Request information

PRODUCT SPECIFICATION

TFT-LCD MODULE

Module No: 1000084-01

☑ Preliminary Specification

☐ Approval Specification

Designed by	Checked by	Approved by

Final Approval by Customer

Approved by	Comment

For more information, contact us:

WWW.DCLTEK.COM | 1-800-407-8917 | SALES@DCLTEK.COM

※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.

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1. Record of Revision修订记录

Version	Contents	Date	Note
V0	NEW	2023.12.07	

2.General Specifications 产品规格

	Item 项目	Specification 规格	Unit	Remark
1	LCD Size 玻璃尺寸	TFT"19	-	
2	Panel Type 玻璃类型	IPS		
4	Resolution 分辨率	1280 x RGB x 1024	pixel	-
5	Display Mode 显示模式	Normally Black	-	-
6	Number of Colors 颜色	16.7M		-
7	Viewing Direction 视角	ALL	-	-
8	Contrast Ratio 对比度	1000		
9	Luminance 亮度	300	nit	TYP
10	Module Size 外形尺寸	419.48 (W) x344.22(L) x16.9(H)	mm	Note
11	Panel Active Area 可视区	374.78 (W) x 299.83 (L)	mm	Note
12	Pixel Pitch 像素尺寸	0.294 (per one triad) x 0.294	mm	-
13	Weight 重量	TBD	-	-
14	Driver IC 芯片	-	bit	-
15	Light Source 背光源	white LED	-	-
16	Interface 界面	LVDS	-	
17	CTP Drive IC 驱动芯片	ILI2302	-	
18	Construction 结构	G+G	-	
19	Surface Hardness 表面硬度	6H	-	
20	Operating Temperature	-0~+50	℃	-
21	Storage Temperature	-20~+60	℃	

3.LCM Pin Assignments 接口定义

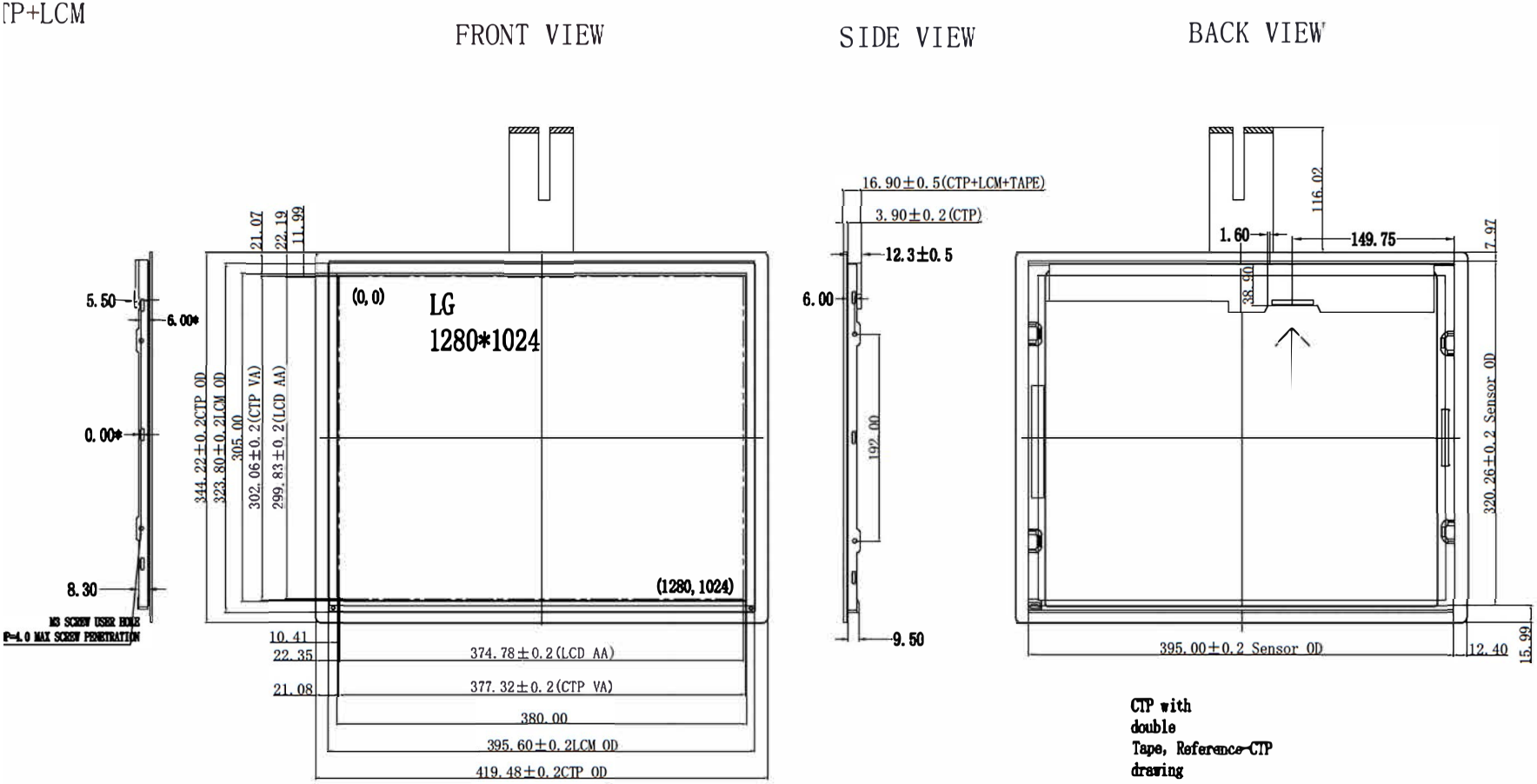
PIN #	SIGNAL NAME	DESCRIPTION
1	RxOIN0-	Negative LVDS differential data input (Odd data)
2	RxOIN0+	Positive LVDS differential data input (Odd data)
3	RxOIN1-	Negative LVDS differential data input (Odd data)
4	RxOIN1+	Positive LVDS differential data input (Odd data)
5	RxOIN2-	Negative LVDS differential data input (Odd data, DSPTMG)
6	RxOIN2+	Positive LVDS differential data input (Odd data, DSPTMG)
7	GND	Power Ground
8	RxOCLKIN-	Negative LVDS differential clock input (Odd clock)
9	RxOCLKIN+	Positive LVDS differential clock input (Odd clock)
10	RxOIN3-	Negative LVDS differential data input (Odd data)
11	RxOIN3+	Positive LVDS differential data input (Odd data)
12	RxEIN0-	Negative LVDS differential data input (Even data)
13	RxEIN0+	Positive LVDS differential data input (Even data)
14	GND	Power Ground
15	RxEIN1-	Positive LVDS differential data input (Even data)
16	RxEIN1+	Negative LVDS differential data input (Even data)
17	GND	Power Ground
18	RxEIN2-	Negative LVDS differential data input (Even data)
19	RxEIN2+	Positive LVDS differential data input (Even data)
20	RxECLKIN-	Negative LVDS differential clock input (Even clock)
21	RxECLKIN+	Positive LVDS differential clock input (Even clock)
22	RxEIN3-	Negative LVDS differential data input (Even data)
23	RxEIN3+	Positive LVDS differential data input (Even data)
24	GND	Power Ground
25	NC	No Connection (I2C Serial interface for LCM)
26	NC	No Connection (I2C Serial interface for LCM)
27	NC	No Connection (I2C Seria)
28	POWER	Power +5V
29	POWER	Power +5V
30	POWER	Power +5V

Note : Please refer to the mechanical drawing; 注：请参照 模组图;

4.External drawing 外形图

HIGH QUALITY DISPLAY SOLUTIONS MADE EASY
DCLTEK

TP+LCM



CTP with double Tape, Reference-CTP drawing

Technical parameters:

1. structure: G+G
Cover Glass:3mm
SCA:0.2mm
ITO SENSOR:0.7mm
Guide line:FPC (PINCH=0.5mm)
The total thickness: 3.9±0.2mm
2. IC: LIL2302
3. Light transmittance: ≥85%
4. The surface hardness: 6H
5. The work environment: -20℃~70℃, 20%-85%RH
6. Storage environment: -30℃~80℃, 20%-85%RH
7. The dimension tolerance is not specified±0.2mm

PIN	ASSIGNMENT
1	VDD/5V
2	DN
3	DP
4	GND

PIN	ASSIGNMENT
1	RST
2	VDD
3	GND
4	INT
5	SDA
6	SCL

s:
splay : 19", TFT
solution: 1280xRGBx1024
D Viewing Direction: ALL,
isplay Mode: Normally Black
M Bringhtness: 300cd/m²(TYP)
mark Tolerance:±0.3
PERATING TEMP: -0° C~ +50° C
TORAGE TEMP: -20° C~ +60° C
equirements on Environmental Protection: ROHS

air-bondi

REV	DESCRIPTION	DATE	N/
0	New drawing	2021.6.7	al
1			
2			
3			

PAGE: 1/1 | Approve | Check
3027T-KC01 | VER: V0

5. Optical Characteristics光学特性

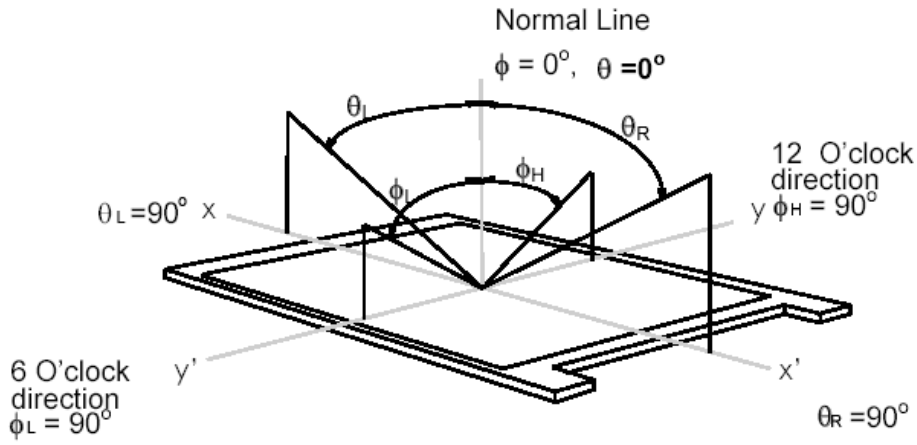
The optical characteristics are measured under stable conditions at 25℃ (Room Temperature).

Item	Unit	Conditions	Min.	Typ.	Max.	Note
Viewing Angle	[degree]	Horizontal (Right) CR = 10 (Left)	80 80	90 90	-	2
		Vertical (Up) CR = 10 (Down)	80 80	90 90	-	
Contrast Ratio		Normal Direction	600	1000	-	3
Optical Response Time	[msec]	Raising Time (TrR)	-	3.6	5.7	4
		Falling Time (TrF)	-	1.4	2.3	
		Rising + Falling	-	5	8	
Color / Chromaticity Coordinates (CIE)		Red x	0.589	0.639	0.689	5
		Red y	0.296	0.346	0.396	
		Green x	0.274	0.324	0.374	
		Green y	0.577	0.627	0.677	
		Blue x	0.104	0.154	0.204	
		Blue y	0.004	0.054	0.104	
		White x	0.263	0.313	0.363	
		White y	0.279	0.329	0.379	
Central Luminance	[cd/m^2]		-	300	-	6
Luminance Uniformity	[%]	9 Points	75	80	-	7
NTSC	[%]			72		

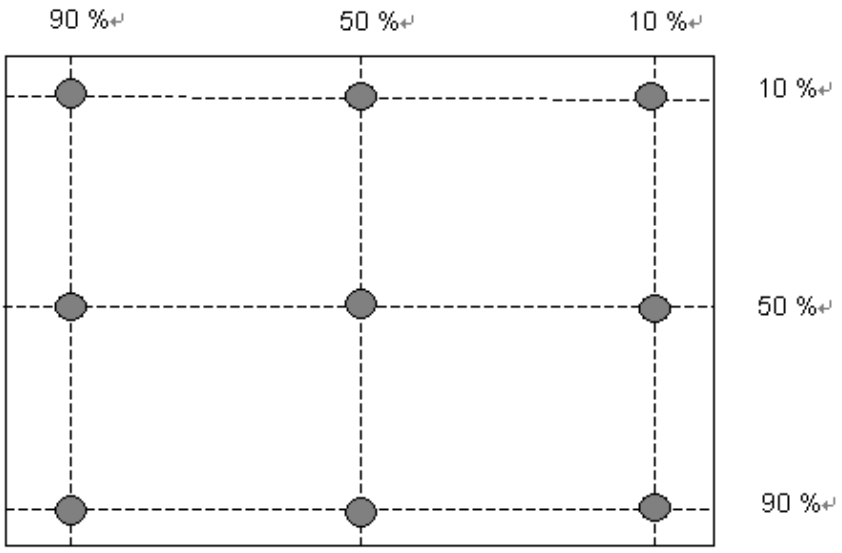
Optical Equipment: BM-5A, BM-7, PR880, or equivalent

5.1 Definition of viewing angle

Viewing angle is the measurement of contrast ratio≧10, or ≧5, at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (Φ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



Note 2: 9 points position

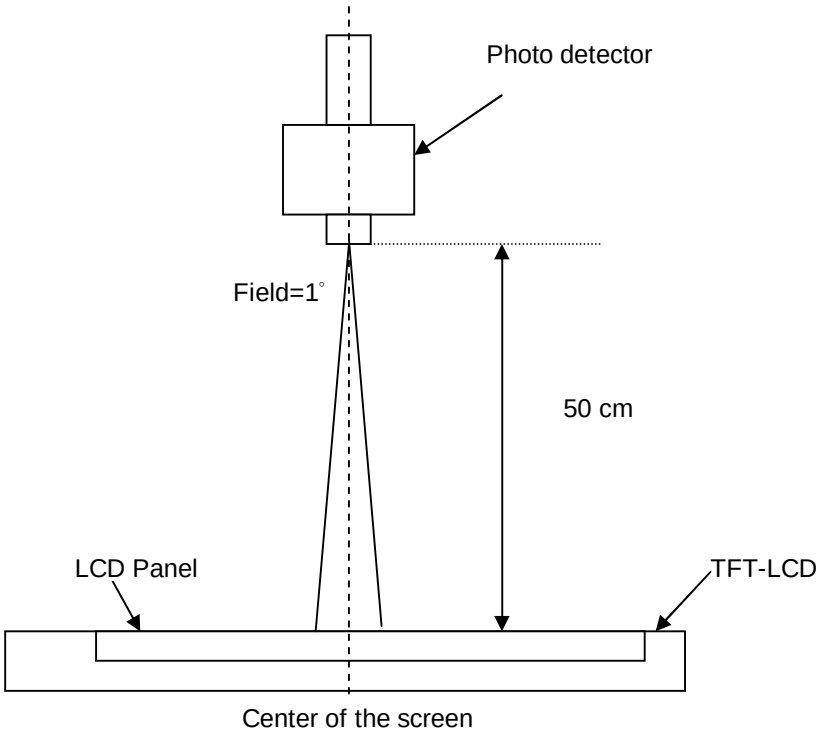


Note 3:

$$\text{Uniformity} = \frac{\text{Minimum Luminance in 9 points (1-9)}}{\text{Maximum Luminance in 9 Points (1-9)}}$$

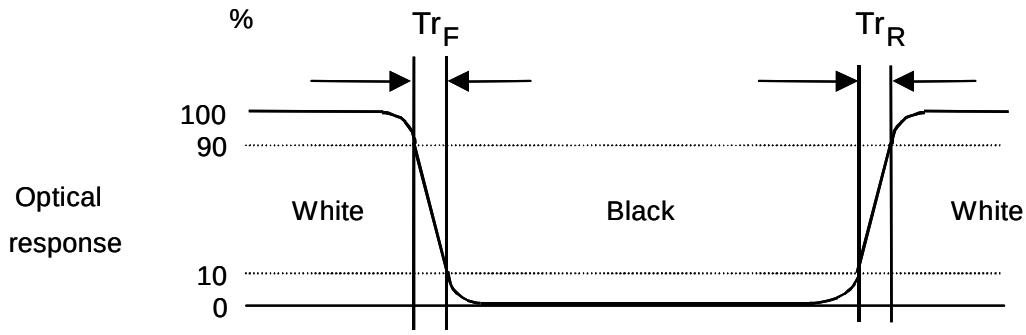
5.1.1 Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.



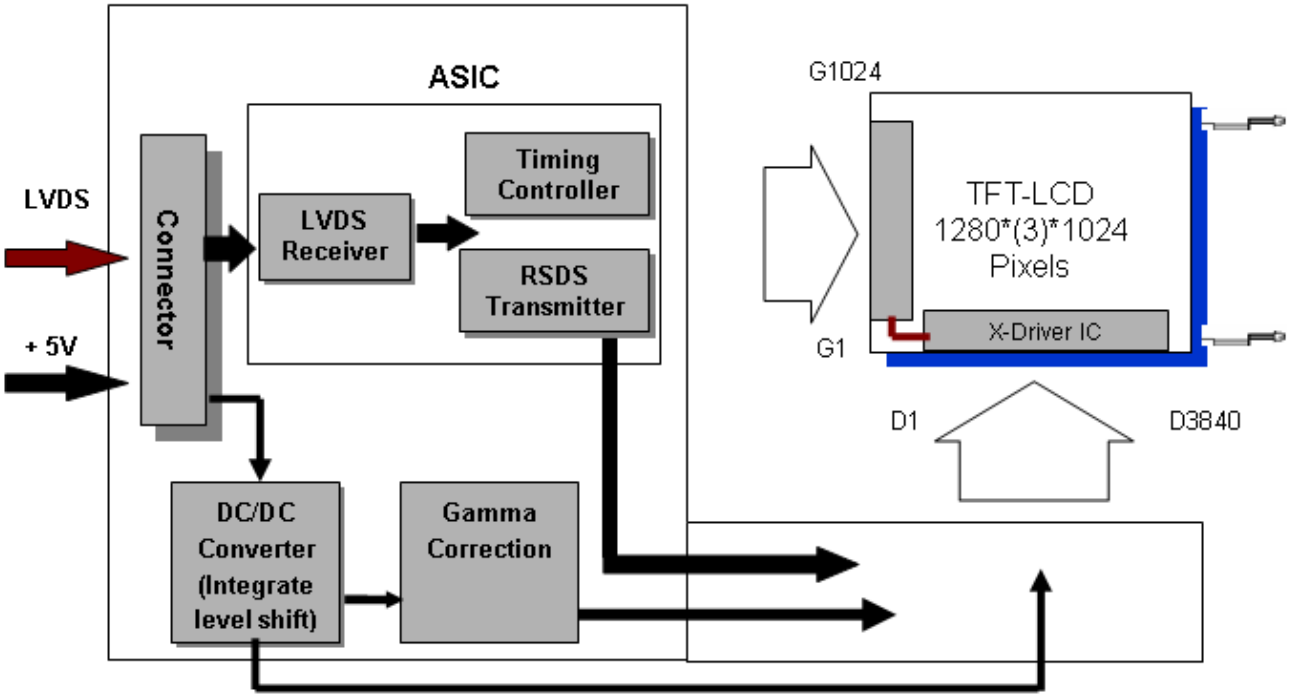
5.1.2 Definition of response time:

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



6. Functional Block Diagram 功能框图

The following diagram shows the functional block of the 19.0 inches wide Color TFT-LCD Module:



7. Absolute Maximum Ratings 绝对最大评级

Absolute maximum ratings of the module are as following:

7.1 TFT LCD Module

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	VDD	-0.3	+6.0	[Volt]	***Note 1,2***

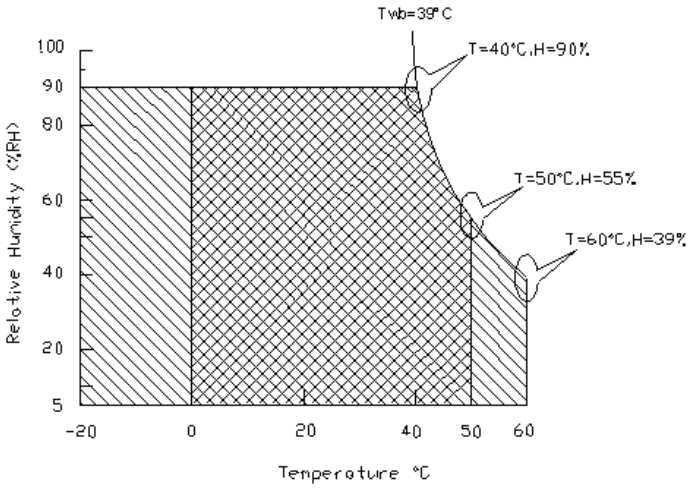
7.2 Absolute Ratings of Environment

Item	Symbol	Min.	Max.	Unit	Conditions
Operating Temperature	TOP	0	+50	[°C]	***Note 3***
Glass surface temperature (operation)	TGS	0	+65	[°C]	***Note 3, Note 4***
Operation Humidity	HOP	5	90	[%RH]	***Note 3***
Storage Temperature	TST	-20	+60	[°C]	
Storage Humidity	HST	5	90	[%RH]	

Note 1: With in Ta (25℃)
Note 2: Permanent damage to the device may occur if exceeding maximum values
Note 3: Temperature and relative humidity range are shown as the below figure.

1. 90% RH Max (Ta ≦39℃)
2. Max wet-bulb temperature at 39℃ or less. (Ta ≦39℃)
3. No condensation

Note 4: Function Judged only



Operating Range Storage Range +

8. Electrical characteristics电气特性

8.1 TFT LCD Module

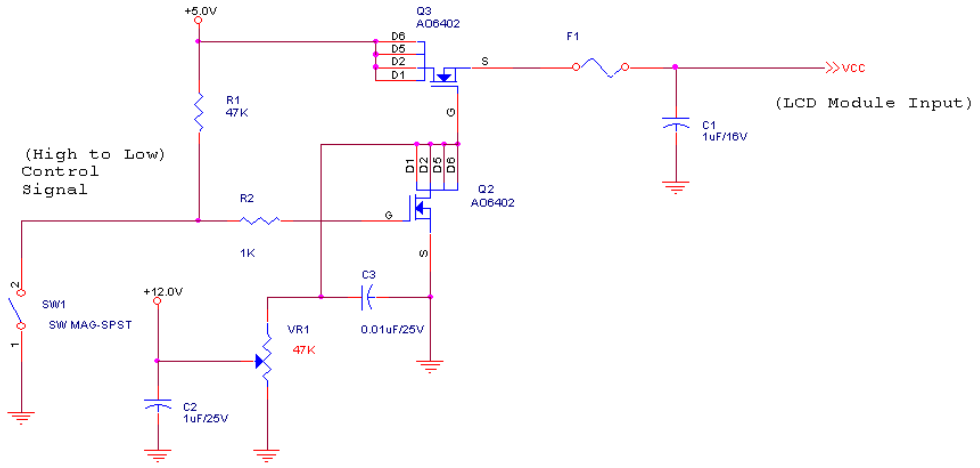
8.1.1 Power Specification

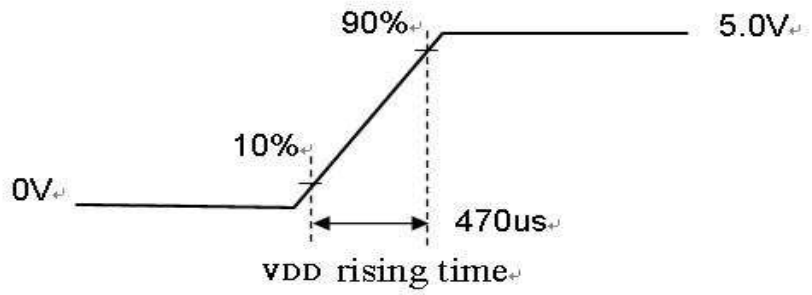
Input power specifications are as follows:

Symbol	Parameter	Min	Typ	Max	Unit	Conditions
VDD	Logic/LCD Drive Voltage	4.5	5.0	5.5	[Volt]	+/-10%
IDD	Input Current	-	0.94	1.1	[A]	VDD= 5.0V, All Black Pattern At 60Hz,
PDD	VDD Power	-	4.7	5.5	[Watt]	VDD= 5.0V, All Black Pattern At 60Hz
IRush	Inrush Current	-	-	3.0	[A]	**Note 1**
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	VDD= 5.0V, All Black Pattern At 75Hz

Note 1: Measurement conditions:

The duration of rising time of power input is 470us.





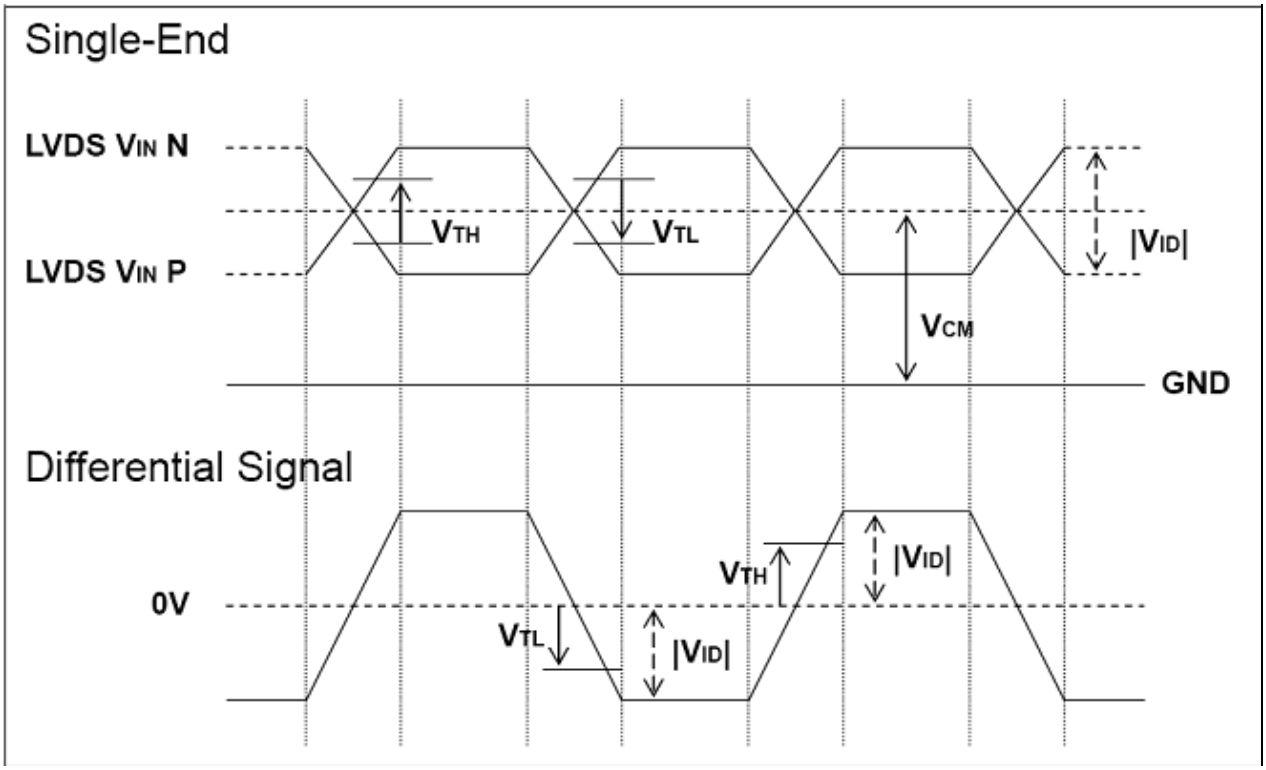
8.1.2 Signal Electrical Characteristics 信号电特性

Input signals shall be low or Hi-Z state when VDD is off. Please refer to specifications of SN75LVDS82DGG (Texas Instruments) in detail.

Each signal characteristics are as follows;

Symbol	Parameter	Min	Typ	Max	Units	Condition
V_{TH}	Differential Input High Threshold	-	-	+100	[mV]	V_{CM} = 1.2V ***Note 1***
V_{TL}	Differential Input Low Threshold	-100	-	-	[mV]	V_{CM} = 1.2V ***Note 1***
$\lvert V_{ID} \rvert$	Input Differential Voltage	100	400	600	[mV]	***Note 1***
V_{CM}	Differential Input Common Mode Voltage	+1.0	+1.2	+1.5	[V]	V_{TH}-V_{TL} = 200mV (max) ***Note 1***

Note1: LVDS Signal Waveform



8.1.3 Backlight unit 背光功耗

Parameter guideline for LED driving is under stable conditions at 25℃ (Room Temperature):

Symbol	Parameter	Min.	Typ.	Max.	Unit	Note
IR_{LED}	LED Operation Current	-	240	-	[mA] Note 1	**Operating with fixed driving current**
V_{LB}	Light Bar Operation Voltage (for reference)	-	48	-	[Volt] Note 2	
P_{BLU}	BLU Power consumption (for reference)	-	9.8	-	[Watt]	
LT_{LED}	LED life Time (Typical)	25,000	30,000	-	[Hour] Note 3	

Note 1 :The specified current is input LED chip 100% duty current.

Note 2 : The value showed in the table is one light bar's operation voltage.

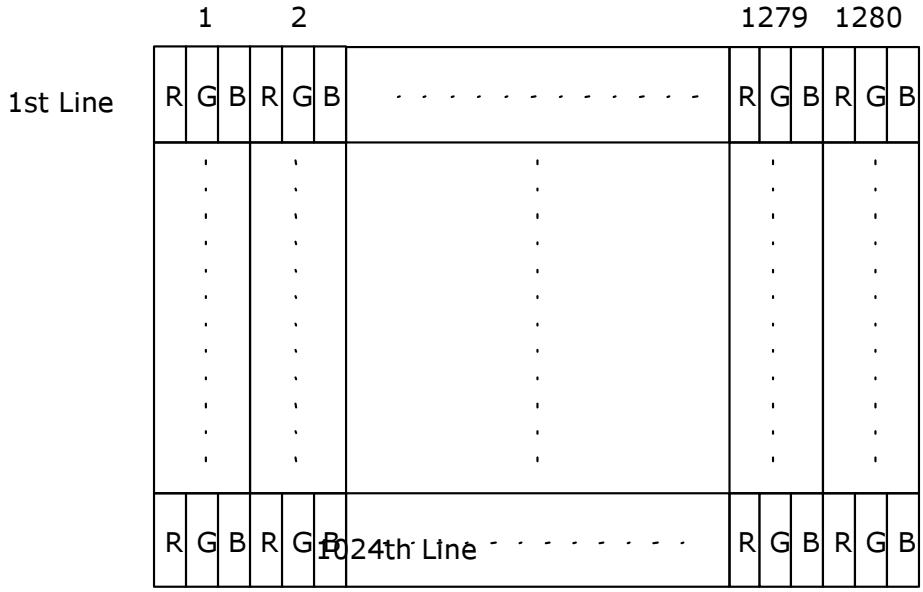
Note 3 : Definition of life time : brightness becomes 50% of its original value. The minimum life time of LED unit is on the condition of IR_{LED} = 60mA and 25±2℃(Room temperature).

Note 4: Each LED light bar consists of 48 pcs LED package (4 strings x 12 pcs / string).

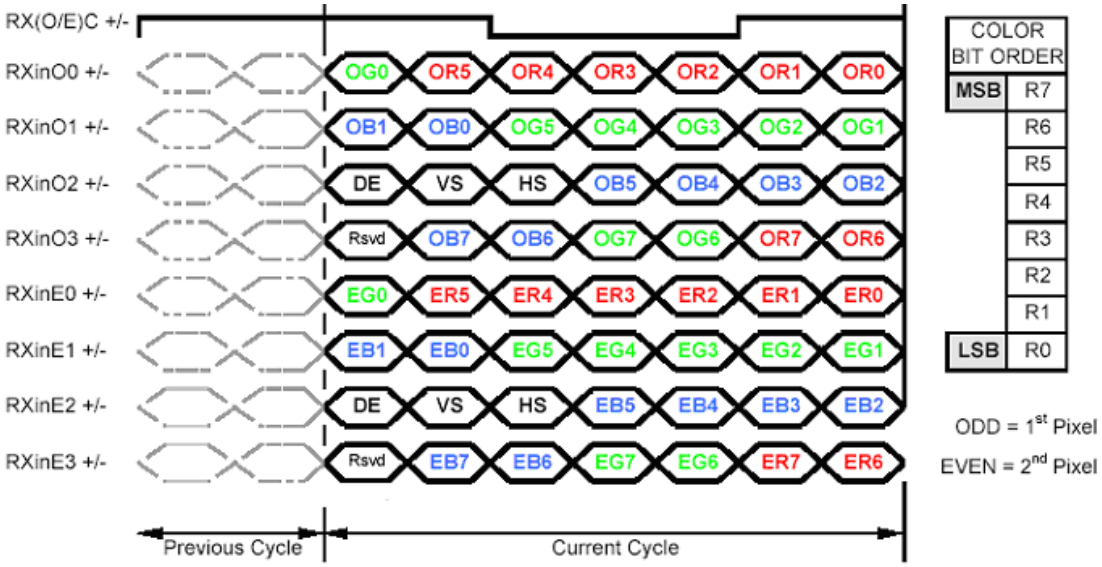
9. Signal Characteristic信号特征

9.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.

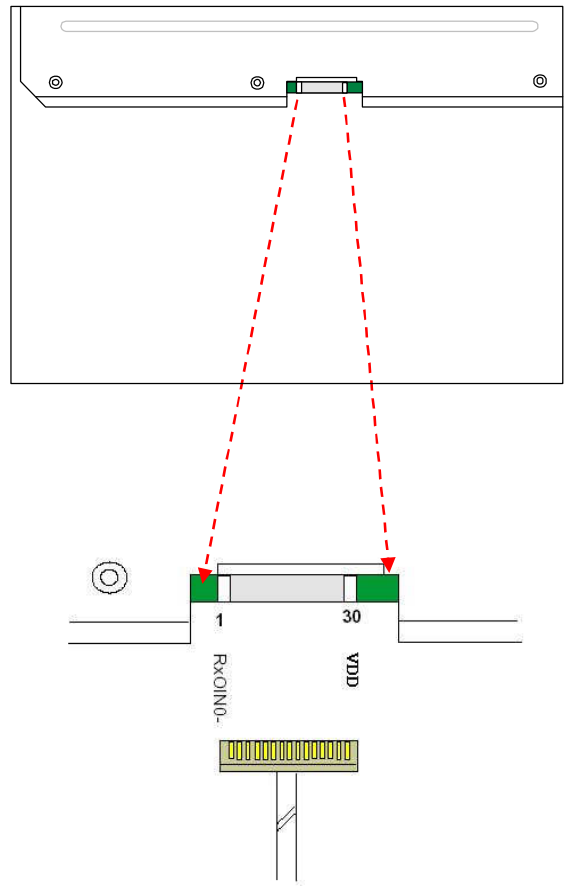


9.2 The Input Data Format输入数据



Note1: Normally, DE, VS, HS on EVEN channel are not used.
Note2: Please follow PSWG.
Note3: 8-bit in

Note1: Start from left side



Note2: Input signals of odd and even clock shall be the same timing.

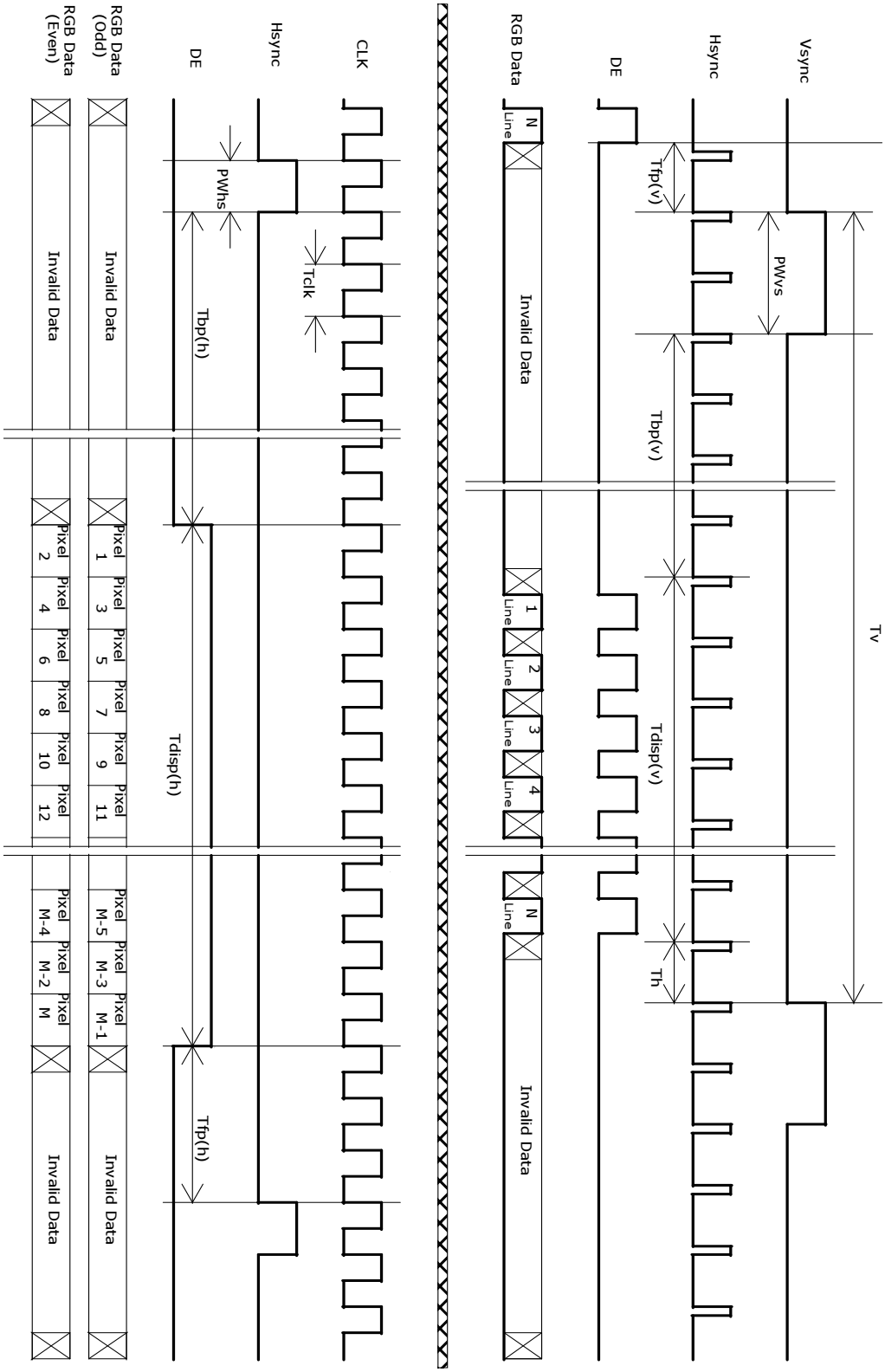
10. Interface Timing 时序设置

10.1.1 Timing Characteristics

Signal	Item	Symbol	Min	Typ	Max	Unit
Vertical Section	Period	Tv	1032	1066	1150	Th
	Active	Tdisp(v)	1024	1024	1024	Th
	Blanking	Tbp(v)+Tfp(v)+PWvs	8	42	126	Th
Horizontal Section	Period	Th	780	844	2047	Tclk
	Active	Tdisp(h)	640	640	640	Tclk
	Blanking	Tbp(h)+Tfp(h)+PWhs	140	204	-	Tclk
Clock	Period	Tclk	22.2	18.52	14.81	ns
	Frequency	Freq.	45	54	67.5	MHz
Frame Rate	Frequency	1/Tv	50	60	75	Hz

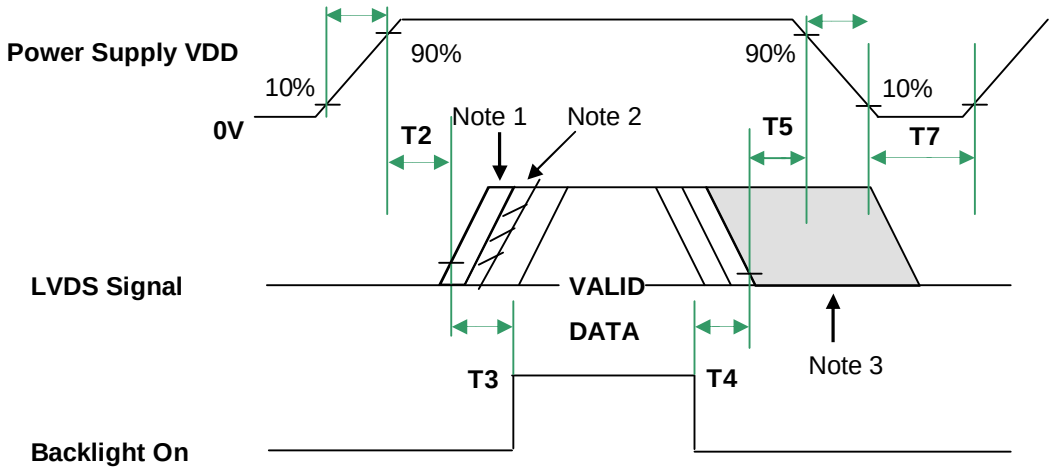
Note: DE mode only

10.1.2 Timing Diagram



11. Power ON/OFF Sequence 时序设置打开/关闭顺序

VDD power and lamp on/off sequence are as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



Note1: insert a white pattern 360ms

Note2: insert a black pattern

Note3 :insert a white pattern after valid data and last until VDD falls to 10%.

Note4 :when AC on/off, timing rule of logo power on/off is the same as above.

Power Sequence Timing				
Parameter	Value			Units
	Min.	Typ.	Max.	
T1	0.5	-	10	ms
T2	0	40	50	
T3	500	-	-	
T4	300	-	-	
T5	40	1500	-	
T6	-	-	-	
T7	1000	-	-	

12. Reliability Test可靠性测试

Environment test conditions are listed as following table.

Items	Required Condition	Note
Temperature Humidity Bias (THB)	Ta= 50℃, 80%RH, 300hours	
High Temperature Operation (HTO)	Ta= 50℃, 50%RH, 300hours	
Low Temperature Operation (LTO)	Ta= 0℃, 300hours	
High Temperature Storage (HTS)	Ta= 60℃, 300hours	
Low Temperature Storage (LTS)	Ta= -20℃, 300hours	
Vibration Test (Non-operation)	Acceleration: 1.5 G Wave: Random Frequency: 10 - 200 - 10 Hz Sweep: 30 Minutes each Axis (X, Y, Z)	
Shock Test (Non-operation)	Acceleration: 50 G Wave: Half-sine Active Time: 20 ms Direction: ±X, ±Y, ±Z (one time for each Axis)	
Drop Test	Height: 60 cm, package test	
Thermal Shock Test (TST)	-20℃/30min, 60℃/30min, 100 cycles	
On/Off Test	On/10sec, Off/10sec, 30,000 cycles	
ESD (Electro Static Discharge)	Contact Discharge: ± 8KV, 150pF(330Ω) 1sec, 9 points, 25 times/ point.	1
	Air Discharge: ± 15KV, 150pF(330Ω) 1sec 9 points, 25 times/ point.	
Altitude Test	Operation:10,000 ft Non-Operation:30,000 ft	

Note1: According to EN61000-4-2, ESD class B: Some performance degradation allowed. No data lost Self-recoverable. No hardware failures.

Note2:

- Water condensation is not allowed for each test items.
- Each test is done by new TFT-LCD module. Don't use the same TFT-LCD module repeatedly for reliability test.
- The reliability test is performed only to examine the TFT-LCD module capability.
- To inspect TFT-LCD module after reliability test, please store it at room temperature and room humidity for 24 hours at least in advance.
- No function failure occurs.

13.Features

13.1,Support HDMI（Version 1.1），

VGA(Common resolutions:640*480,800*480,800*600,1024*600,1024*768，1280*800,1366*768,1920*1080),

CVBS

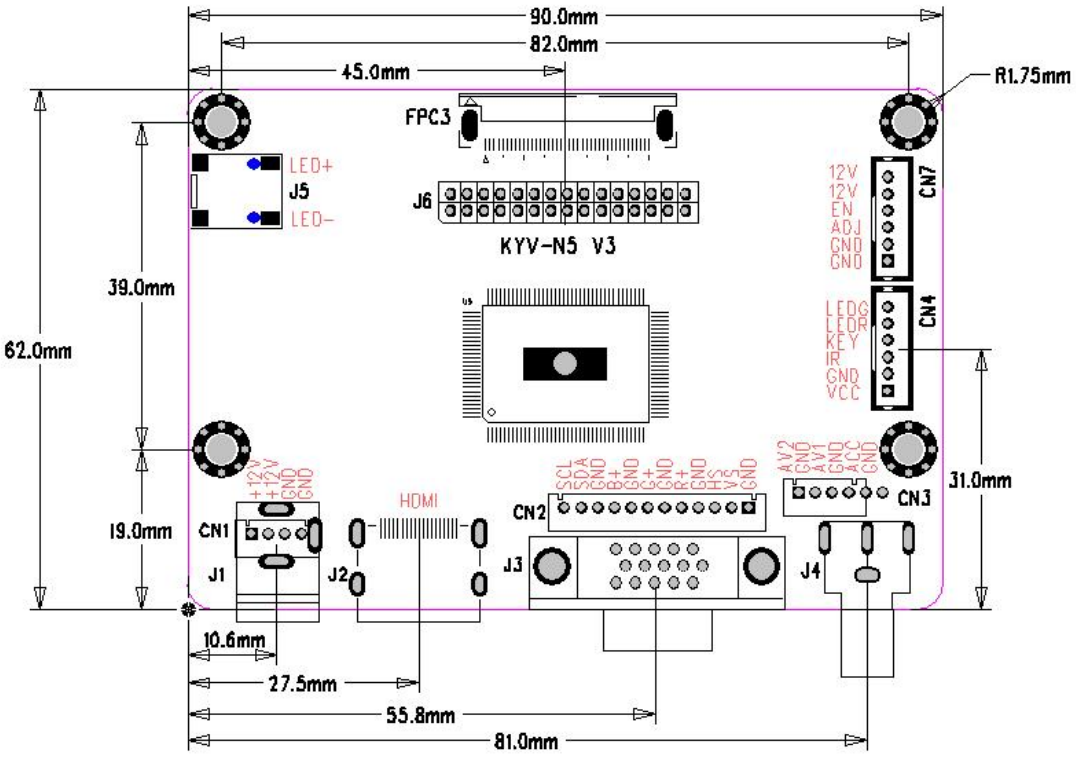
13.2,Input Voltage :DC +12V（9V-15V）

13.3,Multi-function OSD, support brightness, contrast and other parameter adjustment

13.4,Support remote control function

13.5,Power-on and power-off indicator status

14.Outline structure diagram Driver board 驱动板外形结构图

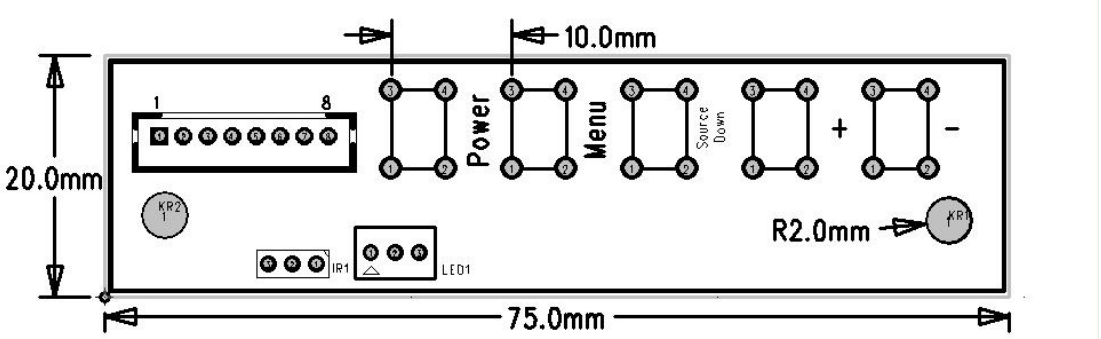


length：90mm

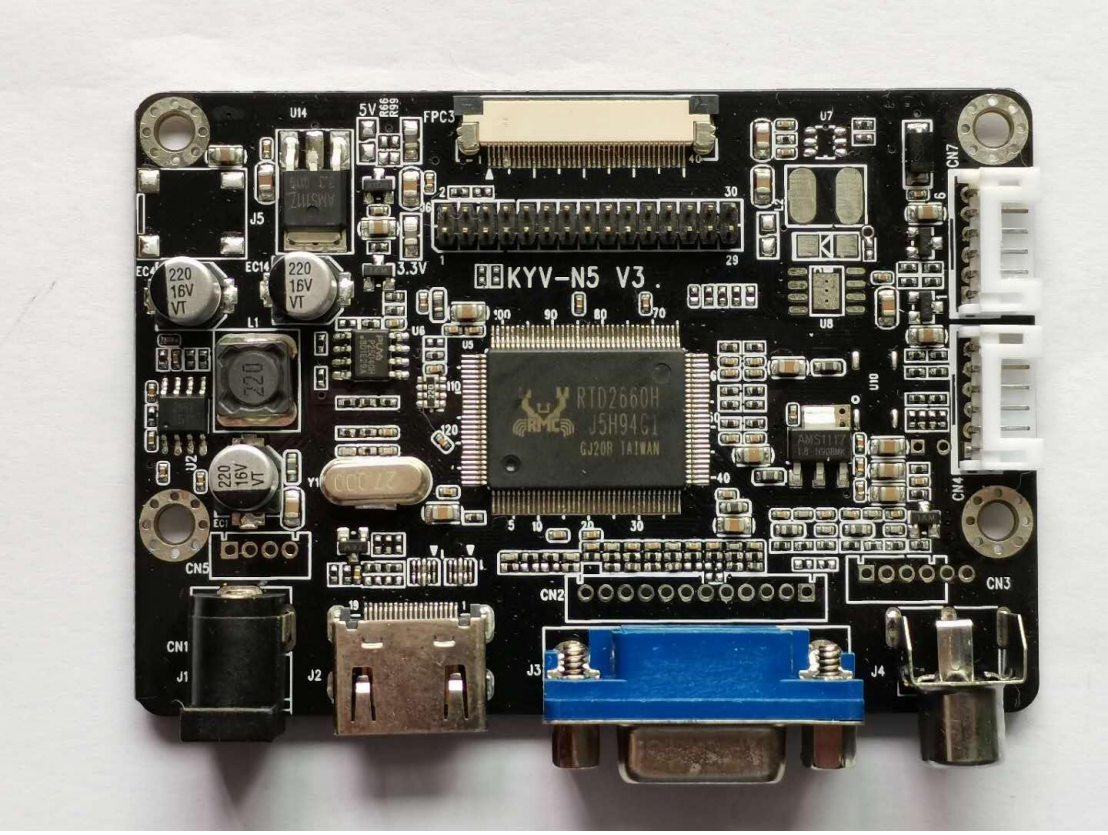
width：62mm

high：15mm (Component height + PCB thickness)

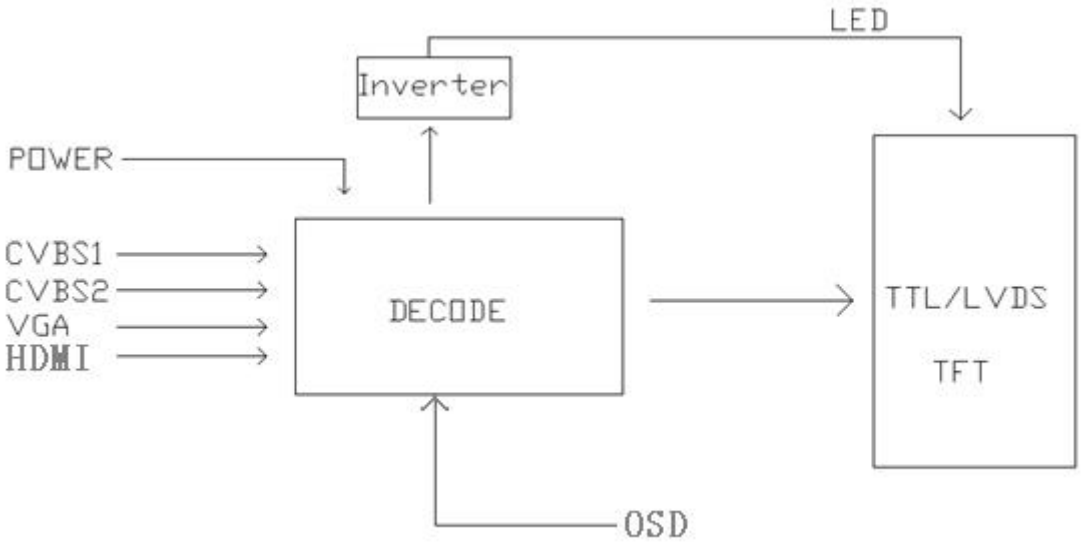
13.1 keyboard



15. Product Image HDMI产品驱动板



16. Electrical Circuit电路



17.Interface Definition 接口定义

power supply J 1 (DC-2.1-005) power supply CN1/CN5

Foot number	Foot number	Describe
1	+12V	power
2	+12V	power
3	GND	land
4	GND	land

J2，HDMI

J3　VGA Interface (VGA-15P-3.08)

CN2 VGA Interface

Pin number	Definition	Describe
1	SCL	I2C
2	SDA	I2C
3	GND	land
4	B+	blue signal+
5	GND	land
6	G+	green signal+
7	GND	land
8	R+	red signal+
9	GND	land
10	HS	line sync signal
11	VS	field sync signal
12	GND	land

Signal input CN3

Foot number	Definition	Describe
1	CVBS2	AV2enter
2	GND	land
3	CVBS1	AV1enter
4	GND	land

5	ACC	Reversing detection12V（5V-16V）
6	GND	

Keypad Interface CN4

Foot number	Definition	Describe
1	VCC +3.3V	key board power
2	GND	land
3	IR INT	Infrared acceptance
4	KEY	Keypad AD interface
5	LED RED	Keypad LED
6	LED GREEN	Keypad LED

External backlight control interface CN7

Foot number	Definition	Describe
1	GND	land
2	GND	land
3	ADJ	PWM adjustable backlight
4	EN	Backlight switch control
5	12V	POWER12V
6	12V	POWER12V

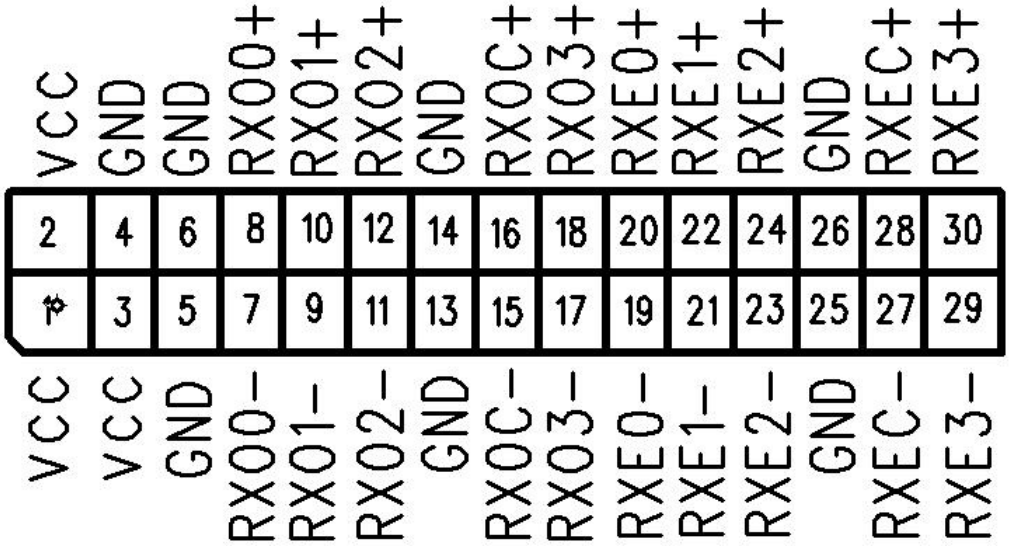
Screen line interface definition：

and other screens with the same interface

J6　2.0 Spacing 15Pin*2 Double row DuPont

Single and dual LVDS signal

output



In addition: For the definition of each screen interface, please refer to the specification of the screen. Our company can provide the specification of each screen

9, Reliability Test

DCLTEK

深圳市丽台电子有限公司

Quality Inspection Standards

品质允收标准

Model No. / 产品型号: **Applies More than 10.0 Inches 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		2022.05.20

1.Scope of application /适用范围.

This document shall be applied to more than 10.0 inches 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.

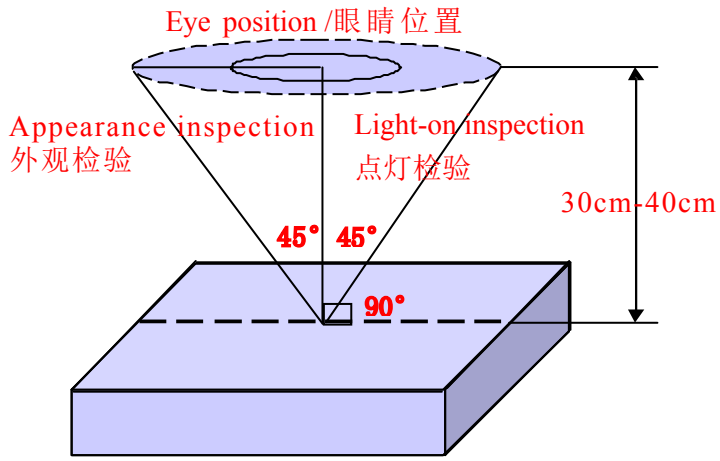
(2) Check time /检验时间：

Displays performance test /功能测试：3~5S /Image，Cosmetic Inspection /外观检验:12~15S.

(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：

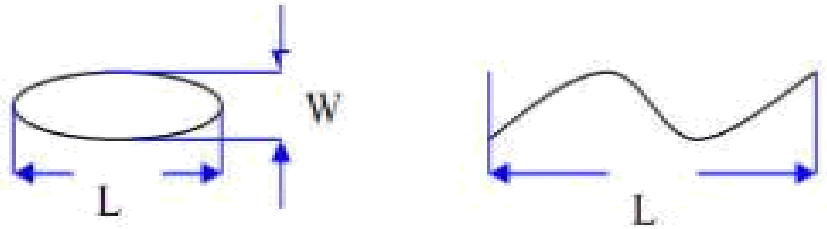
The size of the point defect is defined by the diameter D, and the average diameter of the defect is D=1/2（W+L）.

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.

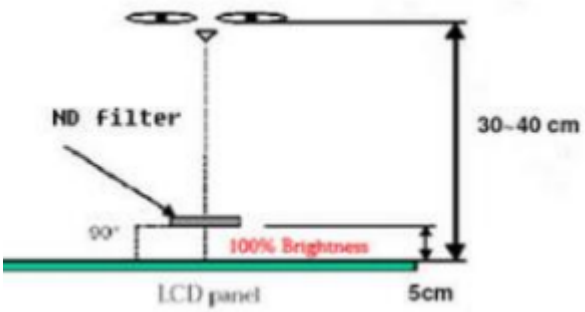
（Ratio of Zone I to Zone O /I 区与 O 区比例：1：2：1）



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	0.30mm~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≤0.10mm; L≤5mm, Ignore（忽略） 2. 0.10mm<W≤0.15mm ; L≤5mm ; N≤5 ; DS≥10mm 3. 0.15mm<W; 5mm< L, Not allowable（不允许）		MI
	Dent 凹凸印	1. D≤0.25mm, Ignore（忽略） 2. 0.25mm<D≤0.50mm; N≤5; DS≥10mm 3. 0.50mm<D, Not allowable（不允许）		MI
	Bubbles 气泡	1. D≤0.25mm, Ignore（忽略） 2. 0.25mm<D≤0.50mm; N≤5; DS≥10mm 3. 0.50mm<D, Not allowable（不允许）		MI
	Point defects 点状不良	1. D≤0.25mm, Ignore（忽略） 2. 0.25mm<D≤0.50mm; N≤5; DS≥10mm 3. 0.50mm<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/水印/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≤0.25mm，Ignore（忽略） 2. 0.25mm＜D≤0.50mm；N≤5；DS≥10mm 3. 0.50mm＜D，Not allowable（不允许）		MI
	Scratches 划伤	1. W≤0.10mm；L≤5mm，Ignore（忽略） 2. 0.10mm<W≤0.15mm ; L≤5mm ; N≤5 ; DS≥10mm 3. 0.15mm＜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≤5；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≤0.20mm , N≤5 , DS≥10mm，allowable 2. D＞0.20mm，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≤0.25mm，Ignore（忽略） 2. 0.25mm＜D≤0.50mm；N≤5；DS≥10mm 3. 0.50mm＜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≤0.25mm，Ignore（忽略） 2. 0.25mm＜D≤0.50mm；N≤5；DS≥10mm 3. 0.50mm＜D，Not allowable（不允许）		MI
Linear foreign bodies 线状异物（异物毛丝等）	1. W≤0.10mm；L≤5mm，Ignore（忽略） 2. 0.10mm<W≤0.15mm ; L≤5mm ; N≤5 ; DS≥10mm 3. 0.15mm＜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	