



SPECIFICATION FOR TFT LCD MODULE

CUSTOMER : _____

CUSTOMER MODULE : _____

HL MODEL : HG101WX053

☐ Preliminary Specification

☒ Final Specification

Customer Confirmation column:

Approved by : _____ Dept. : _____ Data : _____

Please return one of the copies of the specification with your signature to us within two weeks after you receive this document. If it is not returned, we will assume that you agree to the entire contents of this specification document.

Designed by	Checked by	Approved by



REVISION STATUS

Version	Revise Date	Page	Content	Modified by
V1.0	2022-04-21	-	First Issued.	M



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1. GENERAL DESCRIPTION

1.1 DESCRIPTION

HG101WX053 is a color active matrix thin film transistor (TFT) IPS liquid crystal display(LCD) that uses amorphous silicon TFT as a switching device. It is composed of a TFT LCD panel,DriverIC, FPC and Backlight, This TFT LCD has a 10.1-inch diagonally measured active display area with WSVGA resolution (800 vertical by 1280 horizontal pixel array).

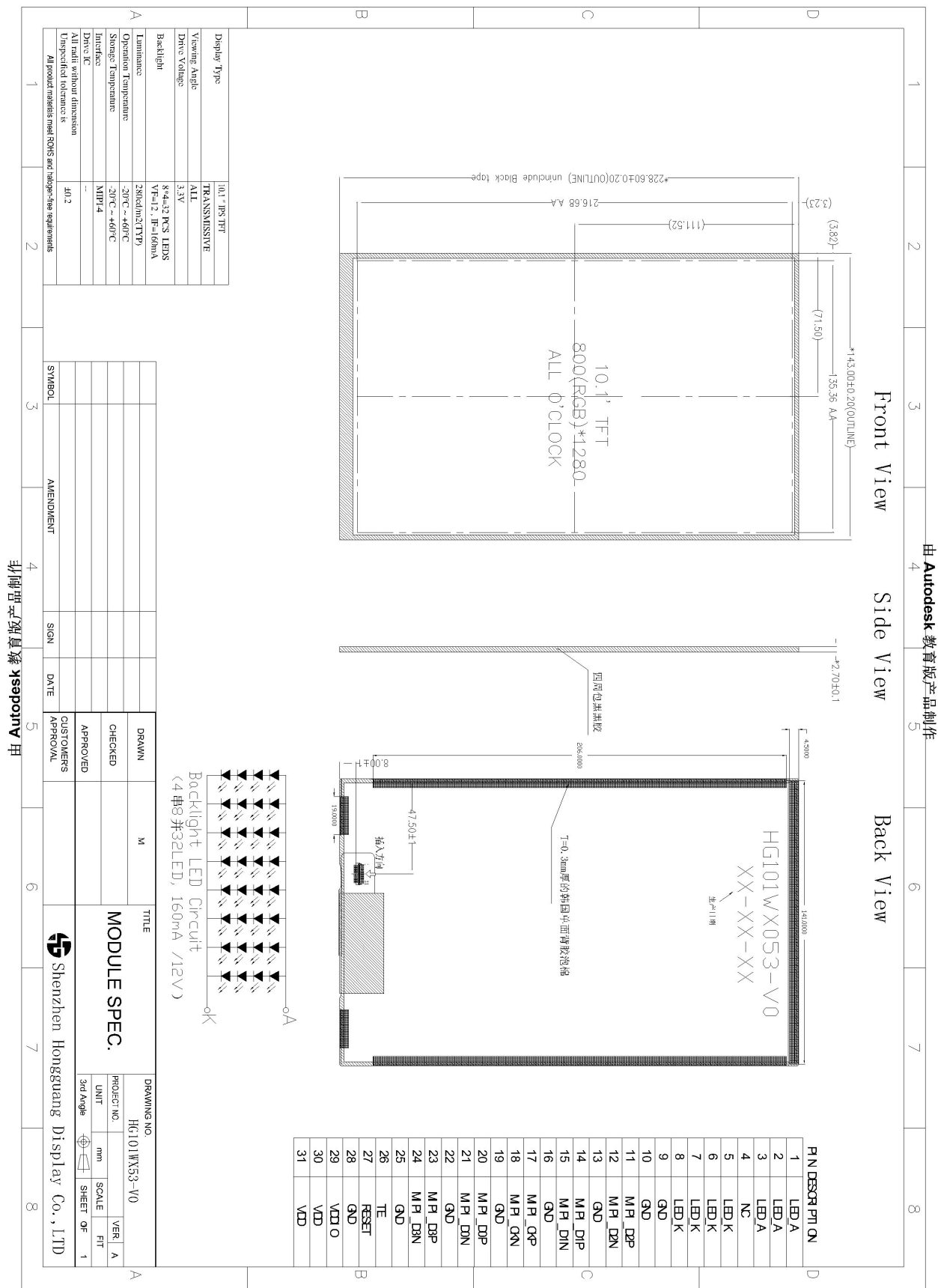
1.2 FEATURES:

No.	Item	Specification	Unit
1	Panel Size	10.1"	inch
2	Number of Pixels	800×RGB (3) ×1280	pixels
3	Active Area	135.36(H)×216.576(V)	mm
4	Outline Dimension	143(W)×228.6(H)×2.7(D)	mm
5	Number of Colors	16.7M	-
6	Viewing Direction	ALL	-
7	Luminance (cd/m ²)	250(TYP.)	nit
8	Interface	MIPI	-
9	Backlight	32-LEDs (White)	-
10	Operation Temperature	-20~60	°C
11	Storage Temperature	-20~60	°C
12	Weight	TBD	g
13	Recommend SourceIC	JD9365DA	



2. MECHANICAL SPECIFICATION

由 Autodesk 教育版产品制作





3. PIN DESCRIPTION

No.	Symbol	Function
1	LEDA	LED Anode
2	LEDA	LED Anode
3	LEDA	LED Anode
4	NC	No connection
5	LEDK	LED Cathode
6	LEDK	LED Cathode
7	LEDK	LED Cathode
8	LEDK	LED Cathode
9	GND	Ground
10	GND	Ground
11	D2P	MIPI differential data input
12	D2N	MIPI differential data input
13	GND	Ground
14	D1P	MIPI differential data input
15	D1N	MIPI differential data input
16	GND	Ground
17	DCLKP	MIPI differential clock input
18	DCLKN	MIPI differential clock input
19	GND	Ground
20	D0P	MIPI differential data input
21	D0N	MIPI differential data input
22	GND	Ground
23	D3P	MIPI differential data input
24	D3N	MIPI differential data input
25	GND	Ground
26	TE	NC
27	RESET	Global reset pin, Active low
28	GND	Ground
29	VDDIO	Power supply 1.8V
30	VDD	Power supply 3.3V
31	VDD	Power supply 3.3V



4. Electrical Characteristics

4.1 TFT LCD MODULE

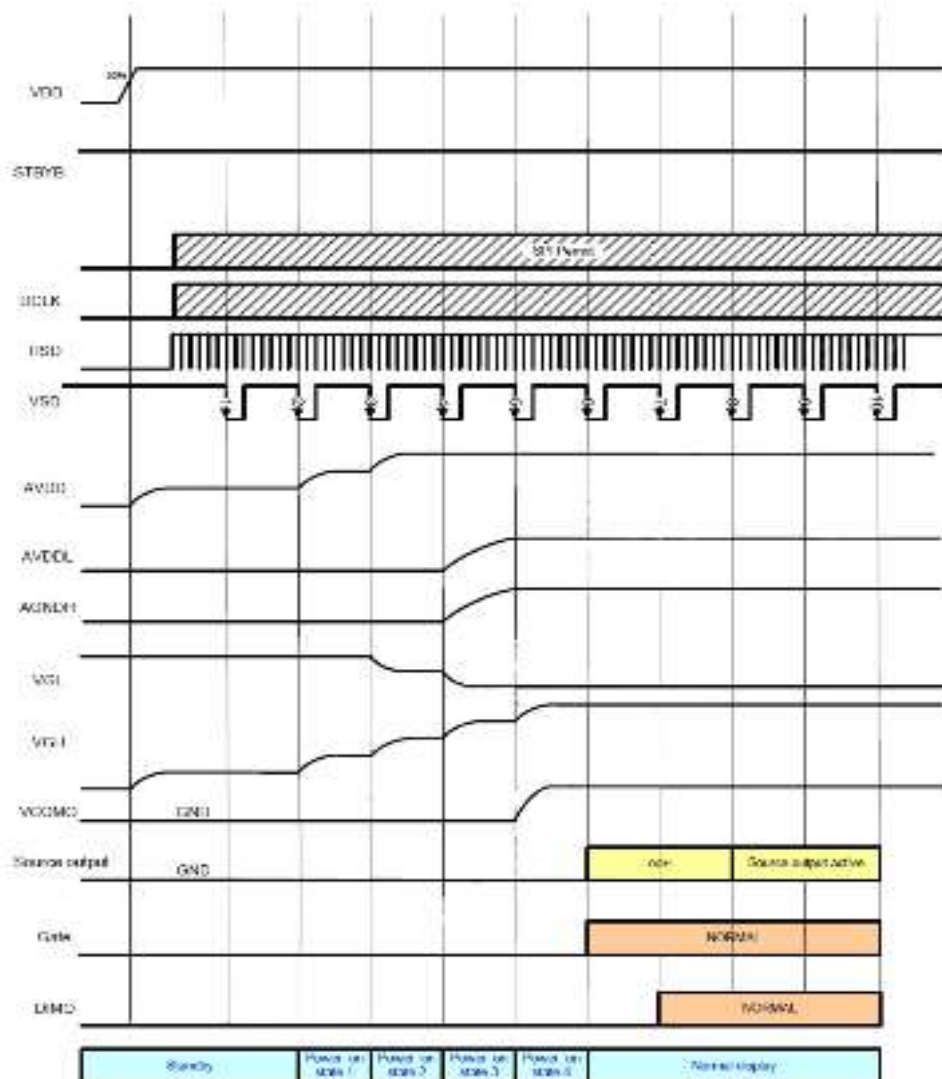
Parameter	Symbol	Min.	Typ.	Max.	Unit
power supply voltage	VDD		3.3	3.6	V
power supply ripple voltage	VRP			350	mV
power supply current	IDD	--	225	251	mA
Power consumption	PD	--	0.735	0.830	w

4.2 POWER ON/OFF SEQUENCE

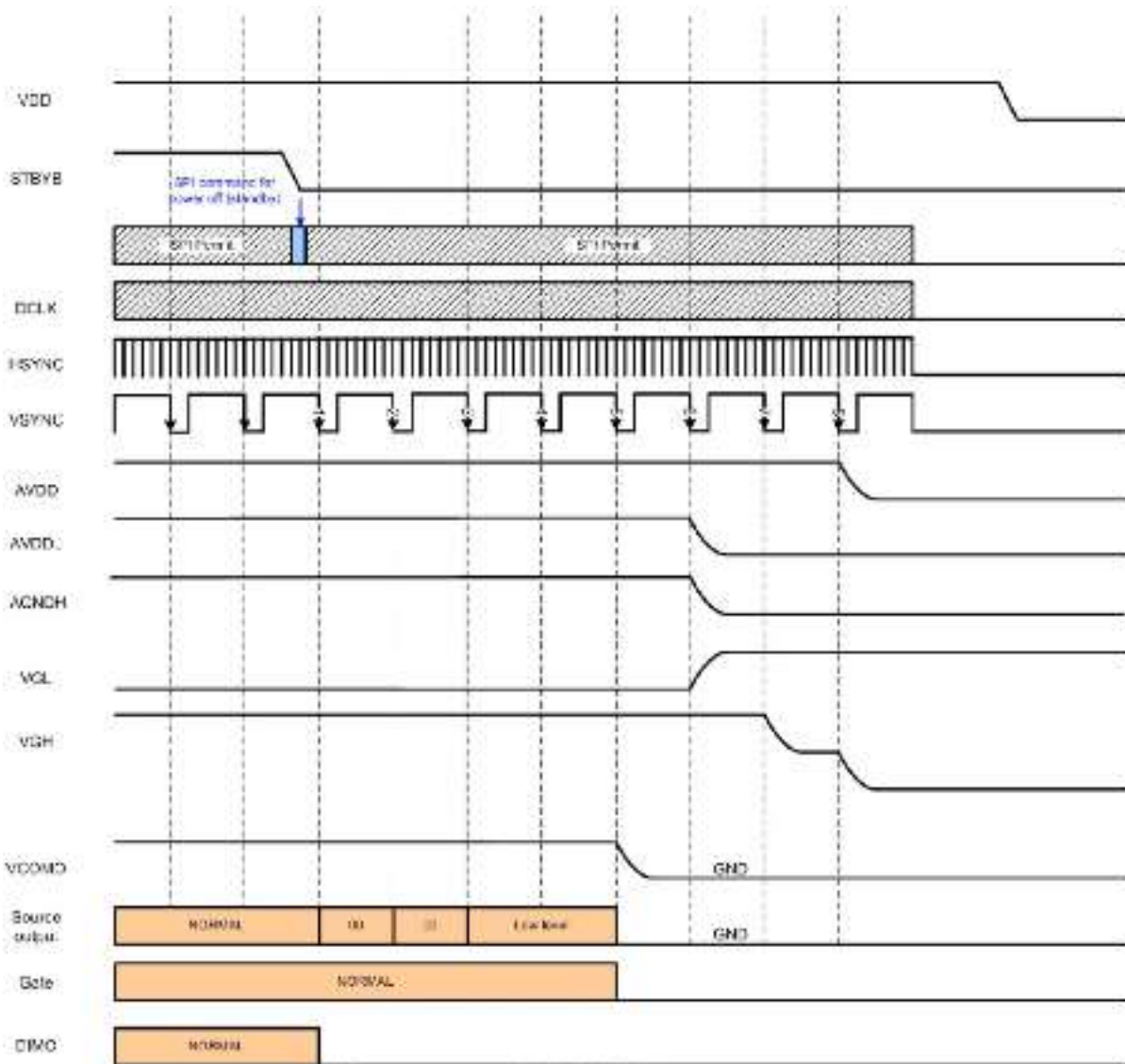
To prevent the device damage from latch up, the power on/off sequence shown below must be followed.

Power on: VDD, GND → AVDD, AGND → V1 to V14

Power off: V1 to V14 → AVDD, AGND → VDD, GND



Power on timing sequence



Power off timing sequence

Note: Low level=3FH, when NBW=L (Normally white)

Low level=00H, when NBW=H (Normally black)

4.3 BACK LIGHT UNIT

Ta=25°C

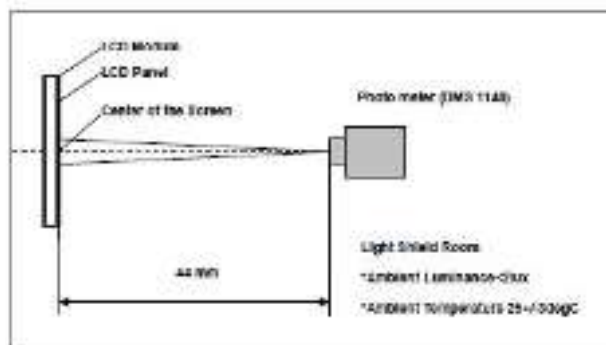
Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	I _{LED}		160		mA	32LEDS
Forward voltage	V _F	10.8	12.0	13.2	V	I _F =160mA 32LEDS
Reverse current	I _R			50	μA	V _R =10V, 1LED
Power dissipation	P _d	1920			mW	27LEDS
Reverse Voltage	V _R	10			V	1LED

5.OPTICAL CHARACTERISTICS

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	800	1000	-		Note1 Note3
Luminance		YL	-	250	-	cd/m2	Note1 Note5
Luminous tolerance		I IV-M point5	75			%	Note1 Note6
		IV-M point13	70				
Response Time		Rising + Falling	-	30	—	ms	Note1 Note4
Viewing Angle[degrees] K=Contrast Ratio>10	Horizontal		75	80		degree	Note1 Note2
	Vertical		75	80			
Color Chromaticity	Red	x	0.588	0.618	0.648		Note1
		y	0.338	0.368	0.398		
	Green	x	0.295	0.325	0.355		
		y	0.573	0.603	0.633		
	Blue	x	0.128	0.158	0.188		
		y	0.066	0.096	0.126		
	White	x	0.274	0.304	0.334		
		y	0.29	0.32	0.35		

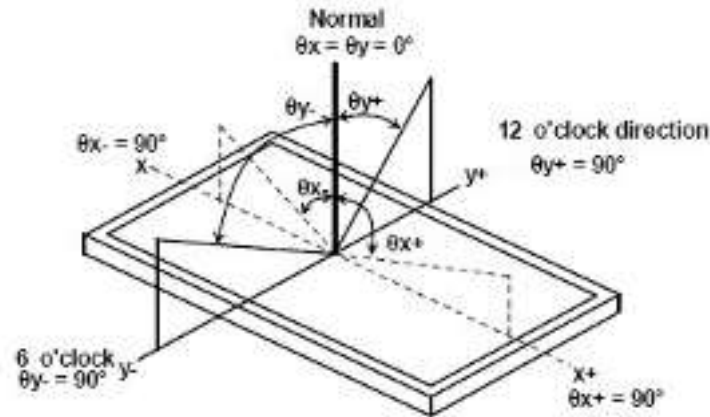
Note1: Measurement Setup

The LCD module should be stabilized at given temperature 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.





Note2:Definition of Viewing Angle



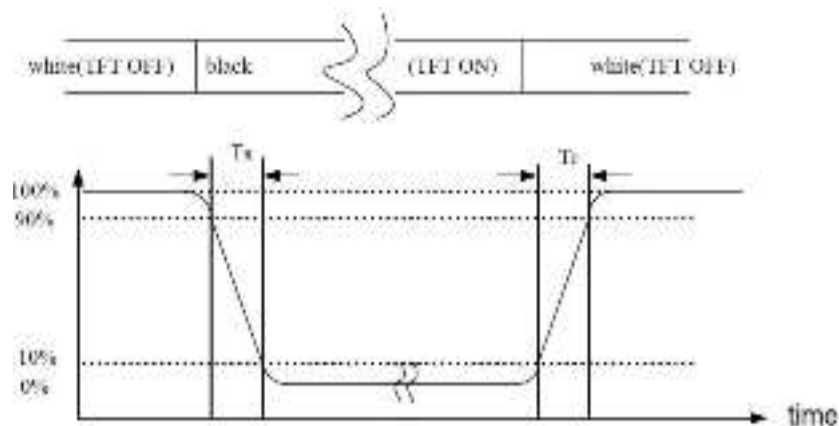
Note3:Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

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

Note4:Definition of Response Time (TR, TF)



Note5:Definition of Luminance White

Measure the luminance of gray level 63 at center point and 5 points.

Center of Luminance = Y1

$$\text{Average Luminance of 5 points} = \frac{Y_1 + Y_2 + Y_3 + Y_4 + Y_5}{5}$$

Note6: Definition of Luminance Uniformity(Variation)

Measure the luminance of gray level 63 at 13 points.

$$\text{Uniformity of 13 points} = \frac{\text{Min Luminance of } Y_1 \sim Y_{13}}{\text{Max Luminance of } Y_1 \sim Y_{13}} \times 100\%$$

$$\text{Uniformity of 5 points} = \frac{\text{Min Luminance of } Y_1 \sim Y_5}{\text{Max Luminance of } Y_1 \sim Y_5} \times 100\%$$



6. RELIABILITY TEST ITEMS

6.1 TEMPERATURE AND HUMIDITY

No	Test Item	Test condition	Criterion
1	High Temperature Storage	60°C±2°C 96H Restore 2H at 25°C Power off	1. After testing, cosmetic and electrical defects should not happen. 2. Total current consumption should not be more than twice of initial value.
2	Low Temperature Storage	-10°C±2°C 96H Restore 2H at 25°C Power off	
3	High Temperature Operation	50°C±2°C 96H Restore 2H at 25°C Power on	
4	Low Temperature Operation	0°C±2°C 96H Restore 4H at 25°C Power on	
5	High Temperature/Humidity Operation	40°C±2°C 90%RH 96H Power on	
6	Temperature Cycle	- 10°C----->50°C 30min 5min 30min after 5 cycle, Restore 2H at 25°C Power off	
7	Vibration Test	10Hz~150Hz, 100m/s ² , 120min	Not allowed cosmetic and electrical defects.
8	Shock Test	Half- sine wave, 300m/s ² , 11ms	
9	ESD Test	Air discharge: +/-6KV, Contact discharge: 2KV	

Note: Operation: Supply 3.3V for logic system.

The inspection terms after reliability test, as below

ITEM	Inspection
Contrast	CR>50%
IDD	IDD<200%
Brightness	Brightness>60%
Color Tone	Color Tone+/-0,05



7. GENERAL PRECAUTION

7.1 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.

7.2 STORAGE CONDITIONS

1. Store the panel or module in a dark place where the temperature is $23\pm5^{\circ}\text{C}$ and The humidity is below $50\pm20\%\text{RH}$.
2. Store in anti-static electricity container.
3. Store in clean environment, free from dust, active gas, and solvent.
4. Do not place the module near organics solvents or corrosive gases.
5. Do not crush, shake, or jolt the module.

7.3 HANDLING PRECAUTIONS

- (1) Avoid static electricity which can damage the CMOS LSI.
- (2) The polarizing plate of the display is very fragile. So, please handle it very carefully.
- (3) Do not give external shock.
- (4) Do not apply excessive force on the surface.
- (5) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (6) Do not use ketone solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (7) Do not operate it above the absolute maximum rating.
- (8) Do not remove the panel or frame from the module.
- (9) When the module is assembled, it should be attached to the system firmly, Be careful not to twist and bend the module.
- (10) Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining and discoloration may occur.
- (11) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

7.4 WARRANTY

- (1) The period is within twelve months since the date of shipping out under normal using and storage conditions.
- (2) Do not repaired or modified the LCM. It may cause function to lose efficacy, Starry does not warrant the LCM.
- (3) All process and material comply ROHS.