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- ☒

Preliminary Specifications
- ☐

Final Specifications

Title	10.1-inch LCM Product Specifications
Model Name	ET101WU01-R
Version	0.1

Customer

Approved by

Date

Notice: This Specification is subject to change without notice.

Approved By	Prepared By
Leo 2025-06-12	William 2025-06-12



REVISION HISTORY

Version	Description of Changes	Date	Prepared
V0	First Edition	2025-06-12	William



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1. General Description

1.1 Introduction

ET101WU01-R is a color active matrix TFT LCD Module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 10.1 inch diagonally measured active area with WUXGA resolutions (1920 horizontal by 1200 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors.

1.2 Features

- LVDS Interface;
- 8bit display 16.7M colors
- High contrast ratio and Transmittance

1.3 Application

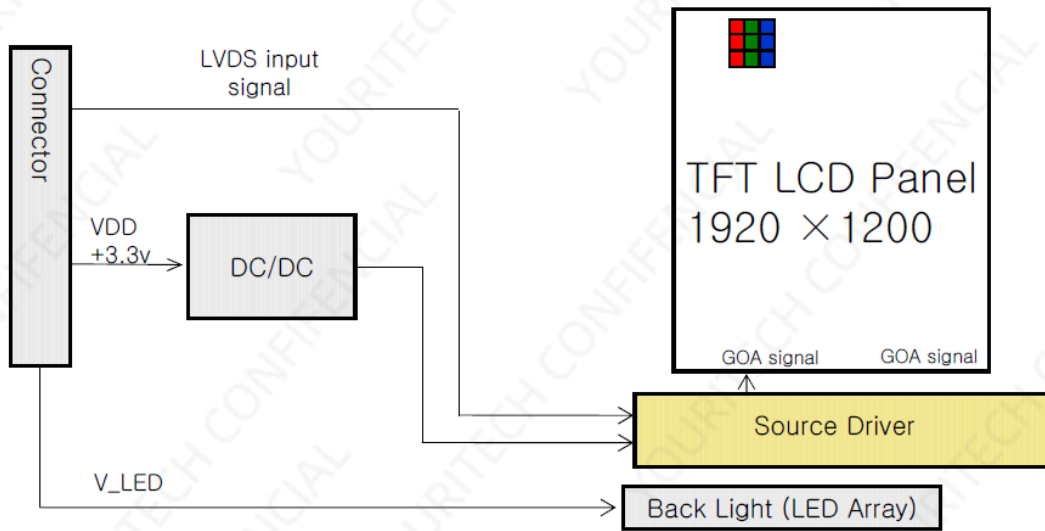
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1.4 General Specification

<Table 1. LCD Module Specifications>

No.	Item	Specification	Remark
1	LCD size	10.1 inch (Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	1920 x 3 (RGB) x1200 pixel	
4	Active area	217.728(W) x 136.08(H) mm	
5	Pixel Pitch	0.0378(H)×RGB×0.1134(V) mm	
6	Module size	229.46(W) x 149.1(H) x 3.74(D) mm	(w/o PCB)
7	Surface treatment	HC	
8	Colors	16.7M(8bit)	
9	Interface	LVDS	
10	Contrast Ratio	1200:1(typ.)	
11	Viewing Angle(CR>10)	85/85/85/85(typ.)	
12	Response Time	30(typ.)/35(max.) ms	
13	Brightness	2000cd/m ² (Typ.)	
14	Color Gamut	65% NTSC typ.	
15	Weight	230g Max.	
16	Backlight power consumption	7.2W(Typ.)	
17	Panel power consumption	Panel : 1W(Typ.)	@ Mosaic
18	Operating Temperature	-20°C~80°C	
19	Storage Temperature	-30°C~80°C	





2. ABSOLUTE MAXIMUM RATINGS

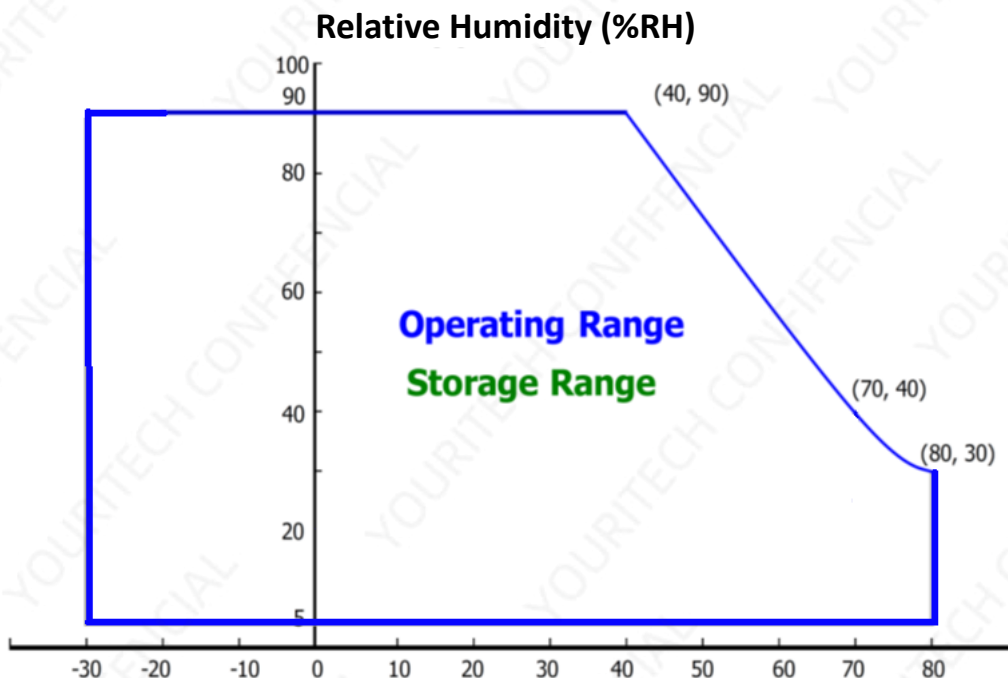
The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit.

< Table 2. Absolute Maximum Ratings >

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply voltage +3.3V	VDD	VSS-0.3	3.6	V	Ta = 25 °C
Back-light Power supply Voltage	V _{LED}	/	25.6	V	Ta = 25 °C
Operating Temperature	T _{OP}	-20	+80	°C	
Storage Temperature	T _{ST}	-30	+80	°C	

Note:

- These range above is maximum value not the actual operating temperature . Actual Operating temperature is no more than 40°C and temperature refers to the LCM surface temperature. Length of operation: No more than 8 hours per day, and no more than 4 hours of continuous use one time.
- 3ASCREEN is not responsible for product problems beyond the use conditions.
- Temperature and relative humidity range are shown in the figure below. Wet bulb temperature should be 39 °C max, and no condensation of water.



3. Electrical Specifications

3.1 TFT LCD Module

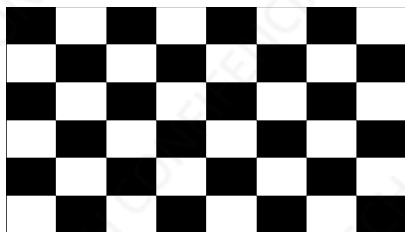
< Table 3. LCD Module Electrical specifications >

[Ta =25±2 °C]

Parameter	Symbol	Values			Unit	Notes
		Min.	Typ.	Max.		
Power Supply Voltage	VDD	3.0	3.3	3.6	V	
	VRP			300	mV	Ripple
Power Supply Current	IDD	-	300	360	mA	Note 1
Power Consumption	PLCD	-	1	1.2	W	
Rush current	Irush	-	-	3.0	A	Note 2

Notes : 1. The supply voltage is measured and specified at the interface connector of LCM.
The current draw and power consumption specified is for VDD=3.3V, Frame rate f_v=60Hz and Clock frequency = 80MHz. Test Pattern of power supply current

a) Typ : Mosaic 8 x 6 Pattern(L0/L255)



b) Max : skip subPixel(L255)



2. The duration of rush current is about 2ms and rising time of Power Input is 1ms(min)



3.1.1 INPUT TERMINAL PIN ASSIGNMENT

This LCD employs one interface connections, a 45 pin connector is used for the LCD module electronics interface.

3.1.2 Pin assignment for LCD module

Connector : FH34SRJ-45S-0.5SH(50) (HRS) or equivalent

< Table4. Pin Assignment for LCD Module Connector >

Pin No.	Symbol	Description	I/O
1	NC	NC	-
2	NC	NC	-
3	NC	NC	-
4	NC	NC	-
5	NC	NC	-
6	GND	Ground	P
7	ELV3P	Even LVDS Positive data signal (+)	I
8	ELV3N	Even LVDS Negative data signal (-)	I
9	GND	Ground	P
10	ELV2P	Even LVDS Positive data signal (+)	I
11	ELV2N	Even LVDS Negative data signal (-)	I
12	GND	Ground	P
13	ELVCLKP	Even LVDS Positive CLK signal (+)	I
14	ELVCLKN	Even LVDS Negative CLK signal (-)	I
15	GND	Ground	P
16	ELV1P	Even LVDS Positive data signal (+)	I
17	ELV1N	Even LVDS Negative data signal (-)	I
18	GND	Ground	P
19	ELV0P	Even LVDS Positive data signal (+)	I
20	ELV0N	Even LVDS Negative data signal (-)	I
21	GND	Ground	P
22	OLV3P	Odd LVDS Positive data signal (+)	I
23	OLV3N	Odd LVDS Negative data signal (-)	I
24	GND	Ground	P
25	OLV2P	Odd LVDS Positive data signal (+)	I
26	OLV2N	Odd LVDS Negative data signal (-)	I
27	GND	Ground	P
28	OLVCLKP	Odd LVDS Positive CLK signal (+)	I
29	OLVCLKN	Odd LVDS Negative CLK signal (-)	I
30	GND	Ground	P
31	OLV1P	Odd LVDS Positive data signal (+)	I
32	OLV1N	Odd LVDS Negative data signal (-)	I
33	GND	Ground	P
34	OLV0P	Odd LVDS Positive data signal (+)	I
35	OLV0N	Odd LVDS Negative data signal (-)	I



36	GND	Ground	P
37	I2C_SDA	Reserved for LCD manufacturer's use, Not connecton	I
38	I2C_SCL		I
39	VDD_OTP		P
40	EEPEN	Not Connection	I
41	VDD	Power supply VDD=3.3V (Typ.)	P
42	VDD		P
43	VDD		P
44	VDD		P
45	VDD		P

3.2 Backlight Unit

< Table 5. LED Driving guideline specifications >

[Ta =25±2 °C]

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Power supply Input voltage	V _{LED}		24	25.6	V	Note 1
Power supply current fo backlight	I _{LED}		300		mA	
LED Power consumption	P _{LED}		7.2		W	
Life time	L _{BL}	50000	-	-	hrs	Note 2

Note 1: The LED Supply voltage is defined by the number of LED (8*7=56LED) at Ta=25°C and IBL=300mA.

Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C Humidity=60%±10% and ILED=300mA.

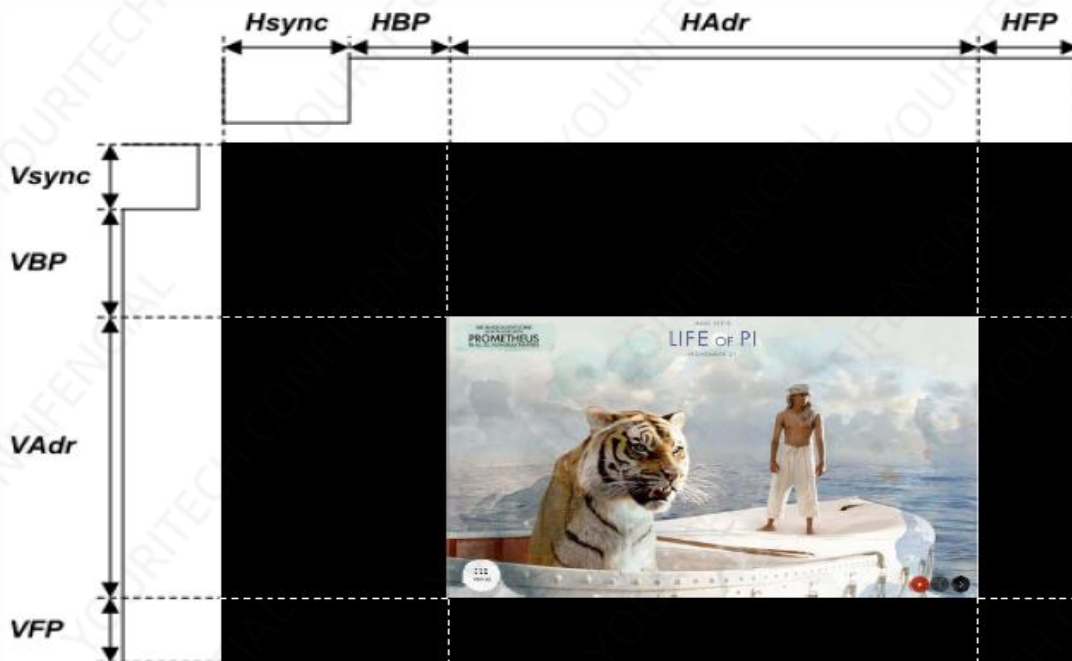


3.3 Interface timing Parameter and AC/DC Parameter

The SA101UWV-LK1 is operated by the DE only.

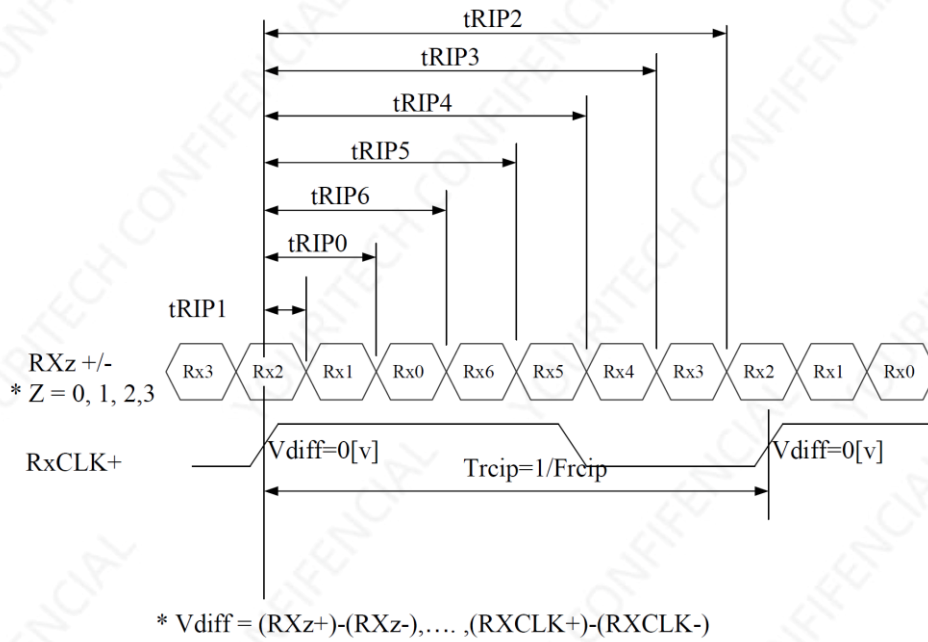
< Table 6. LVDS Timing Parameter >

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK Frequency	Fdclk	73.3	74.1	85	MHz
Horizontal display area	Thd	960			
HSYNC period time	Th	989	1000	1248	DCLK
Horizontal Blank	THB	58	80	288	DCLK
HSYNC pulse width	Thp	10	10	255	DCLK
HSYNC back porch	thbp	5	6	255	DCLK
HSYNC Front porch	thfp	43	64	260	DCLK
Vertical display area	Tvd	1200			
VSYNC period time	Tv	1235	1235	1560	H
Vertical Blank	TVB	35	35	360	H
VSYNC Pluse width	Tvp	6	6	20	H
VSYNC back porch	Tvbp	10	10	255	H
VSYNC front porch	Tvfp	19	19	260	H
Frequency	fV	-	60	-	Hz



<Table 7. LVDS AC Timing Specification>

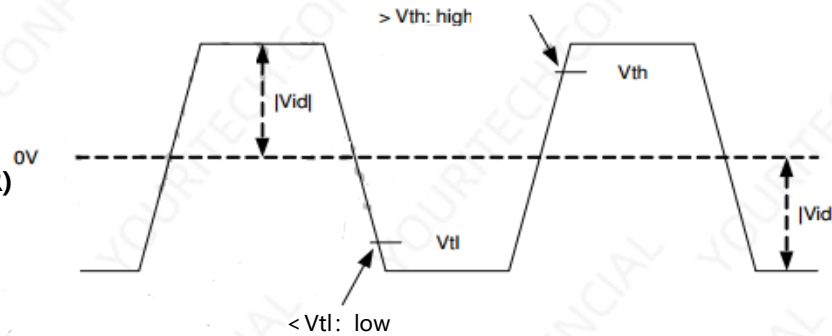
Item	Symbol	Min	Typ	Max	Unit	Remark
CLKfrequency	Frcip	20	-	85	MHZ	
CLKIN Period	tRCIP	11.76	-	-	nsec	
Input Data 0	tRIP1	$tRCIP/7 \times (-0.2)$	0.0	$tRCIP/7 \times 0.2$	nsec	
Input Data 1	tRIP0	$tRCIP/7 \times 0.8$	$tRCIP/7$	$tRCIP/7 \times 1.2$	nsec	
Input Data 2	tRIP6	$tRCIP/7 \times 1.8$	$tRCIP/7 \times 2$	$tRCIP/7 \times 2.2$	nsec	
Input Data 3	tRIP5	$tRCIP/7 \times 2.8$	$tRCIP/7 \times 3$	$tRCIP/7 \times 3.2$	nsec	
Input Data 4	tRIP4	$tRCIP/7 \times 3.8$	$tRCIP/7 \times 4$	$tRCIP/7 \times 4.2$	nsec	
Input Data 5	tRIP3	$tRCIP/7 \times 4.8$	$tRCIP/7 \times 5$	$tRCIP/7 \times 5.2$	nsec	
Input Data 6	tRIP2	$tRCIP/7 \times 5.8$	$tRCIP/7 \times 6$	$tRCIP/7 \times 6.2$	nsec	



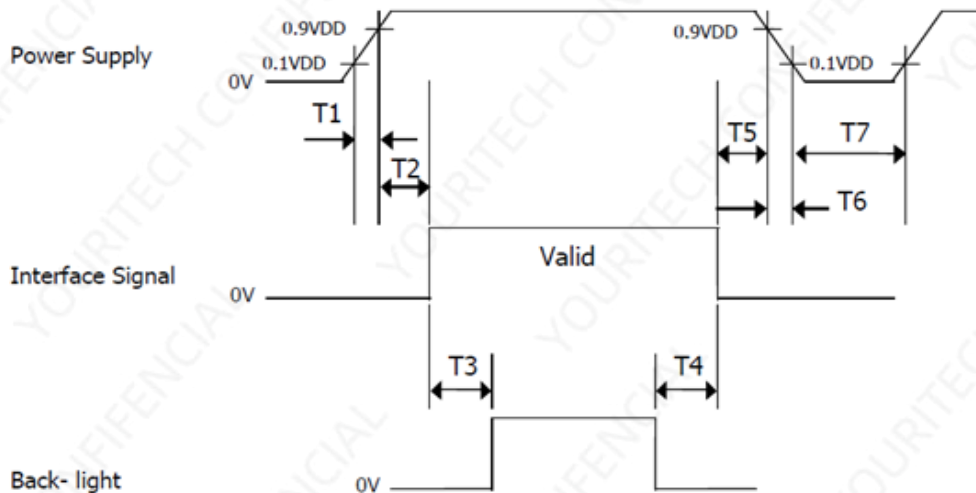
<Table 8. LVDS DC Timing Specification>

Item	Symbol	Condition	MIN	TYP	MAX	Unit
Differential input high Threshold voltage	Vth	Vcm=1.2V	-	-	+0.1	V
Differential input low Threshold voltage	Vtl	-	-0.1	-	-	V
Differential input common Threshold voltage	Vcm	-	1	1.2	1.7- Vid /2	V
LVDS input voltage	Vinlv	-	0.7	-	1.7	V
Differential input voltage	Vid	-	0.35	-	0.6	V
Differential input leakage voltage	Ilvleak	-	-10	-	+10	uA

Differential:
LVCLKP(R)-LVCLKN(R)
LVD[3:0]P(R)-
LVD[3:0]N(R)

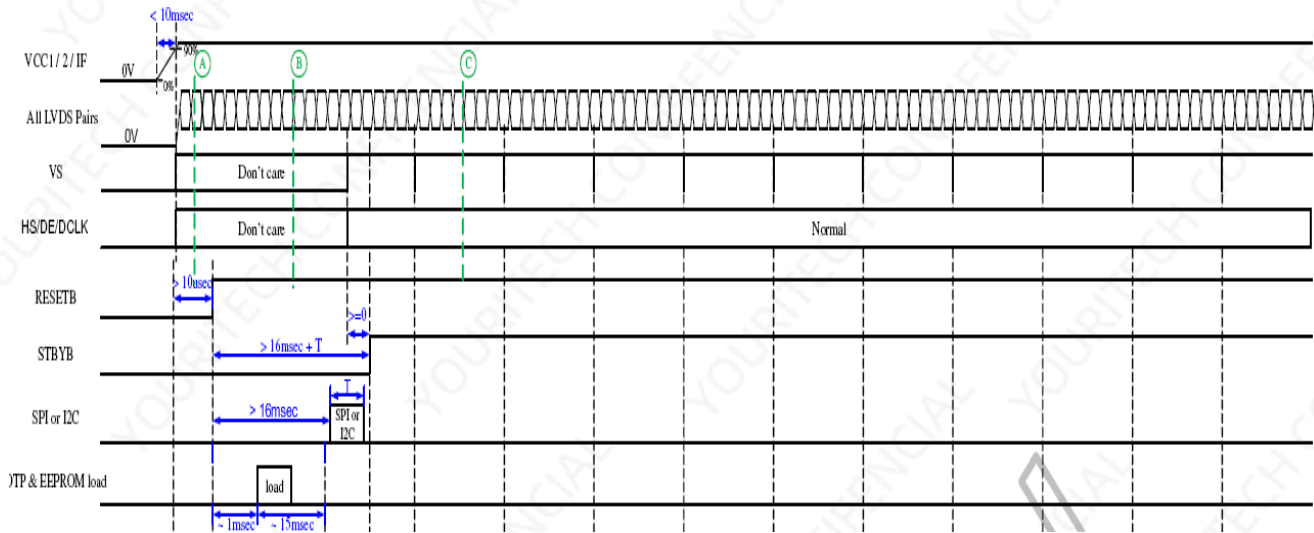


3.4 Power Sequence



< Table 9. Sequence Table >

Parameter	Values			Units
	Min	Typ	Max	
T1	0	-	10	ms
T2	0	-	50	ms
T3	200	-	-	ms
T4	500	-	-	ms
T5	0	-	50	ms
T6	0	-	10	ms
T7	200	-	-	s



4. Optical Specifications

< Table 10. Optical Table >

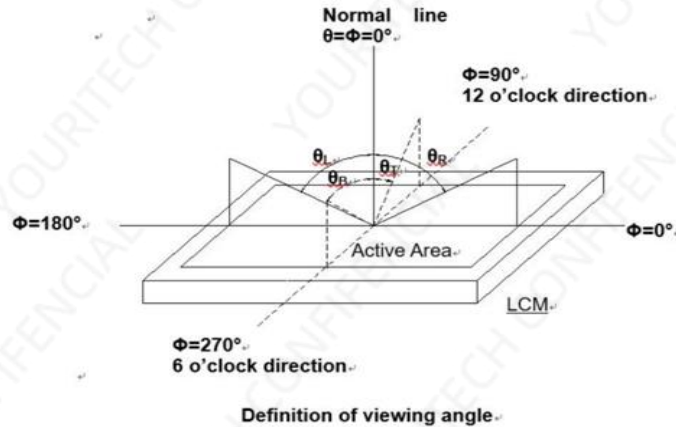
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle	Horizontal	Θ_L	CR>10	80	85	-	Deg.	Note 1
		Θ_R		80	85	-	Deg.	
	Vertical	Θ_T		80	85	-	Deg.	
		Θ_B		80	85	-	Deg.	
Response time	GTG	T _{On} +T _{Off}	$\Theta=0^\circ$ (Center)	-	30	35	ms	Note 2 Note 3
Contrast ratio		CR		1000	1200	-	-	Note 2 Note 4
Color chromaticity	White	W _x		-0.04	0.33	+0.04	-	Note 2 Note 5
		W _y			0.344			
	Red	R _x			0.626			
		R _y			0.364			
	Green	G _x			0.34			
		G _y			0.608			
	Blue	B _x			0.151			
		B _y			0.04			
Luminance (AA Center)		L		1800	2000	-	cd/m ²	Note 2
Luminance uniformity (9point)		Yu		75	80	-	%	Note 2 Note 6
NTSC Ratio		NTSC	CIE1931	-	65	-	%	

Test Conditions: The ambient temperature is 25°C.

Note1: Definition of viewing angle range

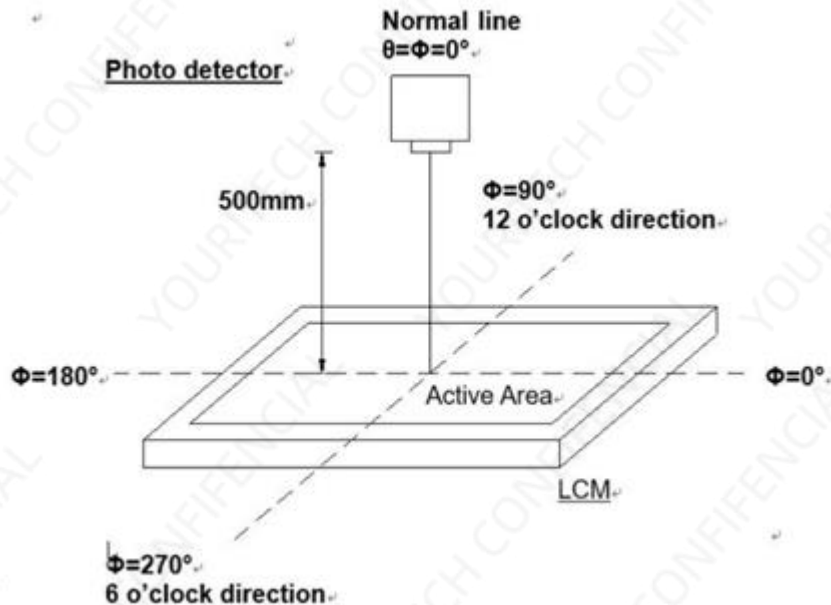
Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3,9 o'clock direction and the vertical or 6,12 o'clock direction with respect to the optical axis which is normal to the LCD surface





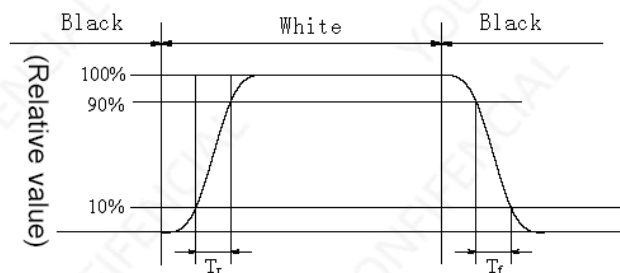
Note2: Definition of optical measurement system

The test of optical specifications shall be measured in a dark room (ambient luminance ≤ 1 lux and temperature = $25 \pm 2^\circ\text{C}$) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-5) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0° .



Note3: Definition of Response time. (Test LCD using RD80S or similar equipments):

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



Note4: Definition of contrast ratio

$$\text{Contrast Ratio(CR)} = \frac{\text{Luminance When LCD is at "White" state}}{\text{Luminance When LCD is at "Black" state}} \\ (\text{Contrast Ratio is measured in optimum common electrode voltage})$$

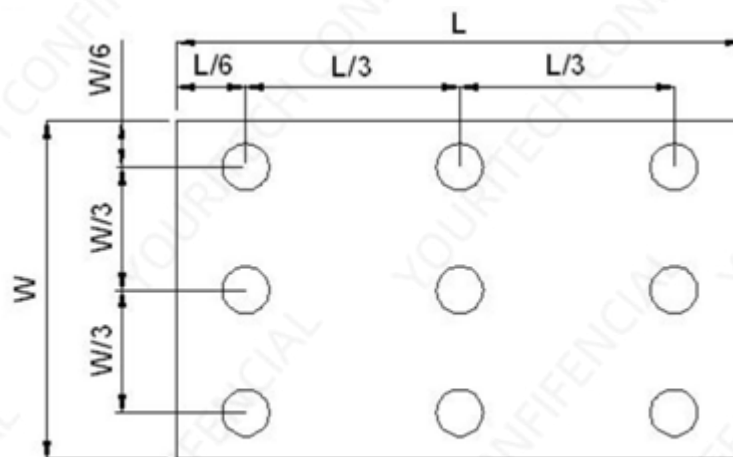
Note5: Definition of color chromaticity(CIE1931)

Color coordinates measured at center point of LCD.

Note6: Definition of Luminance Uniformity("White" state)

Active area is divided into 9 measuring areas. Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity}(Yu) = \frac{B_{min}}{B_{max}} \times 100\%$$



Definition of measuring points

B_{max} : The measured maximum luminance of all measurement position.

B_{min} : The measured minimum luminance of all measurement position.



5. Reliability Test Items

No.	Item	Test Conditions	Remark
1	High Temperature Storage	Ta= 80°C, 240hrs	
2	Low Temperature Storage	Ta=-30°C, 240hrs	
3	High Temperature Operation	Ts=80°C, 240hrs	
4	Low Temperature Operation	Ta=-20°C, 240hrs (But no condensation of dew)	
5	Operate at High Temperature and Humidity	60°C, 90%RH, 240hrs (But no condensation of dew)	
6	Thermal Shock	-30±2°C/30min~25°C~80±2°C /30min 100 cycles	

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.



6. General Precautions

6.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

6.2. Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
3. To avoid contamination on the display surface, do not touch the module surface with bare hands.
4. Keep a space so that the LCD panels do not touch other components.
5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

6.3. Static Electricity

1. Be sure to ground module before turning on power or operating module.
2. Do not apply voltage which exceeds the absolute maximum rating value.

6.4. Storage

1. Store the module in a dark room where must keep at $25\pm 10^{\circ}\text{C}$ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas.
3. Store the module in an anti-electrostatic container or bag.

6.5. Cleaning

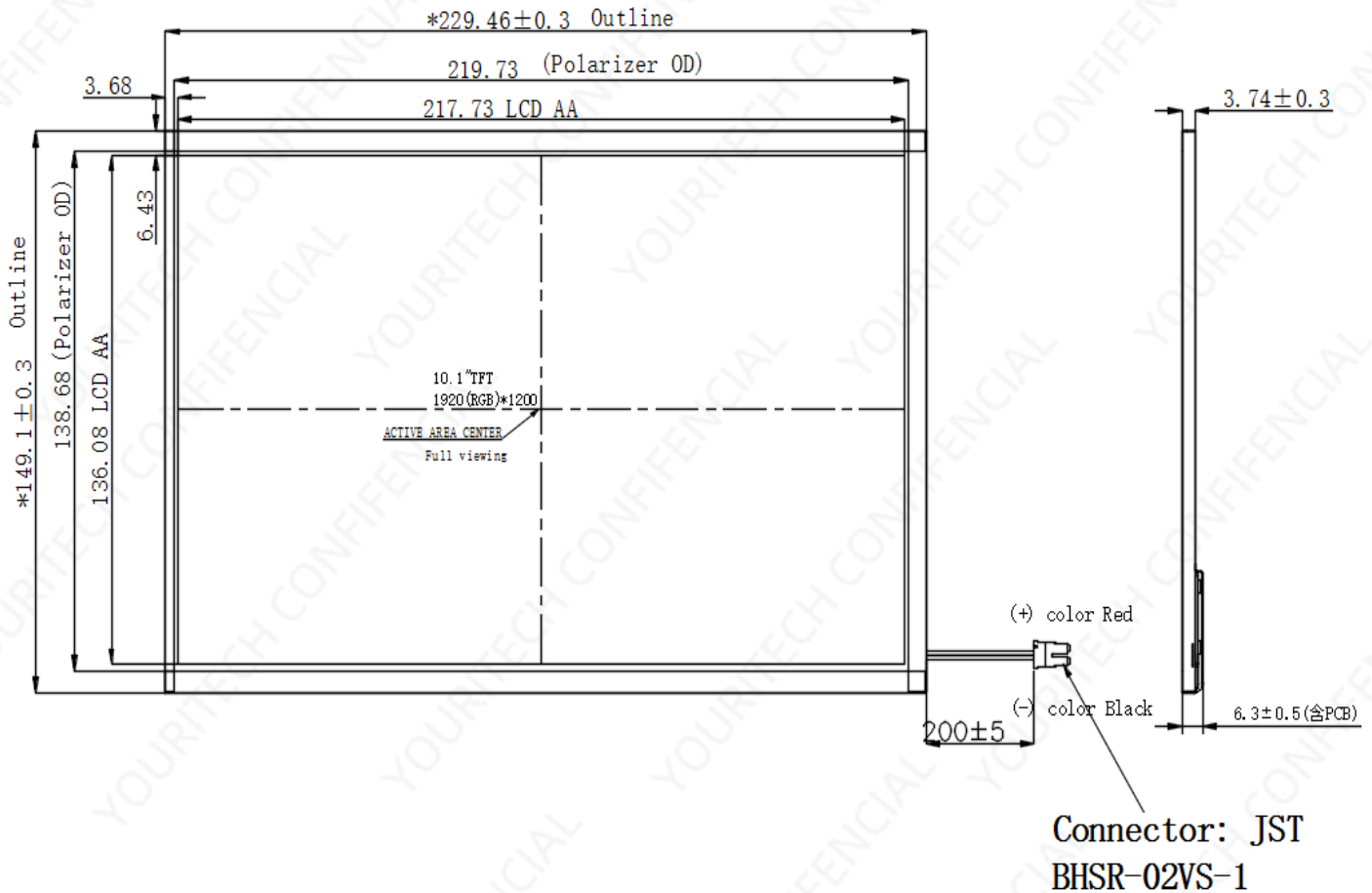
1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.



7. Appendix

7.1. Mechanical Drawing

Front Side: (Unit:mm)



Rear Side:

