SPECIFICATION

Product Model: YX-1280800T101N001H

DESIGNED	CHECKED	Approved
研发部	研发部	研发部
2020.05.13	2020.05.13	2020.05.13
Aleck	Hones	Mike

Approval by Customer:

Ok

NG, Problem survey

Approved By______

Rev.V6 1/21

Revision Record

REV NO.	REV DATE	CONTENTS	Note
V0	2019.08.16	在E的基础上调整背光颜色	
V1	2019.08.29	修正 DC Characteristics	P8
V2	2019.11.15	删掉石墨片	P5
V3	2019.12.03	修正铁框 VA	P5
V4	2020.03.17	修正 ESD 测试条件	P15
V5	2020.04.17	更换背光供应商	P5
V6	2020.05.13	修正 LED 寿命和 ESD 测试条件	P11

Rev.V6 2/21

Table of Contents

List	Description	Page No.
	Cover	1
	Revision Record	2
	Table of Contents	3
1	Scope	4
2	General Information	4
3	External Dimensions	5
4	Interface Description	6
5	Absolute Maximum Ratings	7
6	DC Characteristics	8
7	Timing Characteristics	9
8	Backlight Characteristics	11
9	Optical Characteristics	12
10	Reliability Test Conditions and Methods	16
11	Inspection Standard	17
12	Handling Precautions	20
13	Precaution for Use	21
14	Packing Method	21

Rev.V6 3/21

1. Scope

This specification defines general provisions as well as inspection standards for TFT module supplied by YUXIANG electronics.

If the event of unforeseen problem or unspecified items may occur, naturally shall negotiate and agree to solution

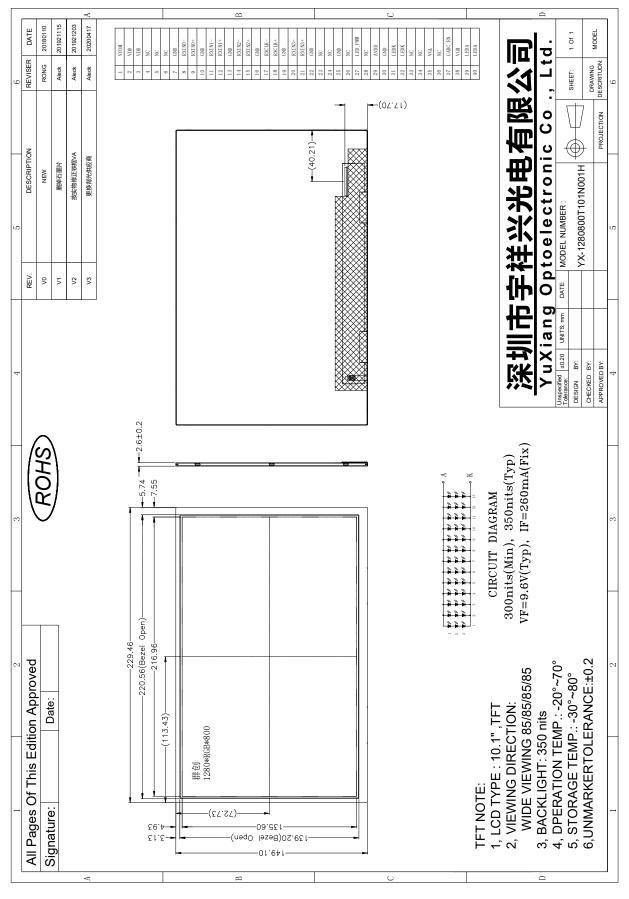
2. General Information

LCM

ITEM	STANDARD VALUES	UNITS
LCD type	10.1"TFT	
Dot arrangement	1280×3(RGB)×800	dots
Color filter array	RGB vertical stripe	
Display mode	Normally Black	-
Viewing Direction	85/85/85	
Module size	229.46(W)×149.10(H)×2.6(T)	mm
Active area	216.96(W)×135.60(H)	mm
Dot pitch	0.1695(W)×0.1695(H)	mm
Interface	LVDS Interface	
Operating temperature	-20 ~ +70	°C
Storage temperature	-30 ~ +80	°C
Weight	TBD	g

Rev.V6 4/21

3. External Dimensions



Rev.V6 5/21

4. Interface Description

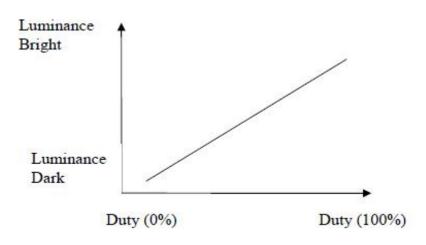
4. IIILEII	ace Descri	iption	
PIN	PIN NAME	DESCRIPTION	Remark
1	VCOM	Common Voltage	
2	VDD	Dowar Supply	
3	VDD	Power Supply	
4	NC		
5	NC	No connection	
6	NC		
7	GND	Ground	
8	Rxin0-	-LVDS Differential Data Input	R0~R5,G0
9	Rxin0+	+LVDS Differential Data Input	K0~K5,G0
10	GND	Ground	
11	Rxin1-	-LVDS Differential Data Input	G1~G5,B0, B1
12	Rxin1+	+LVDS Differential Data Input	G 1~G5,60, 61
13	GND	Ground	
14	Rxin2-	-LVDS Differential Data Input	B2~B5,HS,
15	Rxin2+	+LVDS Differential Data Input	VS,DE
16	GND	Ground	
17	RxCLK-	-LVDS Differential Clock Input	LV/DC CLIV
18	RxCLK+	+LVDS Differential Clock Input	LVDS CLK
19	GND	Ground	
20	Rxin3-	-LVDS Differential Data Input	R6,R7,G6,G7,
21	Rxin3+	+LVDS Differential Data Input	B6,B7
22	GND	Ground	
23	NC	NI- composition	
24	NC	No connection	
25	GND	Ground	
26	NC	No connection	
27	LED_PWM	CABC controller signal output for backlight	Note2
28	NC	No connection	
29	AVDD	Power for Analog Circuit	
30	GND	Ground	
31	LEDK	LED Cathode	
32	LEDK	LED Cathode	
33	NC	NI	
34	NC	No connection	
35	VGL	Gate OFF Voltage	
36	NC	No connection	
37	CABC_EN	CABC Enable Input	Note1
38	VGH	Gate ON Voltage	
39	LEDA	LED Anode	
40	LEDA	LED Anode	

Rev.V6 6/21

Note1: The setting of CABC function are as follows.

Pin	Enable	Disable
CABC_EN	High Voltage	Low Voltage or open

Note2: LED_PWM is used to adjust backlight brightness.



5. Absolute Maximum Ratings

(Note 1)

Item	Symbol	Min.	Max.	Unit	Remark
Digital Supply Voltage	VDD	-0.3	3.9	V	
Analog Supply Voltage	AVDD	-0.3	14	V	
Gate On Voltage	VgH	-0.3	42	V	
Gate Off Voltage	VgL	-19	0.3	V	
Gate On ~ Gate Off Voltage	Vgh-Vgl	12	40	V	
Operating Temperature	Тор	-0	50	°C	
Storage Temperature	Тѕт	-20	60	°C	
LED Reverse Voltage	VF	2.1	3.1	V	IF=20mA
LED Forward Current	lR	-	50	mA	V _R =5V

Rev.V6 7/21

Current Consumption

Item	Symbol	Min.	Тур.	Max.	Unit	Remark
High Supply for Current	lgн	-	705	750	uA	Vgн =22V
Low Supply for Current	lgL	-	705	750	uA	VgL = -7V
Logic Supply for Current	IVDD	-	95	120	mA	VDD =2.5V
Analog Supply for Current	IAvdd	-	45	70	mA	AVDD =8.2V

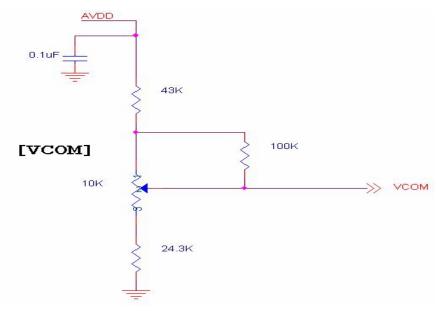
6. DC Characteristics

Item	Symbol	Min.	Тур.	Max.	Unit	Remark
Digital Supply Voltage	VDD	2.3	2.5	2.7	V	Note 1; Note 2
Analog Supply Voltage	AVDD	7.9	8.2	8.5	V	-
Gate On Voltage	Vgн	20.0	22	23.0	V	Note 1
Gate Off Voltage	VGL	-7.3	-7.0	-6.7	V	Note 1
Input signal voltage	VCOM	2.7	3.0	3.3	V	Note 4
Input logic high voltage	VIH	0.8VDD	-	3.6	V	Note 2
Input logic low voltage	VIL	GND	-	0.2DVDD	V	Note 3

Note 1: Be sure to apply VDD and VGL to the LCD first, AND THEN APPLY VGH

Note 2: VDD setting should match the signals output voltage (refer to Note 3) of customer's System board

Note 4: Typical VCOM is only a reference value, it must be optimized according to each LCM. Be sure to use VR.

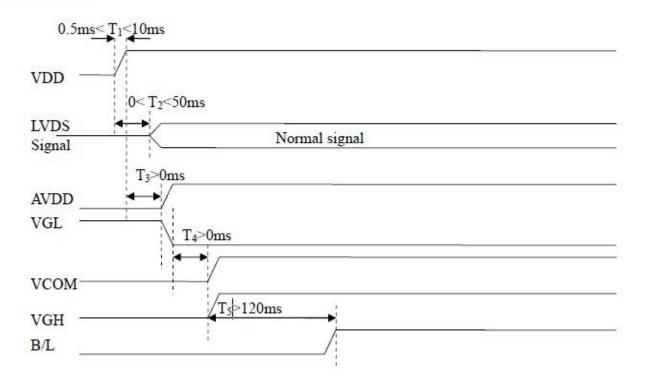


Rev.V6 8/21

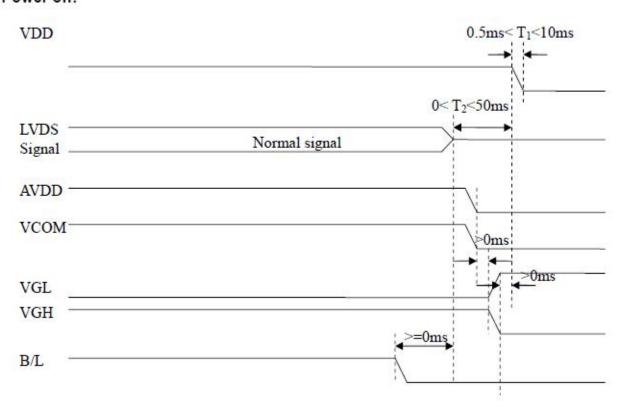
7. Timing Characteristics

7.1 Power Sequence

a. Power on:



b. Power off:

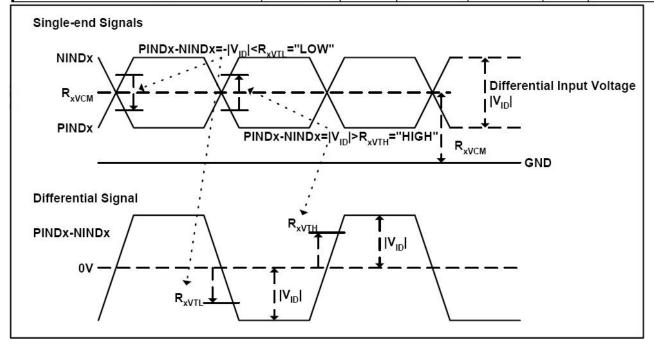


Rev.V6 9/21

7.2 LVDS Signal Timing Characteristics

7.2.1 AC Electrical Characteristics

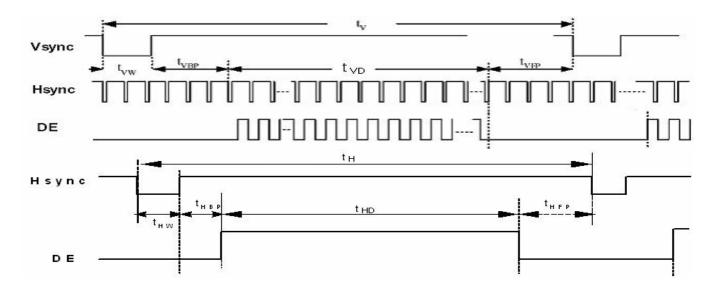
Parameter	Symbol Values				Unit	Remark
r arameter	Cymbol	Min.	Тур.	Max.		Kemark
LVDS Differential input high Threshold voltage	R _{xVTH}	-	-	+100	mV	R _{XVCM} =1.2V
LVDS Differential input low Threshold voltage	R _{xVTL}	-100	6 - 0	-	m∨	RXVCM-1.2V
LVDS Differential input common mode voltage	R _{xVCM}	0.7	(Sa)	1.6	V	
LVDS Differential voltage	V _{ID}	200	(A=)	600	m∨	



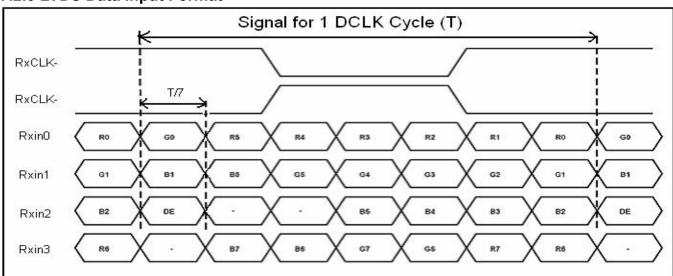
7.2.2 Timing Table

ltem	Values			l luit	B	
item	Symbol	Min.	Тур.	Max.	Unit	Remark
Clock Frequency	1/Tc	(68.9)	71.1	(73.4)	MHz	Frame rate =60Hz
Horizontal display area	thD	1280			Tc	
HS period time	th	(1410)	1440	(1470)	Tc	
HS Width +Back Porch +Front Porch	thw+ thbp +thpp	(60)	160	(190)	Tc	
Vertical display area	tvD	(3)	800		tH	
VS period time	tv	(815)	823	(833)	th	
VS Width +Back Porch +Front Porch	tvw+ tvbp +tvpp	(15)	23	(33)	th	

Rev.V6 10/21



7.2.3 LVDS Data Input Format



8. Backlight Characteristic

or Baoking it Characteriotic								
Item	Symbol	MIN	TYP	MAX	UNIT	Test Condition		
Supply Voltage	Vf	8.0	9.6	10.5	V	If=260mA		
Supply Current	If	-	260	-	mA	-		
Luminous Intensity for LCM	-	300	350		cd/m ²	If=260mA		
Uniformity for LCM	-	80		-	%	If=260mA		
Life Time	-	30000	50000	-	Hr	If=260mA		
Backlight Color	White							

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25°C and IL=200mA Note 2: The "LED life time" is defined as the module brightness decrease to 50% original Brightness at Ta=25°C and IL=200mA. The LED life time could be decreased if operating IL is larger than 200mA

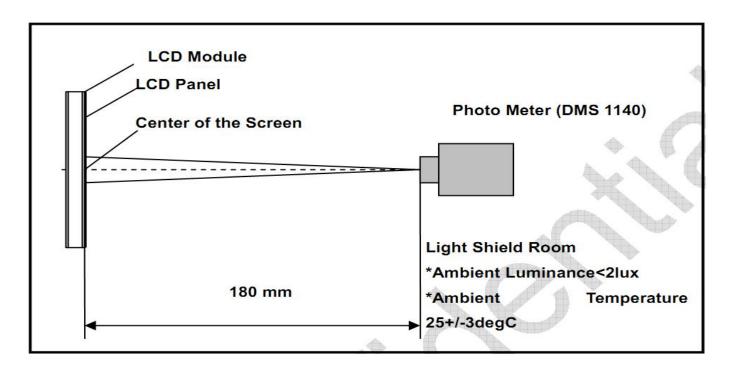
Rev.V6 11/21

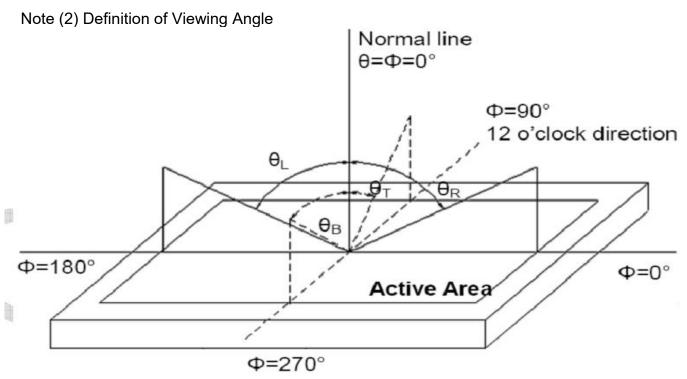
9. Optical Characteristics

Item	Conditions		Min.	Тур.	Max.	Unit	Note	
Viewing Angle (CR>10)	Horizontal	θL	75	85	-	degree		
		θR	75	85	-		(1),(2),(6)	
	Vertical	θт	75	85	-			
		θв	75	85	-			
Contrast Ratio	Center		600	800	-	-	(1),(3),(6)	
LCM Luminance	Center poi	nt	250	350	-	Cd/m ²		
Posponso Timo	Rising		ı	10	20	ma	(1) (4) (6)	
Response Time	Falling		-	15	30	ms	(1),(4),(6)	
	Red x Red y Green x Green y Blue x Blue y			0.5778		-	(1), (6)	
			Typ. -0.05	0.3362	Typ. +0.05	-		
				0.3162		-		
CF Color				0.5920		-		
Chromaticity (CIE1931)				0.1495		-		
(=:=:00:,				0.1120		-		
	White x			0.2858		-		
	White y			0.3351		-		
Luminance uniformity	Yu		75	80	-	%	(1)	

Note (1) Measurement Setup: The LCD module should be stabilized at given temp. 25°C for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.

Rev.V6 12/21





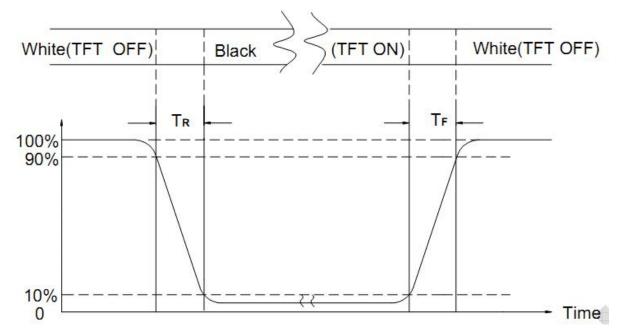
Note (3) Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note (4) Definition of response time

Rev.V6 13/21



Note (5) Definition of Transmittance (Module is without signal input)

Transmittance = Center Luminance of LCD / Center Luminance of Back Light x 100%

Note (6) Definition of color chromaticity (CIE1931)

Color coordinates measured at the center point of LCD

Rev.V6 14/21

10. Reliability Test Conditions and Methods

NO.	TEST ITEMS	TEST CONDITION	INSPECTION AFTER TEST
1)	High Temperature Storage	80°C±2°C×200Hours	
2	Low Temperature Storage	-30°C±2°C×200Hours	
3	High Temperature Operating	70°C±2°C×120Hours	Inspection after 2~4hours
4	Low Temperature Operating	-20°C±2°C×120Hours	storage at room temperature, the samples should be free from
(5)	Temperature Cycle(Storage)	-20°C \longrightarrow 25°C \longrightarrow 70°C (30min) 1cycle Total 10cycle	defects: 1, Air bubble in the LCD. 2, Seal leak. 3, Non-display.
6	Damp Proof Test (Storage)	50°C±5°C×90%RH×120Hours	4, Missing segments.5, Glass crack.6, Current IDD is twice
7	Vibration Test	Frequency:10Hz~55Hz~10Hz Amplitude:1.5M X,Y,Z direction for total 3hours (packing condition test will be tested by a carton)	higher than initial value. 7, The surface shall be free from damage. 8, The electric characteristic requirements
8	Drooping Test	Drop to the ground from 1M height one time every side of carton. (packing condition test will be tested by a carton)	shall be satisfied.
9	ESD Test	Voltage:±8KV,R:330Ω,C:150PF,Ai r Mode,10times	

REMARK:

- 1, The Test samples should be applied to only one test item.
- 2, Sample side for each test item is 5~10pcs.
- 3, For Damp Proof Test, Pure water(Resistance \geq 10M Ω) should be used.
- 4,In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.
- 5, EL evaluation should be accepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence EL has.
- 6, Failure Judgment Criterion: Basic Specification Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

Rev.V6 15/21

11. Inspection Standard

11.1. QUALITY:

THE QUALITY OF GOODS SUPPLIED TO PURCHASER SHALL COME UP TO THE FOLLOWING STANDARD.

11.1.1. THE METHOD OF PRESERVING GOODS

AFTER DELIVERY OF GOODS FROM AMSON TO PURCHASER. PURCHASER SHALL CONTROL THE LCM AT -10 $^{\circ}$ C TO 40 $^{\circ}$ C ,AND IT MIGHT BE DESIRABLE TO KEEP AT THE NORMAL ROOM TEMPERATURE AND HUMIDITY UNTIL INCOMING INSPECTION OR THROWING INTO PROCESS LINE.

11.1.2. INCOMING INSPECTION

(A) THE METHOD OF INSPECTION

IF PURCHASER MAKE AN INCOMING INSPECTION, A SAMPLING PLAN SHALL BE APPLIED ON THE CONDITION THAT QUALITY OF ONE DELIVERY SHALL BE REGARDED AS ONE LOT.

(B) THE STANDARD OF QUALITY

ISO-2859-1 (SAME AS MIL-STD-105E), LEVEL II SINGLE PLAN.

CLASS	AQL(%)
CRITICAL	0.4 %
MAJOR	0.65 %
MINOR	1.5 %
TOTAL	1.5 %

EVERY ITEM SHALL BE INSPECTED ACCORDING TO THE CLASS.

(C) MEASURE

IF AS THE RESULT OF ABOVE RECEIVING INSPECTION, A LOT OUT IS DISCOVERED. PURCHASER SHALL BE INFORM SELLER OF IT WITHIN SEVEN DAYS. BUT FIRST SHIPMENT WITHIN FOURTEEN DAYS.

11.1.3 WARRANTY POLICY

AMSON WILL PROVIDE ONE-YEAR WARRANTY FOR THE PRODUCTS ONLY IF UNDER SPECIFICATION OPERATING CONDITIONS. AMSON WILL REPLACE NEW PRODUCTS FOR THESE DEFECT PRODUCTS WHICH UNDER WARRANTY PERIOD AND BELONG TO THE RESPONSIBILITY OF AMSON.

11.2. CHECKING CONDITION

- 11.2.1. CHECKING DIRECTION SHALL BE IN THE 45 DEGREE AREA TO FACE THE SAMPLE.
- 11.2.2. CHECKER SHALL SEE OVER 300±25 mm. WITH BARE EYES FAR FROM SAMPLE AND USING 2 PCS. OF 20W FLUORESCENT LAMP.

Rev.V6 16/21

11.3. INSPECTION PLAN:

CLASS	ITEM	JUDGEMENT	CLASS
PACKING &	OUTSIDE AND INSIDE PACKAGE	"MODEL NO." , "LOT NO." AND "QUANTITY" SHOULD INDICATE ON THE PACKAGE.	Minor
INDICATE	2. MODEL MIXED AND QUANTITY	OTHER MODEL MIXEDREJECTED QUANTITY SHORT OR OVERREJECTED	Critical
	3. PRODUCT INDICATION	"MODEL NO." SHOULD INDICATE ON THE PRODUCT	Major
ASSEMBLY	4. DIMENSION, LCD GLASS SCRATCH AND SCRIBE DEFECT.	ACCORDING TO SPECIFICATION OR DRAWING.	Major
	5. VIEWING AREA	POLARIZER EDGE OR LCD'S SEALING LINE IS VISABLE IN THE VIEWING AREAREJECTED	Minor
	6. BLEMISH - BLACK SPOT - WHITE SPOT IN THE LCD AND LCD GLASS CRACKS	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
APPEARANCE	7. BLEMISH · BLACK SPOT WHITE SPOT AND SCRATCH ON THE POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
	8. BUBBLE IN POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION(INSIDE VIEWING AREA)	Minor
	9. LCD'S RAINBOW COLOR	STRONG DEVIATION COLOR (OR NEWTON RING) OF LCDREJECTED. OR ACCORDING TO LIMITED SAMPLE (IF NEEDED, AND INSIDE VIEWING AREA)	Minor
	10. ELECTRICAL AND OPTICAL CHARACTERISTICS (CONTRAST: VOP: CHROMATICITY ETC)	ACCORDING TO SPECIFICATION OR DRAWING . (INSIDE VIEWING AREA.)	Critical
ELECTRICAL	11.MISSING LINE	MISSING DOT: LINE : CHARACTERREJECTED	Critical
	12.SHORT CIRCUIT- WRONG PATTERN DISPLAY	NO DISPLAY - WRONG PATTERN DISPLAY - CURRENT CONSUMPTION OUT OF SPECIFICATION REJECTED	Critical
	13. DOT DEFECT (FOR COLOR AND TFT)	ACCORDING TO STANDARD OF VISUAL INSPECTION	Minor

Rev.V6 17/21

11.4	STANI	DARD OF VISUAL INSPECT	TION			
NO.	CLASS	ITEM	JUDGEMENT			
			(A) ROUND TYPE: unit : mm. DIAMETER (mm.) ACCEPTABLE Q'TY			
			$\Phi \leq 0.1$ DISREGARD			
		BLACK AND WHITE SPOT	$0.1 < \Phi \leq 0.25$ 3 (Distance>5mm)			
			0.25 < Φ 0			
11.4.1	MINOR	DUST IN THE CELL	NOTE: Φ=(LENGTH+WIDTH)/2			
3.03753		BLEMISH	(B) LINEAR TYPE: unit : mm.			
		SCRATCH	LENGTH WIDTH ACCEPTABLE Q'TY			
			W ≤0.03 DISREGARD			
			$L \le 5.0$ 0.03 < W ≤ 0.07 3 (Distance>5mm)	_		
			0.07 < W FOLLOW ROUND TY	PE		
_	-			-		
			unit : mm.			
		BUBBLE IN POLARIZER DENT ON POLARIZER	DIAMETER ACCEPTABLE Q'TY			
11 4 2	MINOR		Φ ≤ 0.2 DISREGARD			
11.4.2	WINOK		$ \begin{array}{c cccc} 0.2 < & \Phi & \leq & 0.5 & 2 \text{ (Distance>5mm)} \\ \hline 0.5 < & \Phi & & 0 \\ \hline \end{array} $			
			υ.5 τ ψ			
11.4.3	MINOR	Dot Defect	Items ACC. Q'TY Bright dot N≤ 4 Dark dot N≤ 4 Pixel Define: Pixel Pixel Pixel Pixel Pixel Pixel Pixel Pixel Note 1: The definition of dot: The size of a defective dot over 1/2 of whole dot is regarded as one defective dot. Note 2: Bright dot: Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern. Note 3: Dark dot: Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green blue pattern.			

Rev.V6 18/21

NO.	CLASS	ITEM	JUDGEMEN	Т
11.4.4	MINOR	LCD GLASS CHIPPING	F. I.	Y > S Reject
11.4.5	MINOR	LCD GLASS CHIPPING	SX	X or Y > S Reject
11.4.6	MAJOR	LCD GLASS GLASS CRACK	Y Y	Y > (1/2) T Reject
11.4.7	MAJOR	LCD GLASS SCRIBE DEFECT	A + B	 a> L/3 , A>1.5mm. Reject B: ACCORDING TO DIMENSION
11.4.8	MINOR	LCD GLASS CHIPPING (ON THE TERMINAL AREA)	T X	$\Phi = (x+y)/2 > 2.5 \text{ mm}$ Reject
11.4.9	MINOR	LCD GLASS CHIPPING (ON THE TERMINAL SURFACE)	T Y	Y > (1/3) T Reject
11.4.10	MINOR	LCD GLASS CHIPPING	T Z	Y > T Reject

Rev.V6 19/21

12. Handling Precautions

12.1 Mounting method

The LCD panel of YUXIANG TFT module consists of two thin glass plates with polarizes which easily be damaged. And since the module in so constructed as to be fixed by utilizing fitting holes in the printed circuit board.

Extreme care should be needed when handling the LCD modules.

12.2 Caution of LCD handling and cleaning

When cleaning the display surface, Use soft cloth with solvent

[Recommended below] and wipe lightly

- Isopropyl alcohol
- Ethyl alcohol

Do not wipe the display surface with dry or hard materials that will damage the polarizer surface.

Do not use the following solvent:

- Water
- Aromatics

Do not wipe ITO pad area with the dry or hard materials that will damage the ITO patterns Do not use the following solvent on the pad or prevent it from being contaminated:

- Soldering flux
- Chlorine (CI), Sulfur (S)

If goods were sent without being silicon coated on the pad, ITO patterns could be damaged due to the corrosion as time goes on.

If ITO corrosion happen by miss-handling or using some materials such as Chlorine (CI), Sulfur (S) from customer, Responsibility is on customer.

12.3 Caution against static charge

The LCD module use C-MOS LSI drivers, so we recommended that you:

Connect any unused input terminal to Power or Ground, do not input any signals before power is turned on, and ground your body, work/assembly areas, and assembly equipment to protect against static electricity.

12.4 packing

- Module employs LCD elements and must be treated as such.
- Avoid intense shock and falls from a height.
- To prevent modules from degradation, do not operate or store them exposed direct to sunshine or high temperature/humidity

12.5 Caution for operation

- It is an indispensable condition to drive LCD's within the specified voltage limit since the higher voltage then the limit cause the shorter LCD life.
- An electrochemical reaction due to direct current causes LCD's undesirable deterioration, so that the use of direct current drive should be avoided.
- Response time will be extremely delayed at lower temperature then the operating temperature range and on the other hand at higher temperature LCD's how dark color in them. However those phenomena do not mean malfunction or out of order with LCD's, which will come back in the specified operation temperature.
- If the display area is pushed hard during operation, some font will be abnormally displayed but it resumes normal condition after turning off once.
- Slight dew depositing on terminals is a cause for electro-chemical reaction resulting in terminal open circuit.

Rev.V6 20/21

Usage under the maximum operating temperature, 50%Rh or less is required.

12.6 storing

In the case of storing for a long period of time for instance, for years for the purpose or replacement use, the following ways are recommended.

- Storage in a polyethylene bag with the opening sealed so as not to enter fresh air outside in it. And with no desiccant.
- Placing in a dark place where neither exposure to direct sunlight nor light's keeping the storage temperature range.
- Storing with no touch on polarizer surface by the anything else.
 [It is recommended to store them as they have been contained in the inner container at the time of delivery from us

12.7 Safety

- It is recommendable to crash damaged or unnecessary LCD's into pieces and wash off liquid crystal by either of solvents such as acetone and ethanol, which should be burned up later.
- When any liquid leaked out of a damaged glass cell comes in contact with your hands, please wash it off well with soap and water

13. Precaution for Use

13.1

A limit sample should be provided by the both parties on an occasion when the both parties agreed its necessity. Judgment by a limit sample shall take effect after the limit sample has been established and confirmed by the both parties.

13.2

On the following occasions, the handing of problem should be decided through discussion and agreement between responsible of the both parties.

- When a question is arisen in this specification
- When a new problem is arisen which is not specified in this specifications
- When an inspection specifications change or operating condition change in customer is reported to YUXIANG TFT, and some problem is arisen in this specification due to the change
- When a new problem is arisen at the customer's operating set for sample evaluation in the customer site.

14. Packing Method

TBD

Rev.V6 21/21