE= "0", DE must be grounded.
Note 2: When input 18 bits RGB data, the two low bits of R,G and B data must be grounded.
Note 3: Data shall be latched at the falling edge of DCLK.

5.0 Absolute Maximum Ratings

5.1 Electrical Absolute Rating

5.1.1 TFT LCD Module

Item	Symbol	Min.	Max.	Unit	Note
Power supply voltage	DV_{DD}	-0.3	5	V	GND=0
	AV_{DD}	6.5	13.5	V	GND=0
	VGH	-0.3	40	V	GND=0
	VGL	-20	0.3	V	GND=0

Note (1) Stresses above those listed under "Absolute Maximum Rating" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at indicated in the operational sections(6.1) of this specification.

5.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	Topa	-10	60	℃	
Storage Temperature	Tstg	-20	70	℃	

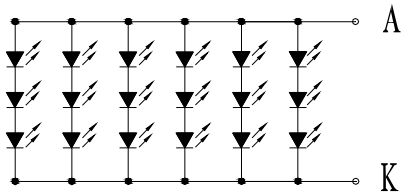
5.3 Back-light Unit:

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
LED Current	IF	–	120	–	mA	–	–
LED Voltage	VF	9.0	9.6	10.5	V	I=120mA	–
Luminance (on the module)	LV	220	250	-	cd/m2	I=120mA	–
Life Time		–	25000	–	Hr.	I=120mA	–
Color	White						

Note (1) Permanent damage may occur to the LCD module if beyond this specification. Functional operation should be restricted to the conditions described under normal operating conditions.

(2)Ta=25±2℃

(3)Test condition: LED Current 120mA



LED 电路图 3串*6并=18 LED

6.0 Optical Characteristics

6.1 Optical specification

Table 6: Optical specifications

Items		Symbol	Condition	Specifications			Unit	Note
				Min.	Typ.	Max.		
Contrast Ratio		CR		400	500	-	-	
Response Time		$T_{R+}T_F$			25	50	ms	
Chromaticity	Red	X_R		-	-	-	-	
		Y_R		-	-	-	-	
	Green	X_G		-	-	-	-	
		Y_G		-	-	-	-	
	Blue	X_B		-	-	-	-	
		Y_B		-	-	-	-	
	White	X_W		0.26	0.31	0.36	-	
		Y_W		0.28	0.33	0.38	-	
Viewing angle	Hor.	Φ1(3 o'clock)	Center CR≥10	60	70		deg.	
		Φ2(9 o'clock)		60	70			
	Ver.	θ2(12 o'clock)		40	50			
		θ1(6 o'clock)		60	70			
NTSC ratio					-		%	

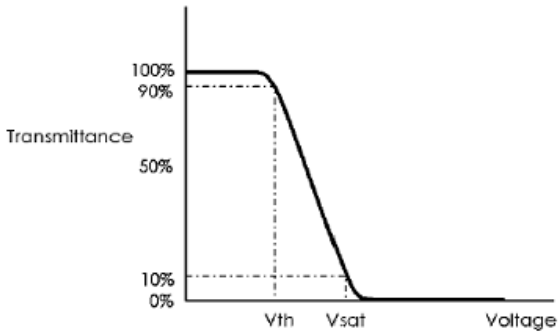
3.2 Measuring Condition

- Measuring surrounding : dark room
- Ambient temperature : 25±2℃
- 30min. warm-up time.

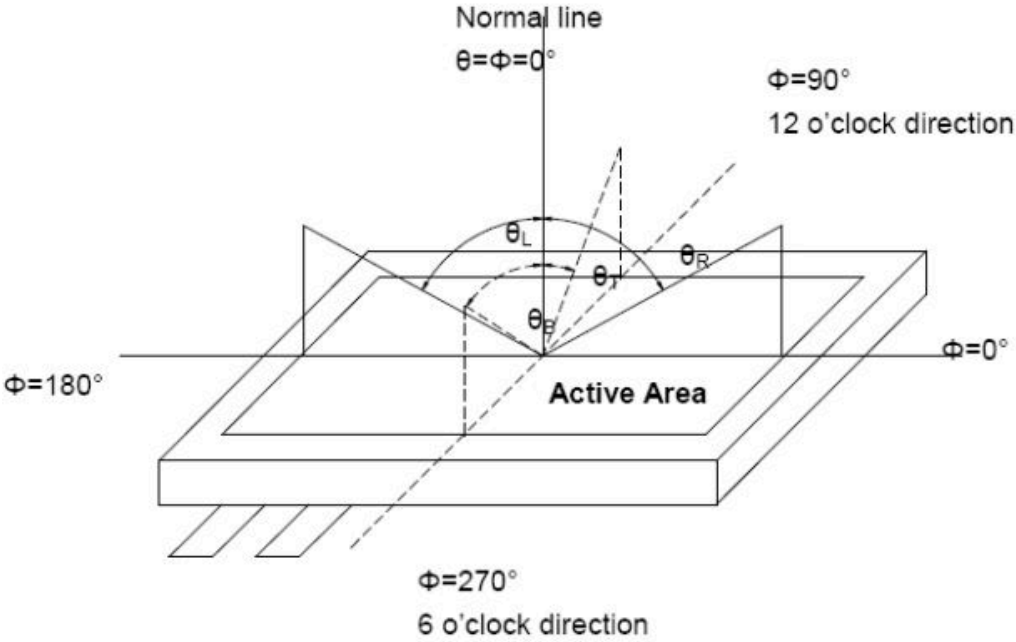
3.3 Measuring Equipment

- TOPCON BM-7
- Measuring spot size : field 2°

Note (1) Definition of Vsat and Vth (at 20℃)

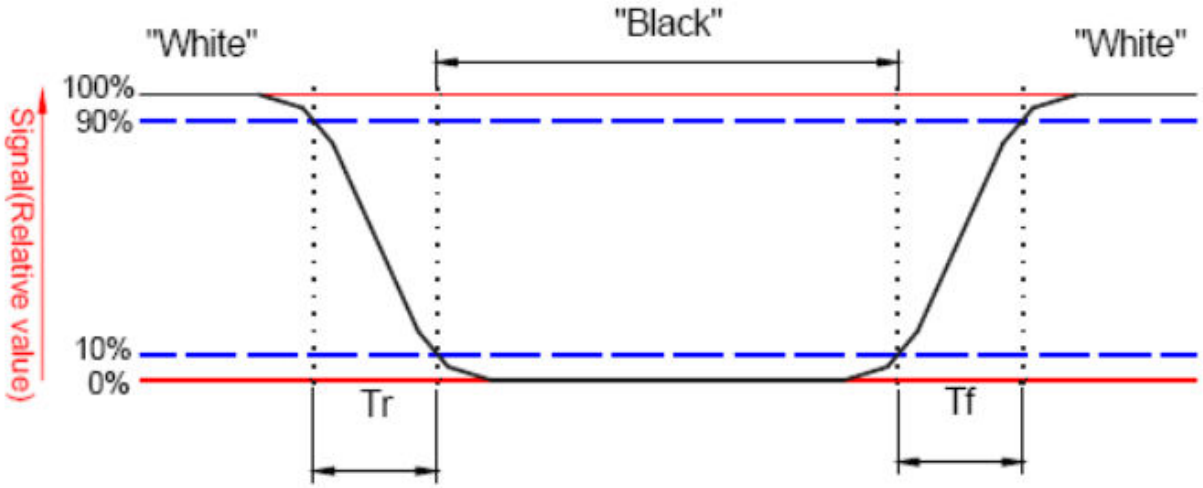


Note (2) Definition of Viewing Angle :



Note 3: Definition of response time:

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



Note 4: Definition of contrast ratio:

Contrast ratio is calculated by the following formula.

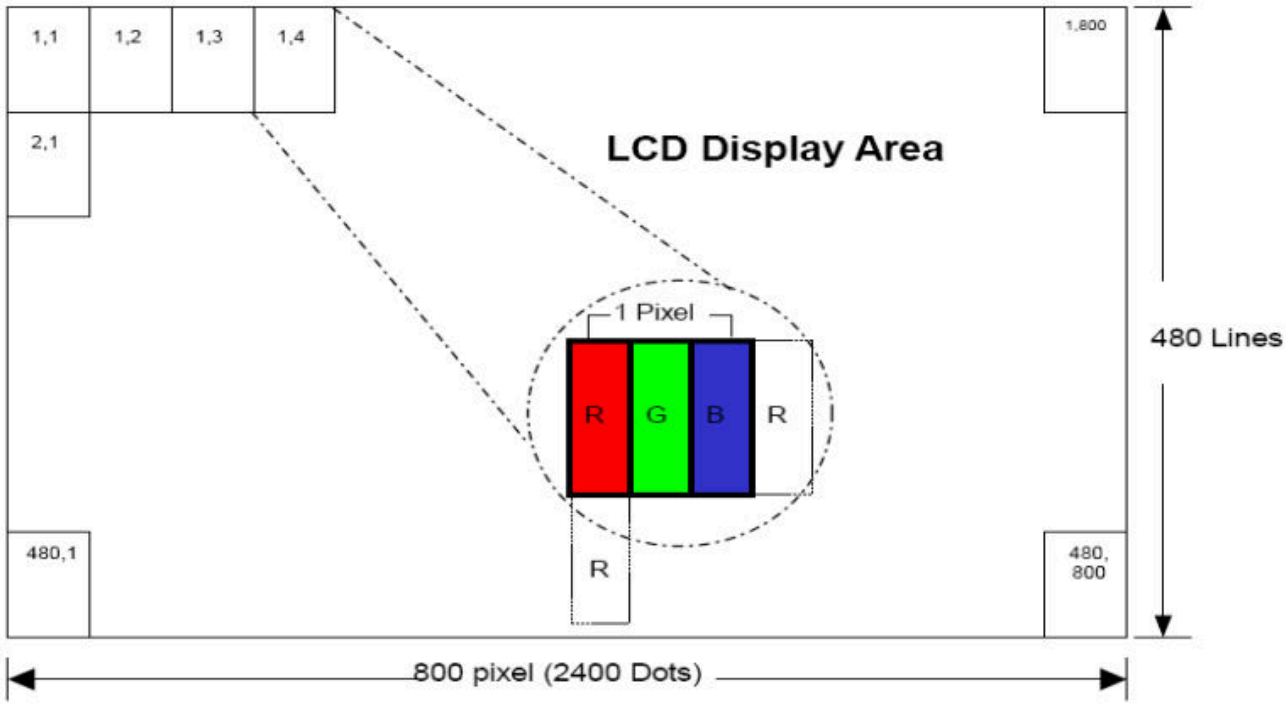
$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "white" state}}{\text{Brightness on the "black" state}}$$

Note 5: Definition of color chromaticity (CIE 1931)

Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel

4.0 Block Diagram

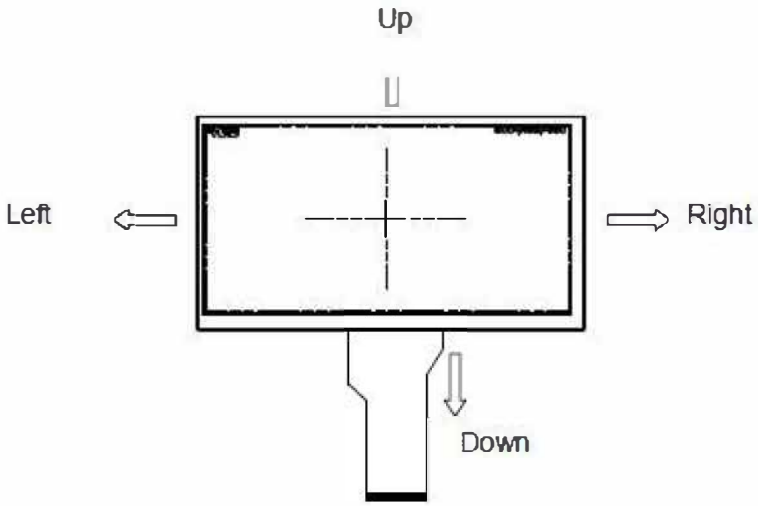
4.1 TFT-LCD Module



Note 4: Selection of scanning mode

Setting of scan control input		Scanning direction
U/D	L/R	
GND	DV_{DD}	Up to down, left to right
DV_{DD}	GND	Down to up, right to left
GND	GND	Up to down, right to left
DV_{DD}	DV_{DD}	Down to up, left to right

Note 5: Definition of scanning direction.
Refer to the figure as below:



Note 6: Global reset pin. Active low to enter reset state. Suggest to connect with an RC reset circuit for stability. Normally pull high.

Note 7: Dithering function enable control, normally pull high.
When DITHB="1",Disable internal dithering function,
When DITHB="0",Enable internal dithering function,

Note 8: Reserve for LED power input.

7. Electrical Characteristics

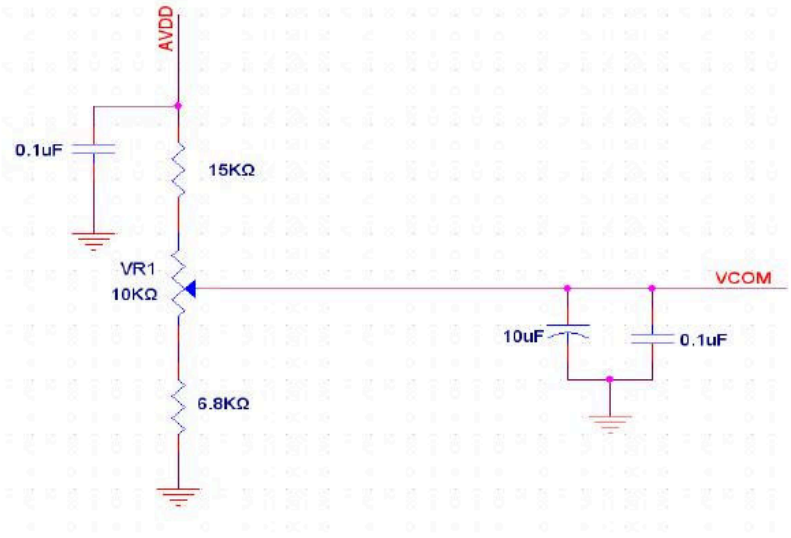
7.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	DV_{DD}	3.0	3.3	3.6	V	Note2
	V_{GH}	14.5	15	15.5	V	
	V_{GL}	-10.5	-10	-9.5	V	
	AV_{DD}	10.2	10.4	10.6	V	
	Vcom	3.45	(3.55)	3.65	V	Note4
Input logic high	VIH	0.7 DVDD	/	DVDD	V	Note3
Input logic low	VIL	0	/	0.3 DVDD	V	

The brightness of LCD panel could be changed by adjusting the AC component of VCOM.

VCOM按实际效果确认

Note 1: Be sure to apply DV_{DD} and V_{GL} to the LCD first, and then apply V_{GH}.
Note 2: DV_{DD} setting should match the signals output voltage (refer to Note 3) of customer's system board.
Note 3: DCLK,HS,VS,RESET,U/D, L/R,DE,R0~R7,G0~G7,B0~B7,MODE,DITHB.
Note 4: Typical V_{COM} is only a reference value. It must be optimized according to each LCM. Please use VR and base on below application circuit.

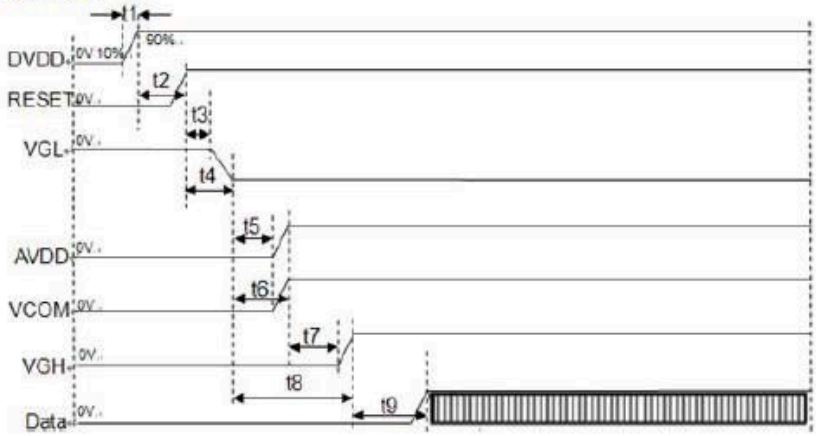


7.2 TFT-LCD Current Consum

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	0.05	0.2	1.0	mA	V_{GH} =15.0V
	I_{GL}	0.2	0.5	1.0	mA	V_{GL} = -10.0V
	IDV_{DD}	1	4.0	10	mA	DV_{DD} =3.3V
	IAV_{DD}	5	20	50	mA	AV_{DD} =10.4V

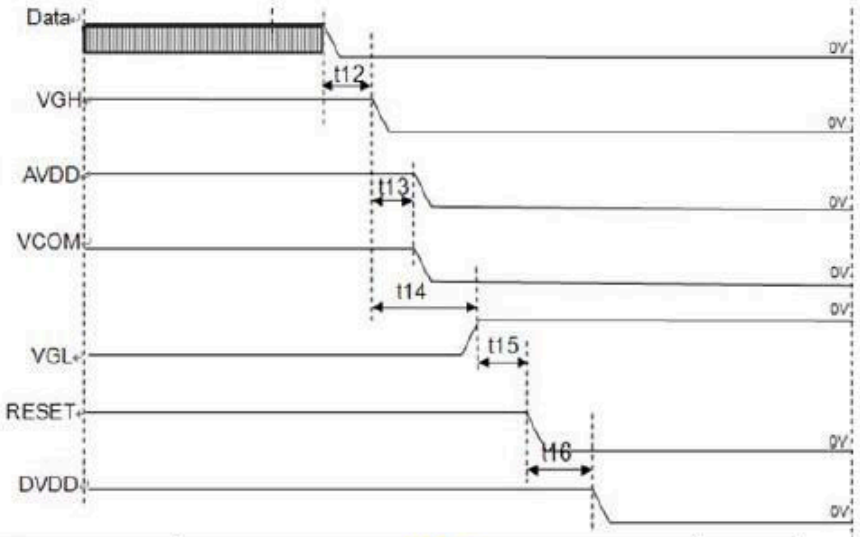
7.3 Power Sequence

a. Power on:



Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t1	0.5	5	20	ms
t2	1	1	1.5	ms
t3	10	15	20	ms
t4	20	22	24	ms
t5	1	2	3	ms
t6	5	6	7	ms
t7	1.5	2	4	ms
t8	10	12	15	ms
t9	10	15	20	ms

b. Power off:



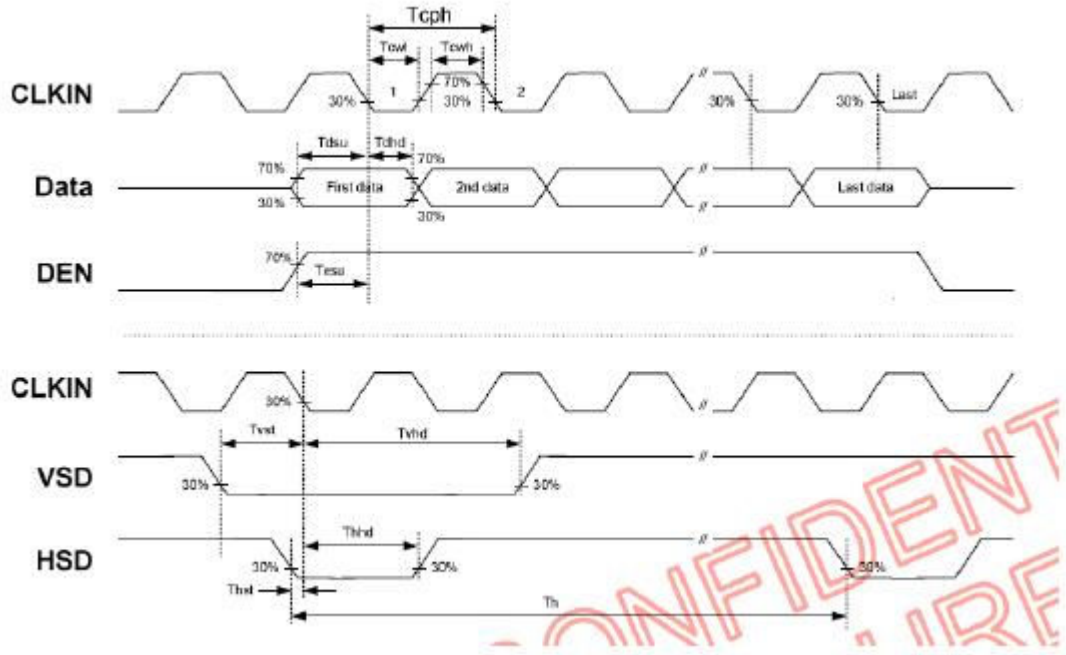
Symbol	SPEC			Unit
	Min.	Typ.	Max.	
t12	10	15	20	ms
t13	5	6	7	ms
t14	10	12	15	ms
t15	20	22	24	ms
t16	1	1.5	3	ms

7.4 Timing Characteristics

7.4.1 AC Electrical Characteristics

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
HS setup time	T_{hst}	8	10	20	ns	
HS hold time	T_{hhd}	8	120	800	ns	
VS setup time	T_{vst}	8	10	20	ns	
VS hold time	T_{vhd}	8	96000	640000	ns	
Data setup time	T_{dsu}	8	10	20	ns	
Data hole time	T_{dhd}	8	15	20	ns	
DE setup time	T_{esu}	8	15	20	ns	
DE hole time	T_{ehd}	8	15	20	ns	
DV_{DD} Power On Slew rate	T_{POR}	1	10	20	ms	From 0 to 90% DV_{DD}
RESET pulse width	T_{Rst}	1	2	5	ms	
DCLK cycle time	T_{coh}	20	30	40	ns	
DCLK pulse duty	T_{cwh}	40	50	60	%	

7.4.2 Input Clock and Data Timing Diagram



7.4.3 Timing

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Horizontal Display Area	thd	/	800	/	DCLK	
DCLK Frequency	fclk	26.4	33.3	46.8	MHz	
One Horizontal Line	th	862	1056	1200	DCLK	
HS pulse width	thpw	1	6	40	DCLK	**Note1**
HS Blanking	thb	46	46	46	DCLK	**Note1**
HS Front Porch	thfp	16	210	354	DCLK	

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Vertical Display Area	tvd	/	480	/	TH	
VS period time	tv	510	525	650	TH	
VS pulse width	tvpw	1	3	20	TH	Note2
VS Blanking	tvb	23	23	23	TH	Note2
VS Front Porch	tvfp	7	22	147	TH	

Note1: HS Blanking has included HS pulse width
Note2: VS Blanking has included VS pulse width
Note: Frame rate 60±5Hz

7.4.4 Data Input Format

Figure 3. 1 Horizontal input timing diagram.

7.0 Reliability test items

NO	Item	Conditions	Remark
1	High Temperature Storage	Ta=+70℃,48hrs	Note 1，Note3，Note 4，Note5
2	Low Temperature Storage	Ta=-20 ,48hrs	Note 1，Note3，Note 4，Note5
3	High Temperature Operation	Ta=+60℃,48hrs	Note 1，Note3，Note 4，Note5
4	Low Temperature Operation	Ta=-10℃,48hrs	Note 1，Note3，Note 4，Note5
5	High Temperature and High Humidity (operation)	Ta=+50℃,90%RH,48hrs	Note 1，Note3，Note 4，Note5

Note 1: Ta is the ambient temperature of samples.
Note 2: Ts is the temperature of panel's surface.
Note 3: 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 don't guarantee all of the cosmetic specification.
Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.
Note 5: A certain level of Mura (non-uniformity) of dark / black image will happen several days after high temperature testing (H.T.T.). There is a slowly part recovery over a long time (several months). Such a long exposure time like in H.T.T. will normally not happen in a real application. Therefore the test H.T.T. was introduced to simulate cycles with normal conditions in-between but with the same total exposure time what show a significant reduced Mura.
The root cause is related to tension generated due to different amount of shrinking in the stack of layers in the polarizer sheet. The effect is more significant on larger displays like this size. An investigation into alternative polarizer material showed that there is no better alternative currently available.

8.0 Packing form

8.1 TBD

9.0 General Precaution

9.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

9.2 Asembly Precaytton

9.2.1 Please use the mounting hole on the module side in installing and do not bending or wrenching LCD in assembling. And please do not drop, bend or twist LCD module in handling.
9.2.2 Please design display housing in accordance with the following guide lines.
9.2.2.1 Housing case must be destined carefully so as not to put stresses on LCD all sides and not to wrench module. The stresses may cause non-uniformity even if there is no non-uniformity statically.
9.2.2.2 Keep sufficient clearance between LCD module back surface and housing when the LCD module is mounted. The clearance in the design is recommended taking into account the tolerance of LCD module thickness and mounting structure height on the housing.
9.2.3 Please do not push or scratch LCD panel surface with any-thing hard. And do not soil LCD panel surface by touching with bare hands. (Polarizer film, surface of LCD panel is easy to be flawed.)
9.2.4 Please do not press any parts on the rear side such as source IC, gate IC, and FPC during handling LCD module. If pressing rear part is unavoidable, handle the LCD module with care not to damage them.
9.2.5 Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.
9.2.6 Please wipe out drops of adhesives like saliva and water on LCD panel surface immediately. They might damage to cause panel surface variation and color change. 9.2.7 Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.

9.3 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

9.4 Breakage of LCD Panel

9.4.1 If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.
9.4.2 If liquid crystal contacts mouth or eyes, rinse out with water immediately.
9.4.3 If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.
9.4.4 Handle carefully with chips of glass that may cause injury, when the glass is broken.

9.5 Absolute Maximum Ratings and Power Protection Circuit

9.5.1 Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.
9.5.2 Please do not leave LCD module in the environment of high humidity and high temperature for a long time.
9.5.3 It's recommended employing protection circuit for power supply.

9.6 Operation

9.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.
9.6.2 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.
9.6.3 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.
9.6.4 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

9.7 Static Electricity

9.7.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.
9.7.2 Because LCD module uses CMOS-IC on TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge.
10.7.3 Persons who handle the module should be grounded through adequate methods.

9.8 Disposal

When disposing LCD module, obey the local environmental regulations.

9.9 OTHERS

9.9.1 A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight land strong UV rays.
9.9.2 Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.
9.9.3 For the packaging box, please pay attention to the followings:
9.9.3.1 Packaging box and inner case for LCD are designed to protect the LCDs from the damage or scratching during transportation. Please do not open except picking LCDs up from the box.
9.9.3.2 Please do not pile them up more than 6 boxes. (They are not designed so.) And please do not turn over.
9.9.3.3 Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.
9.9.3.4 Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

LEADTEK DISPLAY

深圳市丽台电子有限公司

Shenzhen Leadtek Electronics Co.,Ltd

Quality Inspection Standards

品质允收标准

Model No. / 产品型号: **Applies 5.5~10.0 Inch Touch Display Screen**
Updated Date /生效日期: **2022-05-20**
Version / 版 本: **A0**
Customer confirmation : _____

Record of Revision /修订履历

Version /版本	Revision Record /修订内容	Reviser /修订人	Revision Date /修订日期
V0	首发 / Starting	Green	2022.05.20

1.Scope of application /适用范围.

This document shall be applied to 5.5~10.0 inch touch display screen.

本文件适用于5.5~10.0 寸触摸显示屏.

2.Inspection conditions and environment /检验条件与环境.

2. 1 Inspection Conditions /检验条件:

(1) Inspection Distance /检测距离: 35cm ±5cm.

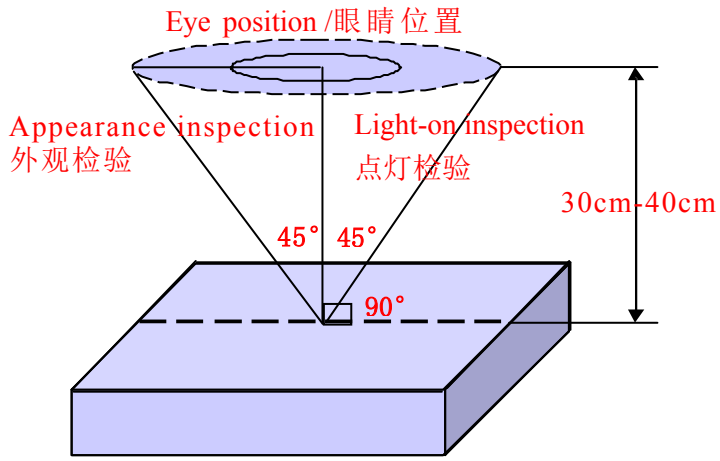
(2) Check time /检验时间：

Displays performance test /功能测试：2~3S /Image，Cosmetic Inspection /外观检验:10~12S.

(3) Check the viewing angle /检验视角:

Light-on Inspection Angle /点灯检验角度： ±45°.

Cosmetic Inspection Angle /外观检验角度：±45°.



(Perpendicular to LCD panel surface /垂直于LCD表面)

2.2 Inspection environment /检验环境:

Ambient Temperature 温度		25℃±5℃
Ambient Humidity 湿度		55±5%RH
Ambient Illumination 亮度	Cosmetic Inspection 外观检验	800-1000 Lux
	Functional Inspection 点灯检验	200~300Lux

2.3 Sampling Conditions /抽样条件:

（1）Quantity to be inspected /批量：Quantity of shipment lot per model /单次运送单一型号数量.

（2）Sampling method /抽样方法：

Sampling Plan /抽样计划		GB/T 2828.1- 2003
		Normal Inspection ， Single Sampling 正常检验、单次抽样
		General inspection level： Ⅱ 一般检验水平：二级
AQL	Major Defect /主要缺陷	0.65
	Minor Defect /次要缺陷	1.0

（3）The classification of Major(MA) and Minor(MI) defects is shown as “3.1 Classification of defects”.

主缺(MA)及次缺(MI)定义于”3.1缺陷分类”.

3.Terms And Definitions /术语和定义

3.1 Classification of defects / 缺陷分类 :

（1）Major defects /主要缺陷:

A major defect is a defect that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose .

可导致产品功能失效或减少产品可用性的缺陷.

（2）Minor defects /次要缺陷:

It will not cause the product to fail and reduce the defects in the effective use and operation of the product.

不会导致产品功能失效和减少产品的有效使用与操作的缺陷.

3.2 Point defects /点状缺陷：

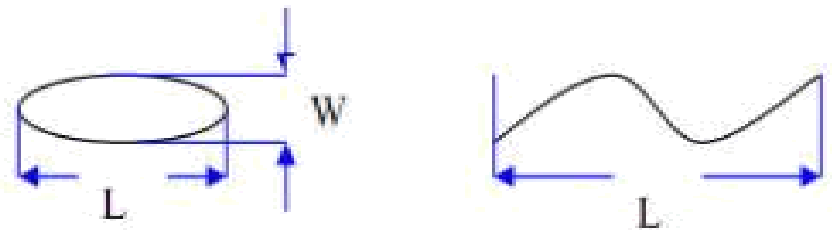
The size of the point defect is defined by the diameter D, and the average diameter of the defect is D=1/2（W+L）.

点状缺陷的大小是由直径 D 定义的，缺陷的平均直径 D=1/2(W+L).

3.3 Linear defects /线状缺陷：

When defect size L≥2W,the defect count as liner type defect.Size of linear defect is defined by length (L) and the maximum width (W).

当缺陷尺寸 L≥2W 时，被视为线状缺陷，线状缺陷是由长度 (L) 和最大宽度 (W) 定义的.



3.4 LCD sub-pixel dot /LCD子像素点

（1）Definition /定义： The point defect area is greater than 50% of the LCD sub-pixel area, and is visible through ND5% filter masking .

子像素点缺陷面积大于 50% LCD子像素面积, 且透过 ND5%遮盖是可见的.

（2）The drawing of 1/2 area sub-pixel definition / 1/2 面积的子像素定义绘图:

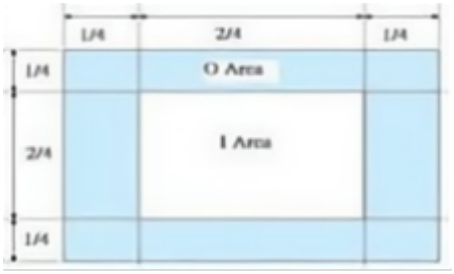
The 1/2 area sub-pixel can be defined as below one or more of specific shapes

1/2 面积的子像素可以定义为如下一个或多个特定形状图：

3.5 Small bright dot /细碎亮点：

Point defects smaller than "LCD sub-pixels" /小于“LCD子像素点”的点缺陷.

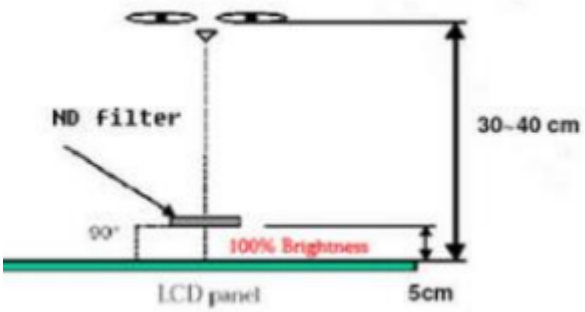
（Ratio of Zone I to Zone O /I 区与 O 区比例：1：2：1）



3.6 ND filter inspection method /ND卡的检验方法：

Hold the ND filter about 5cm above the display area, with your eyes 30-40cm away from the panel, and observe for 2~3 seconds.

在显示区域上方大约 5cm 处握住 ND 卡，眼睛距离面板 30-40cm，观察2~3 秒.



3.7 Any FPC surface problems that do not leak copper on the surface and do not cause functional failure are acceptable.
任何 FPC 表面问题，表面未露铜和不造成功能失效是可以接受.

3.8 Extraneous substances that can be wiped out， like Finger point,Particles are not considered as a defect .
可以被擦拭干净的表面物质不视为缺陷 (如手指印，尘粒) .

3.9 Defects that can be covered by the material and are not visible in appearance are not considered defects.

能被物料覆盖，外观不可见的缺陷不视为缺陷.

3.10 Panel damage /面板损伤：

Glass damage outside the AA display area that does not affect the effective wiring is acceptable.

AA 显示区域以外的玻璃损伤，不影响有效线路是可以接受的.

3.11 Issues not specified or defined in this acceptance standard shall be handled through friendly negotiation between the two parties.

本允收标准中未规定或定义的问题，双方友好协商处理.

4. Inspection standards /检验标准

4.1 Structural Dimensions /结构尺寸规格

Serial Number 序号	Measurement items /测量项目		Specification /规格	Remark /备注
	名称 /Name	Unit /单位	Tolerance /公差	
1	Outside dimension：Length 尺寸：长	mm /毫米	0.15mm~0.30mm	Please refer to the product specification for detailed dimensions and tolerances 详细的尺寸规格和公差请参考产品规格书
2	Outside dimension：Width 尺寸：宽	mm /毫米	0.15mm~0.30mm	
3	Outside dimension：Thickness 尺寸：高	mm /毫米	0.20mm~0.50mm	

4.2 Appearance Inspection Specification /外观检验规格

(D： diameter, W： width, L： length, N： quantity, DS： spacing)

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
Glass 玻璃	Wire(on Array) 线路	Can't be damaged 不能损伤	MA	
	Chipping/corner breaking 崩边/破角	Can't affect the effective lines and functions 不能影响有效线路和功能	MA	
	Edge 边缘	There must be no extensional cracks 不可有延伸性裂纹	MA	
Silicone 硅胶	Silicone coating 硅胶涂布	The height must not exceed the LCD CF surface 高度不能超过LCD CF面		MI
	Glue overflow 溢胶	Can't cover FPC, POL, etc 不能覆盖到FPC、POL等		MI

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
PCBA FPC Connector 连接器	Appearance 外观	Scratches or injuries are not allowed to cause copper exposure 划伤或损伤不允许表面出现露铜		MI
	Component 元器件	Can't be damaged and lack 不能损伤和缺少	MA	
	Goldfinger oxidation 金手指氧化	Not allowed 不允许		MI
	Connection status 连接状况	The connection must be accurate and stable 必须准确稳定连接	MA	
	Break 破裂	Not allowed 不允许	MA	
	Soldering,: false soldering/tinning/tin beads 假焊/连锡/锡珠	Not allowed 不允许	MA	
POL 偏光片	Scratches 划伤	1. W≤0.07mm；L≤5mm，Ignore（忽略） 2. 0.07mm＜W≤0.12mm ; L≤5mm ; N≤4 ; DS≥10mm 3. 0.12mm＜W；5mm＜ L， Not allowable（不允许）		MI
	Dent 凹凸印	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
	Bubbles 气泡	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
	Point defects 点状不良	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
	Edge bubbles 边缘气泡	1. Within 1/2BM of the display area, it is not allowed 显示区往外 1/2BM 区域内，不允许 2. The display area is 1/2 outside the BM area, and it is not controlled 显示区往外1/2BM区域以外，不管控		MI
	Dirty/watermarked 脏污/水印	No dirt/water lines/finger marks are allowed, and must be wiped clean 不允许有脏污/水纹/手指印，须擦拭干净方可		MI
	Warping 起翘	Not allowed 不允许		MI
	Attaching offset 贴偏	It is necessary to completely cover the display area outward, within the 1/2BM area, or without leaking POL edges after TP is attached 需完整覆盖显示区往外、1/2BM区以内或贴合TP后不会出现漏偏光片边缘		MI
	Mixture 混料	Mixing different types of POL or not using POL as required by the BOM，not allowed 不允许混贴不同型号的POL或未按BOM要求使用POL	MA	

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
TP&CG	Point defects 点状不良	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
	Scratches 划伤	1. W≤0.07mm；L≤5mm，Ignore（忽略） 2. 0.07mm＜W≤0.12mm ; L≤5mm ; N≤4 ; DS≥10mm 3. 0.12mm＜W；5mm＜ L， Not allowable（不允许） 4. There is a feeling scratch，Not allowable 有感划伤，不允许		MI
	Edges and corners cracked 崩角/崩边	1. Product front /产品正面： Edge and corner chipping is not allowed 崩角、崩边不允许 2. Product back /产品背面: X≤ 0.5 , Y≤0.5，Z≤1/2T；N≤4；DS≥10mm		MI
	Silk screen 丝印	The silk screen is clear, complete and correct 丝印清晰、完整、内容正确		MI
	Dirty 脏污	Non-wipeable dirt, not allowed 不可擦拭的脏污，不允许		MI
	Broken 破损	Not allowable 不允许	MA	
	Ink color aberration 油墨色差	ΔE>1，Not allowable（不允许）		MI
	Cover pinholes 针孔	1. D≤0.15mm , N≤4 , DS≥10mm，allowable 2. D＞0.15mm，intensive pinholes（密集型针孔），Not allowable（不允许）		MI
	IR holes IR孔	Dirt, deviation, color difference, etc. are not allowed 不允许脏污、偏位、色差等		MI
BL 背光	Backlight separation 背光分离	Not allowable 不允许		MI
	Deformation of rubber iron and rubber frame 胶铁、胶框变形	Use the plug gauge 0.3mm on the flat surface and can snap in and judge NG 在平面上使用塞规0.3mm卡翘曲位置，能卡进判定NG		MI
	The iron frame is oxidized and not tightened 铁框氧化、卡不紧	Not allowable 不允许		MI
	Backlight sticky solder beads, glue, etc 背面粘锡珠、残胶等	Not allowable 不允许		MI
	Lnkjet coding，Barcode，QR code 喷码/条码/二维码	The lnkjet coding is clear and complete, the barcode and QR code can be scanned normally, and the content and format match 喷码清晰完整、条码和二维码可正常扫描，内容和格式相符		MI
	Accessories(protective film, double-sided tape, insulating adhesive, etc.) 辅料（保护膜、双面胶、绝缘胶等）	Defects such as missing pastes, sticking deviations, defects, and fractures are not allowed 不允许有漏贴、贴偏、残缺、断裂等缺陷		MI

4.3 Electrical test specifications /电性检查规格

(D： diameter, W： width, L： length, N： quantity, DS： spacing)

Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
Glass bright spots/dark spots 玻璃亮点/暗点	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
Mura	Use ND5% filter masking, visual invisibility is OK, 200~300Lux 使用ND5%遮盖，目视不可见即为OK，200~300Lux		MI
Small bright dot 细碎亮点	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖，目视不可见即为OK		MI
Light leakage 漏光	1. Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖，目视不可见即为OK 2. If necessary, sign off on the sample 必要时，签限定样		MI
Backlight black/white dots 背光黑点/白点	1. D≤0.20mm，Ignore（忽略） 2. 0.20mm＜D≤0.40mm；N≤4；DS≥10mm 3. 0.40mm＜D，Not allowable（不允许）		MI
Linear foreign bodies 线状异物（异物毛丝等）	1. W≤0.07mm；L≤5mm，Ignore（忽略） 2. 0.07mm＜W≤0.12mm ; L≤5mm ; N≤4 ; DS≥10mm 3. 0.12mm＜W；5mm＜ L，Not allowable（不允许）		MI
Black/White Print 黑印/白印	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖，目视不可见即为OK		MI
The display is uneven 显示不均匀	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖，目视不可见即为OK		MI
The brightness is uneven 亮度不均匀	Brightness uniformity＜85.0%，Not allowable 亮度均匀性＜85.0%，不允许		MI
Displacement of the membrane 膜材移位	Not allowable 不允许		MI
Interference pattern/Newtonian pattern 干涉纹/牛顿纹	Not allowable 不允许		MI
Display abnormal 显示异常	Not allowable 不允许	MA	
No display 无显示	Not allowable 不允许	MA	
Line/Missing Drawing 线条/缺画	Not allowable 不允许	MA	
Splash screen 闪屏	Not allowable 不允许	MA	
LCD grid LCD网格	Not allowable 不允许	MA	
Afterimage 残影	Not allowable 不允许	MA	
Wrong viewing angle 视角错误	Not allowable 不允许	MA	
No touch 无触摸	Not allowable 不允许	MA	
Touch the jump point 触摸跳点	Not allowable 不允许	MA	
Not sensitive 触摸不灵敏	Not allowable 不允许	MA	