



# PRODUCT SPECIFICATIONS

## Preliminary Specification

**Module No: VISLCD-101HY171A02W**

**PRODUCT TYPE: TFT MODULE**

**VERSION: A0**

**Huayuan:**

APPROVED BY	CHECKED BY	DESIGNED BY
		Jiang

**Customer:**

APPROVED BY	TESTED BY	INSPECTION RESULT





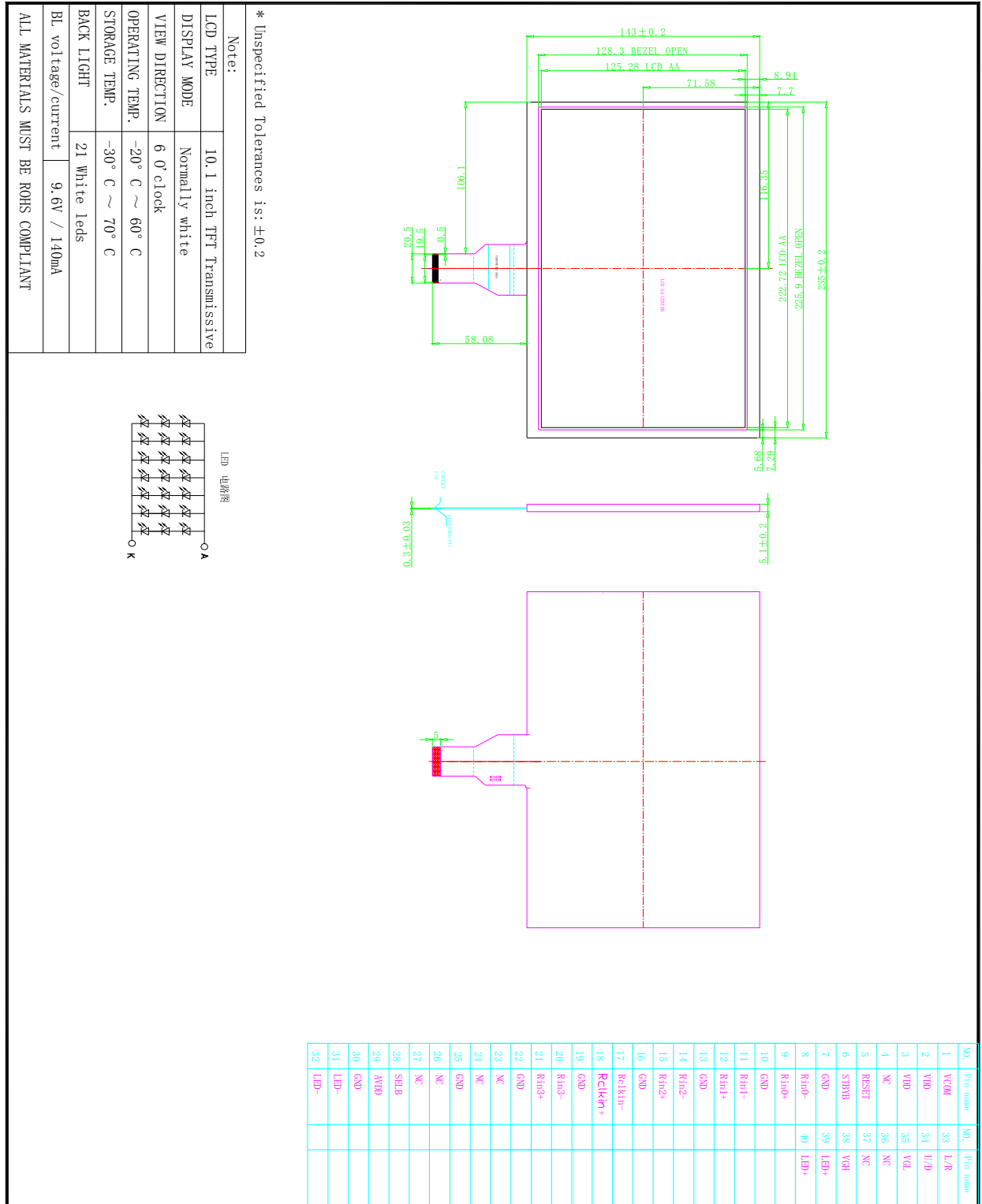
### 3. General Specifications

VISLCD-101HY171A02W is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC, a back light unit. The 10.1" display area contains 1024 x 600 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16.7M		
Viewing Direction	12	O'Clock	
Gray scale inversion direction	6	O'Clock	
Operating temperature	-20~+60	℃	
Storage temperature	-30~+70	℃	
Module size	Refer to outline drawing	mm	
Active Area(W×H)	222.72X125.28	mm	
Number of Dots	1024×600	dots	
Controller	HX8282A14+HX8696	-	
Power Supply Voltage	3.3	V	
Outline Dimensions	Refer to outline drawing	-	
Backlight	3X7-LEDs (white)	pcs	
Weight	---	g	
Interface	LVDS	-	



### 3. Mechanical Dimension





## 4. Pin Descriptions

Pin No.	Symbol	Functional	Notes
1	VCOM	Common Voltage	
2~3	VDD	Power Supply for digital circuit	
4	NC	No connection	
5	RESET	Global reset pin	
6	STBYB	Standby mode, Normally pulled high	
7	GND	Ground	
8	Rin0-	-LVDS differential data input	
9	Rin0+	+LVDS differential data input	
10	GND	Ground	
11	Rin1-	-LVDS differential data input	
12	Rin1+	+LVDS differential data input	
13	GND	Ground	
14	Rin2-	-LVDS differential data input	
15	Rin2+	+LVDS differential data input	
16	GND	Ground	
17	RclkIN-	-LVDS differential clock input	
18	RclkIN+	+LVDS differential clock input	
19	GND	Ground	
20	Rin3-	-LVDS differential data input	
21	Rin3+	+LVDS differential data input	
22	GND	Ground	
23-24	NC	No connection	
25	GND	Ground	
26	NC	No connection	
27	NC	NC	
28	SELB	6bot/8bit mode select , L=8 BIT , H=6BIT	
29	AVDD	Power for Analog Circuit	
30	GND	Ground	
31-32	LED-	LED Cathode	
33	L/R	Horizontal inversion	
34	U/D	Vertical inversion	
35	VGL	Gate OFF Voltage	
36	NC	NC	
37	NC		
38	VGH	Gatr ON Voltage	
39-40	LED+	LED Anode	



## 5. ABSOLUTE MAXIMUM RATINGS

5.1 (GND=AGND=0V)

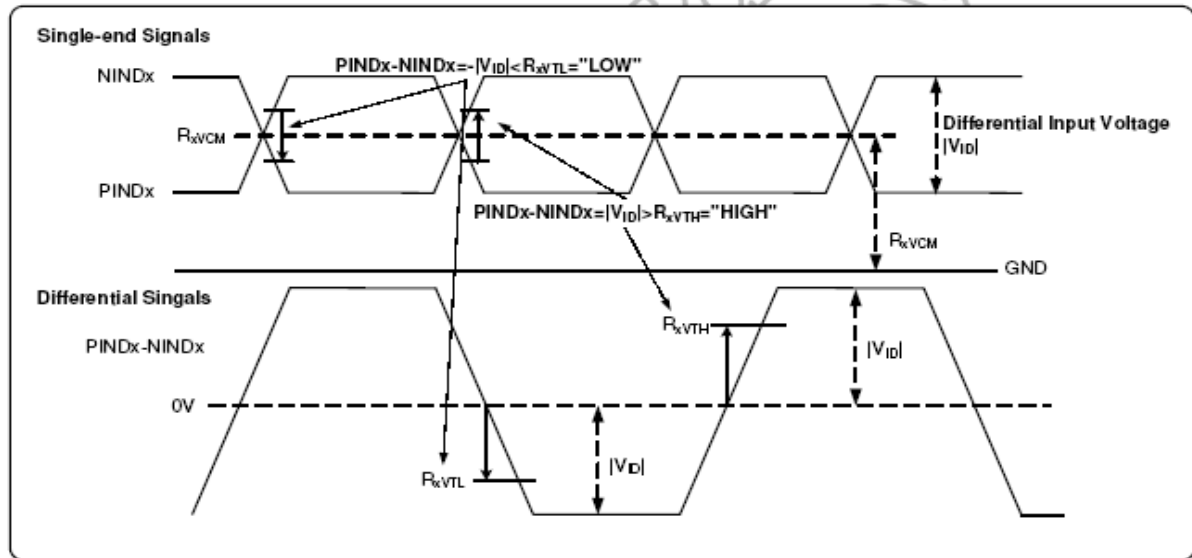
Parameter	Symbol	Min	Max	Unit
Power supply1	V <sub>DD</sub>	-0.5	+3.96	V
Power supply2	A <sub>vdd</sub>	-0.5	+13.85	V
Operating temperature	T <sub>OPR</sub>	-20	60	°C
Storage temperature	T <sub>STG</sub>	-30	70	°C

5.2 Input voltage refer list

Parameter	Symbol	Value	Unit	Remarks
TFT Gate ON Voltage	V <sub>GH</sub>	21	V	
TFT Gate Off Voltage	V <sub>GL</sub>	-8	V	
TFT Common Electrode Voltage	V <sub>COM</sub>	3.8	V	
Analog Power Supply Voltage	AV <sub>DD</sub>	10.8	V	

## 6. DC ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R <sub>XVTH</sub>	-	-	+0.1	V	R <sub>XVCM</sub> =1.2V
Differential input low threshold voltage	R <sub>XVTL</sub>	-0.1	-	-	V	
Input voltage range (singled-end)	R <sub>XVIN</sub>	0	-	V <sub>DD</sub> -1.2+  V <sub>ID</sub>  /2	V	-
Differential input common Mode voltage	R <sub>XVCM</sub>	V <sub>ID</sub>  /2	-	V <sub>DD</sub> -1.2	V	-
Differential input voltage	V <sub>ID</sub>	0.2	-	0.6	V	-
Differential input leakage Current	R <sub>V<sub>XIz</sub></sub>	-10	-	+10	μA	-
LVDS Digital Operating Current	I <sub>ddlvs</sub>	-	15	30	mA	Fclk=65MHz, V <sub>DD</sub> =3.3V
LVDS Digital Stand-by Current	I <sub>stlvs</sub>	-	10	50	μA	Clock & all Functions are stopped



Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Base drive current for PWM	IDRV	-	-	60	mA	$R_{xVCM} = 1.2V$
DRV output voltage for PWM	VDRV	0	-	VDD	V	
Feed back voltage for PWM	VFB	0.55	0.6	0.65	V	-
Duty cycle maximum	Dmax	-	-	85	%	-
VCOM buffer input voltage	VCOMI	1	-	AVDD	V	-
VCOM buffer output voltage	VCOMO	VCOMI-0.2	VCOMI	VCOMI+0.2	V	-
VCOM buffer output current	IVCOM	-	-	10	mA	Fclk=65MHz, VDD=3.3V

## 7. Parallel RGB input timing table

Resolution:1024x600

DE mode

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	40.8	51.2	67.2	MHz
Horizontal Display Area	thd	1024			DCLK
HSD Period	th	1114	1344	1400	DCLK
HSD Blanking	thb+ thfp	90	320	376	DCLK
Vertical Display Area	tvd	600			$T_H$
VSD Period	tvbp	610	635	800	$T_H$
VSD Blanking	tvbp+ tvfp	10	35	200	$T_H$



HV mode :

### Horizontal timing

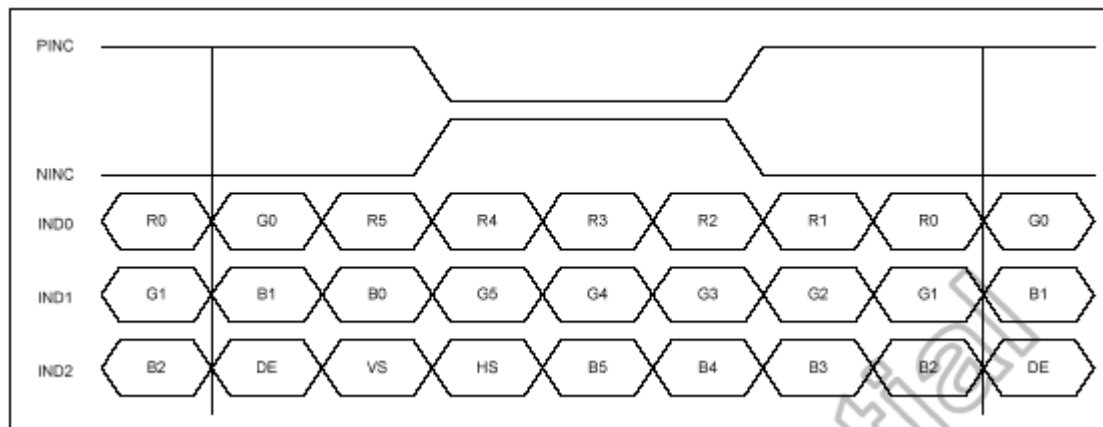
Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK Frequency	fclk	44.9	51.2	63	MHz
Horizontal Display Area	thd	1024			DCLK
HSD Period	th	1200	1344	1400	DCLK
HSD Pulse Width	thpw	1	-	140	DCLK
HSD Back Porch	thbp	160			DCLK
HSD Front Porch	thfp	16	160	216	DCLK

### Vertical Timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd	600			T <sub>H</sub>
VSD Period	tv	624	635	750	T <sub>H</sub>
VSD Pulse Width	tvpw	1	-	20	T <sub>H</sub>
VSD Back Porch	tvbp	23			T <sub>H</sub>
VSD Front Porch	tvfp	1	12	127	T <sub>H</sub>

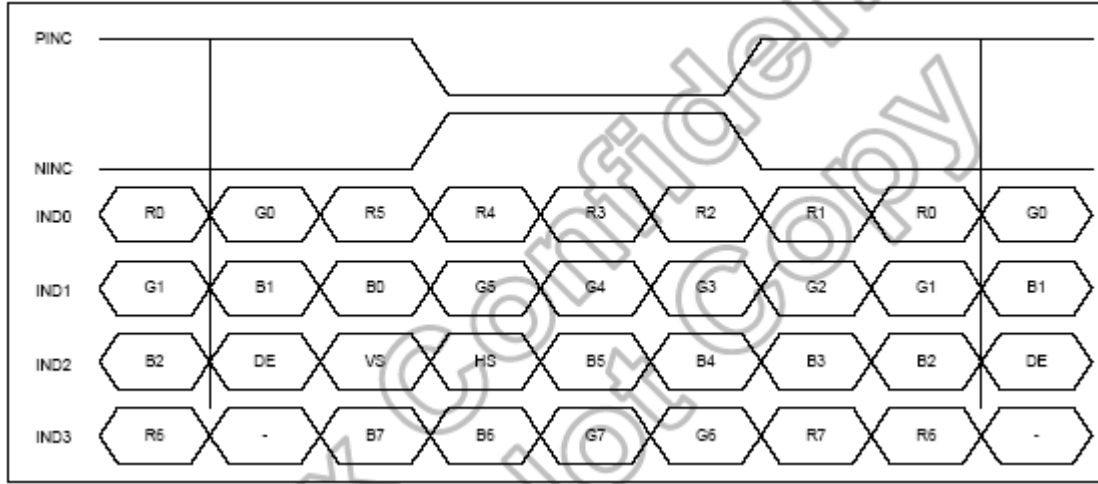
## 8. Data input format for LVDS

### 8.1 For 6-Bit LVDS





## 8.2 For 8-Bit LVDS



## 9. Backlight Characteristic

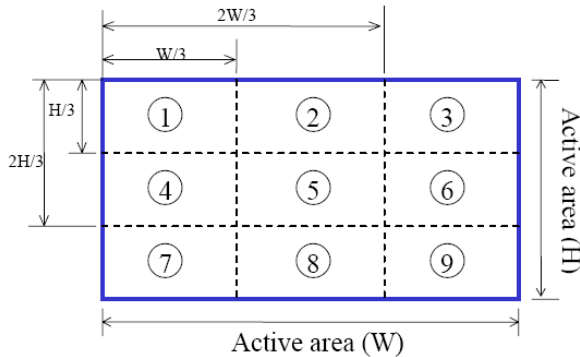
Item	Symbol	Min	Typical	Max	Unit
LED module Forward voltage	$V_{LED}$	--	9.6	--	V
LED module current	$I_{LED}$	--	140	--	mA
L/G Surface Luminance ★1	$L_S$	--	250	--	mcd
LCM Surface brightness uniform ★2	$L_D$	80	--	--	%

★ 1 Test condition is:

- (a) Center point on active area.
- (b) Best Contrast.

★2 Uniform measure condition:

- (1) Measure 9 point. Measure location show below;
- (2)  $Uniform = (Min. \text{ brightness} / Max. \text{ brightness}) * 100\%$
- (3) Best Contrast.





## 10. Electro-optical Characteristics

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing angle range	Hor.	$\phi 3$	$CR \geq 10$		70		Deg	
		$\phi 9$			70		Deg	
	Ver.	$\phi 12$			60		Deg	
		$\phi 6$			70		Deg	
Color gamut (C light)					50		%	
Luminance Contrast ratio		T (%)	$\phi 0^\circ$		600			
Response Time		T <sub>RT</sub>	Temp=25° C		8		ms	

## 11. Reliability

### 11.1 Mtbf

The LCD module shall be designed to meet a minimum MTBF value of 50000 hours with normal

### 11.2 Test condition

N O.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	70°C*240Hrs	<ul style="list-style-type: none"> <li>◦ No Defect Of Operational Function In Room Temperature Are Allowable</li> <li>◦ IDD of LCM in Pre-and Post-Test Should Follow Specification</li> </ul>
2	Low Temperature Non-Operating Test	-30°C*240Hrs	
3	High Temperature/Humidity Non Operating Test	60°C*90%RH*240Hrs	
4	High Temperature Operating Test	55°C*240Hrs	
5	Low Temperature Operating Test	-20°C*240Hrs	
6	Thermal Shock Test	-20 °C (30Min) v55 °C (30Min) *10CYCLES	

Notes:

1. Judgments should be made after exposure in room temperature for two hours.
2. The distill water is used for the high temperature/humidity test.
3. The sample above is individually for every reliability tests condition.

## 12. Inspection standards

1.AQL(Acceptable Quality Level

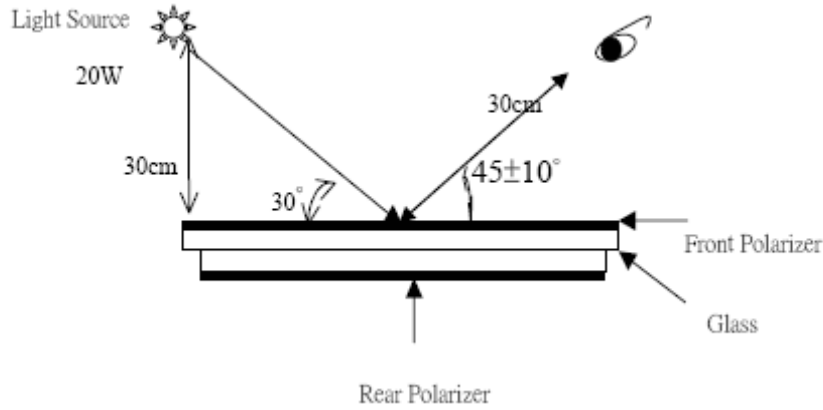
AQL of major and minor defect.

	MAJOR DEFECT	MINOR DEFECT
AQL	0.65	1.5

### 2. Basic conditions for inspection

The LCM face to us, in normal environment, the lux is  $1000 \pm 200$ . (Darkroom's lux:  $100 \pm 50$ ), About an angle of incidence  $30^\circ$ , a distance of 30 cm with an angle of  $45 \pm 10^\circ$  to check the products without uncovering the film!

(As shown below)



### 3. Inspection item and criteria

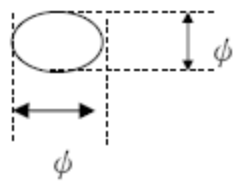
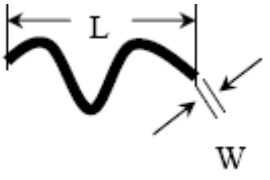
#### 3.1 Visual inspection criterion in immobility

##### 3.1.1 LCD appearance defect (View area)

NO	Defect item	Criteria		Remark
		Specification	Allowable	
1	Fiber、glass cratch、polarizer scratch/folded (minor defect)	$W \leq 0.03\text{mm}$	disregard	note1: L: Length, W: Width note2: disregard if out of AA 
		$0.03\text{mm} < W \leq 0.05\text{mm};$ $L \leq 3.0\text{mm}$	2	
		$0.05\text{mm} < W \leq 0.1\text{mm};$ $L \leq 3.0\text{mm}$	1	
		$W > 0.1\text{mm}; L > 3.0\text{mm}$	0	
2	Polarizer bubble、concave and convex (minor defect)	$\phi \leq 0.2\text{mm}$	disregard	note1: $\phi = (L+W)/2$ , L:Length, W :Width note2:disregard if out of AA
		$0.2\text{mm} < \phi \leq 0.3\text{mm}$	2	
		$0.3\text{mm} < \phi \leq 0.5\text{mm}$	1	
		$0.5\text{mm} < \phi$	0	
3	Black dots、dirty dots、impurities、eye winker (minor defect)	$\phi \leq 0.15\text{mm}$	disregard	note2:disregard if out of AA 
		$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
4	Polarizer prick (minor defect)	$\phi \leq 0.1\text{mm}$	disregard	note1: $\phi = (L+W)/2$ , L=Length, W=Width note2:the distance between two dots>5mm
		$0.1\text{mm} < \phi \leq 0.25\text{mm}$	3	
		$\phi > 0.25\text{mm}$	0	



### 3.2Electrical criteria

NO	Defect item	Criteria	Remark	
1	No display (major defect)	No display 【Reject】		
2	Missing line (major defect)	Missing line 【Reject】		
3	Seg-com light and dark (major defect)	Seg-com light and dark 【Reject】	ND filter 2% test	
4	No display in immobility (major defect)	No display in immobility 【Reject】		
5	Flicker of Pattern (major defect)	Flicker of Pattern 【Reject】		
6	Mura (major defect)	ND filter 2%test		
7	Over current (major defect)	Over current 【Reject】		
8	Voltage out of specification (major defect)	Voltage out of specification 【Reject】		
9	Pattern blur, error code (major defect)	Pattern blur, error code 【Reject】		
10	Dark light, Flicker (major defect)	Dark light, Flicker 【Reject】		
11	Black/white dots 、 Dirty dots、 eye winker (major defect)	Specification	Allowable	Note1:disregard if out of AA 
		$\phi \leq 0.15\text{mm}$	disregard	
		$0.15\text{mm} < \phi \leq 0.25\text{mm}$	2	
		$0.25\text{mm} < \phi \leq 0.3\text{mm}$	1	
		$0.3\text{mm} < \phi$	0	
12	Fiber、glass crutch、Polarizer scratch/folded (major defect)	$W \leq 0.03\text{mm}$	disregard	Note1:L: Length, W: Width Note2: disregard if out of AA 
		$0.03\text{mm} < W \leq 0.05\text{mm}$ $L \leq 3.0\text{mm}$	2	
		$0.05\text{mm} < W \leq 0.1\text{mm}$ $L \leq 3.0\text{mm}$	1	
		$W > 0.1\text{mm}; L > 3.0\text{mm}$	0	



## 13.Precautions for using LCD modules.

### 13.1 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.

### 13.2 Storage Conditions

- (4)Store the panel or module in a dark place where the temperature is  $23 \pm 5^{\circ}\text{C}$  and the humidity is below  $45 \pm 20\% \text{RH}$ .
- (5)Store in anti-static electricity container.
- (6)Store in clean environment, free from dust, active gas, and solvent.
- (7)Do not place the module near organics solvents or corrosive gases.
- (8) )Do not crush, shake, or jolt the module.

### 13.3 Handling Precautions

- (9)Avoid static electricity, which can damage the CMOS LSI.
- (10)The polarizing plate of the display is very fragile, please handle if very carefully.
- (11)Do not give external shock.
- (12)DO not apply excessive force on the surface.
- (13)Bo not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (14)Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (15)Do not operate it above the absolute maximum rating.
- (16)Do not remove the panel or frame from the module.