深圳市星百亿电子有限公司

PRODUCT SPECIFICATIONS

For Customer:_____

Customer Model No._____

Module No.: XBY101MBC615-3900AB0__

Date : 2017.11.05

Version :V0

■Preliminary Product SPEC

☐ Final Product SPEC

For Customer's Acceptance:

Approved By	Comment

Approved by DIV	Reviewed by QA	Reviewed by RD

. Revision Record

Date	Rev.No.	Page	Revision Items	Prepared
2017.11.05	**V0**		**The first release**	**Wang**

Table of Contents

No.	Item	Page
1	General Specifications	
2	Outline.Drawing	
3	Pin Assignment	
4	Absolute Maximum Ratings	
5	Electrical Specifications and Instruction Code	
6	Optical Characteristics	
7	Reliability Test Items and Criteria	
8	Quality Level	
9	Precautions for Use of LCD Modules	

1. General Specifications

XBY101MBC615-3900AB0 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 RGB x 600 pixels and can display up to 16M colors. This product accords with RoHS .

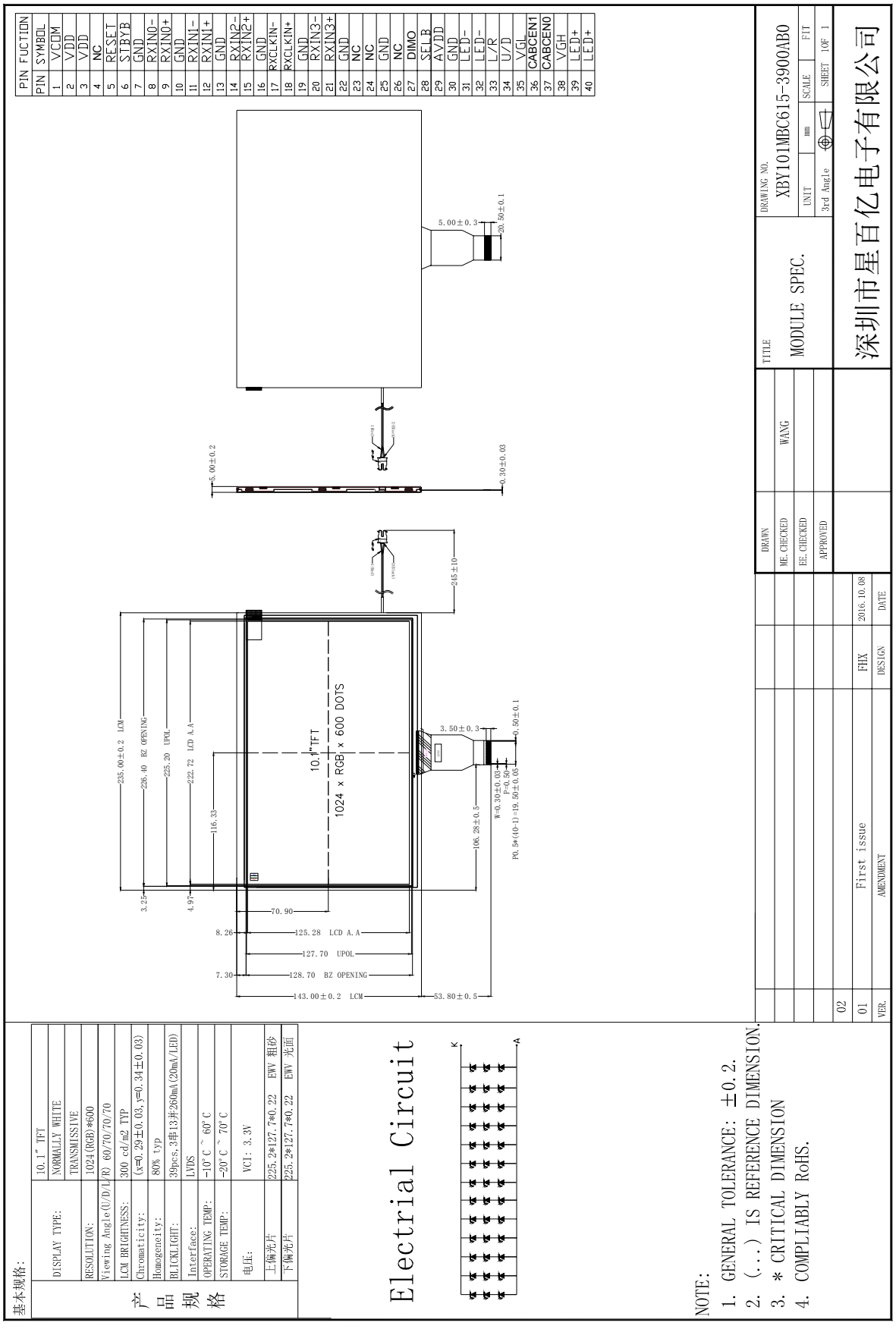
Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16M		1
Operating temperature	-10~+60	℃	
Storage temperature	-20~+70	℃	
Module size	235*143*5.0	mm	2
Active Area(W×H)	222.72*125.28	mm	
Number of Dots	1024×RGB×600	dots	
Backlight	3*13-LEDs (white)	pcs	
Data Transfer	LVDS	-	

environmental criterion

Note 1: Color tune is slightly changed by temperature and driving voltage.

Note 2: Without FPC and Solder.

2.Outline.Drawing



3.Pin Assignment

Pin No.	Symbol	Function	Remark
1	VCOM	Common Voltage	
2	VDD	Power Supply	
3	VDD	Power Supply	
4	NC	NC	
5	RESET	Global reset pin	
6	STBYB	Standby mode	
7	GND	Ground	
8	RXIN0-	Data lane0 input	
9	RXIN0+		
10	GND	Ground	
11	RXIN1-	Data lane1 input	
12	RXIN0+		
13	GND	Ground	
14	RXIN2-	Data lane2 input	
15	RXIN2+		
16	GND	Ground	
17	RXCLKIN-	CLK input	
18	RXCLKIN+		
19	GND	Ground	
20	RXIN3-	Data lane3 input	
21	RXIN3+		
22	GND	Ground	
23-24	NC	NC	
25	GND	Ground	
26	NC	NC	
27	DIMO	NC	
28	SELB	6-bit/8bit input select SELB=L,8-bit；SELB=H,6-bit	
29	AVDD	Power for Analog Circuit	
30	GND	Ground	
31-32	LED-	LED Cathode	
33	SHLR	Source Right or Left sequence	
34	UPDN	Gate Up or Down scan control	
35	VGL	Gate OFF Voltage	
36	CABCCEN1	NC	
37	CABCCEN0	NC	
38	VGH	Gate ON Voltage	
39-40	LED+	LED Anode	

4. Absolute Maximum Ratings(Ta=25℃)

4.1 Electrical Absolute Maximum Ratings.(Vss=0V ,Ta=25℃)

Item	Symbol	Min.	Typ.	Max	Unit	Note
Power Supply Voltage	V_{DD}	-	3.3	-	V	1，2
	AVDD	-	9.6	-		
	VGH	-	16	-		
	VGL	-	-8	-		
	VCOM	-	3.7	-		
Logic Signal Input	V_{IO}	-0.3	1.8	2.0	V	
Current of LED	ILED	0	260	-	mA	

Notes:

1. If the module is above these absolute maximum ratings. It may become permanently damaged. Using the module within the following electrical characteristic conditions are also exceeded, the module will malfunction and cause poor reliability.
2. Please be sure users are grounded when handing LCD Module.

4.2 Environmental Absolute Maximum Ratings.

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-20℃	70℃	-10℃	60℃	1,2
Humidity	-	-	-	-	3

1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature.
   The phenomenon is reversible.
3. Ta<=40℃:85%RH MAX.
   Ta>=40℃:Absolute humidity must be lower than the humidity of 85%RH at 40℃.

5. Electrical Specifications and Instruction Code

5.1 Electrical characteristics(Vss=0V ,Ta=25℃)

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Note
Power supply		VCC	Ta=25℃	-	1.8	2.0	V	
Input voltage	'H'	V_{IH}	V_{CC}=2.8V	0.8V_{CC}	-	V_{CC}	V	
	'L'	V_{IL}	V_{CC}=2.8V	0	-	0.2V_{CC}	V	
Current Consumption		I_{CC1}	Normal mode	-	-	-	mA	2
		I_{CC2}	Sleep mode	-	0.03	0.09	mA	2

Note:

1:When an optimum contrast is obtained in transmissive mode.

2: Tested in 8×6 chessboard pattern.

5.2 LED backlight specification(VSS=0V ,Ta=25℃)

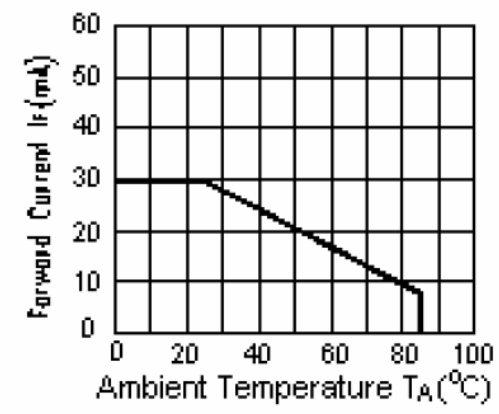
Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage		-	-		9.6		V	1
Supply current		I_f	-	-	260	-	mA	2
Forward current	Normal	I_{pn}	3*13-chip series	-	260	-	mA	
	Dimming	I_{pd}		-	-	-		

Note:

1: V_{LED}=V_{LED}(+)-V_{LED}(-).

2:The current of LED is 20mA.
A LED drive in constant current mode is recommended.

3: LED power consumption is around 2.496W.



6. Optical Characteristics

Item	Symbol		Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	250	300	-	Cd/m²	1
Uniformity	⊿Bp			80	-	-	%	1,2
Viewing Angle	3:00		Cr≥10	-	70	-	Deg	3
	6:00			-	70	-		
	9:00			-	70	-		
	12:00			-	60	-		
Contrast Ratio	Cr		θ=0° Φ=0°		300	-	-	4
Response Time	T_r+T_f				25	40	ms	5
Color of CIE Coordinate	W	x	θ=0° Φ=0°	TYP -0.03	0.290	TYP +0.03	-	1,6
		y			0.340		-	
	R	x			0.632		-	
		y			0.311		-	
	G	x			0.297		-	
		y			0.536		-	
	B	x			0.140		-	
		y			0.154		-	

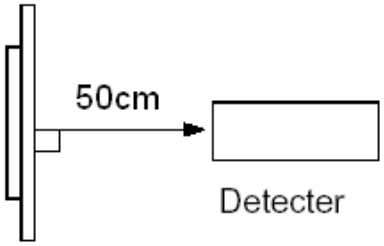
Note：The parameter is slightly changed by temperature, driving voltage and materiel

Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment PR-705 (Φ8mm)

Measuring condition:

- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25℃.
- Adjust operating voltage to get optimum contrast at the center of the display.

Measured value at the center point of LCD panel after more than 5 minutes while backlight turning on.

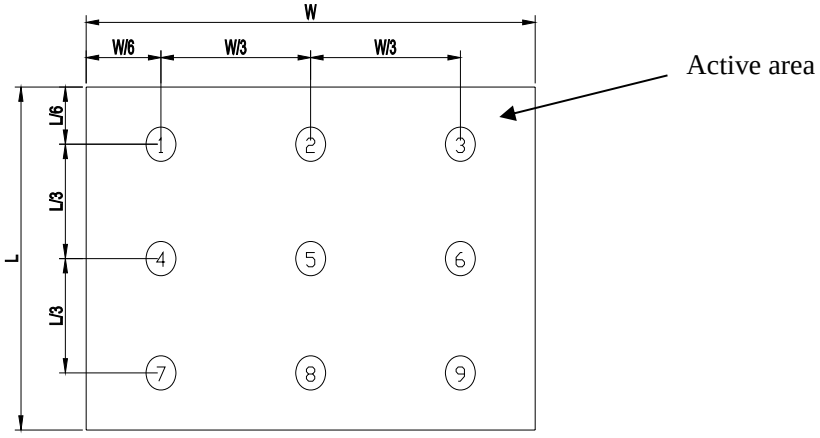


Note 2: The luminance uniformity is calculated by using following formula.

⊿Bp = Bp (Min.) / Bp (Max.)×100 (%)

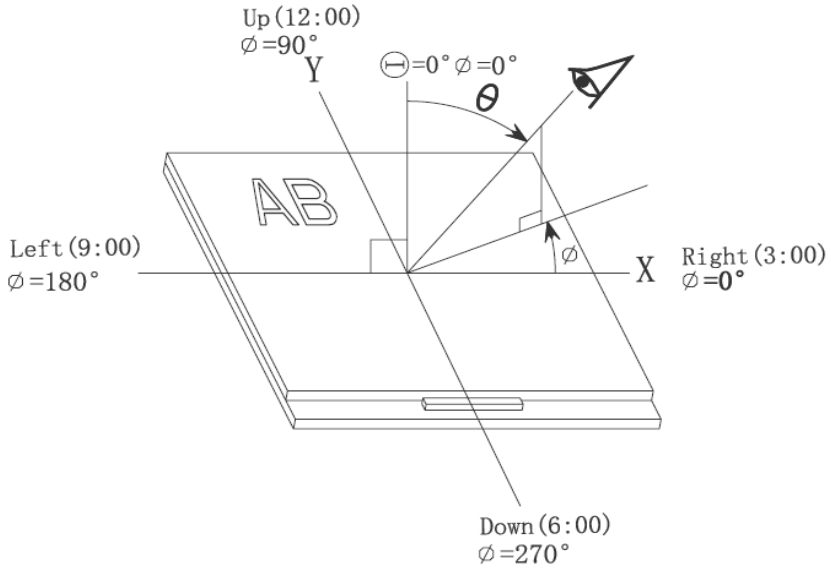
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots.

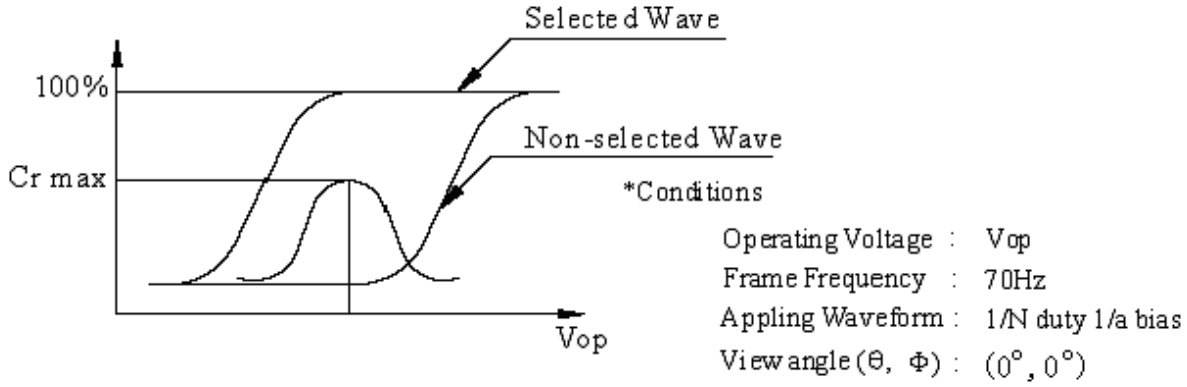


Note 3: The definition of viewing angle:

Refer to the graph below marked by *θ* and *Φ*



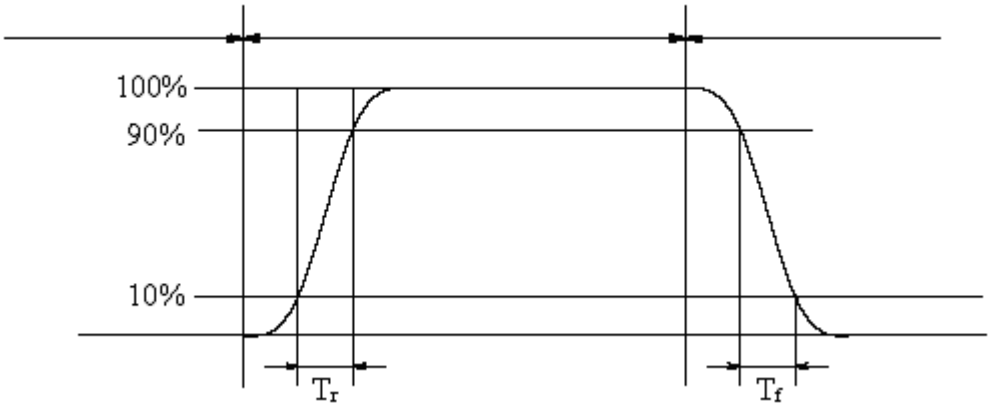
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



$$Contrast\ ratio(Cr) = \frac{Brightness\ of\ selected\ dots}{Brightness\ of\ non-selected\ dots}$$

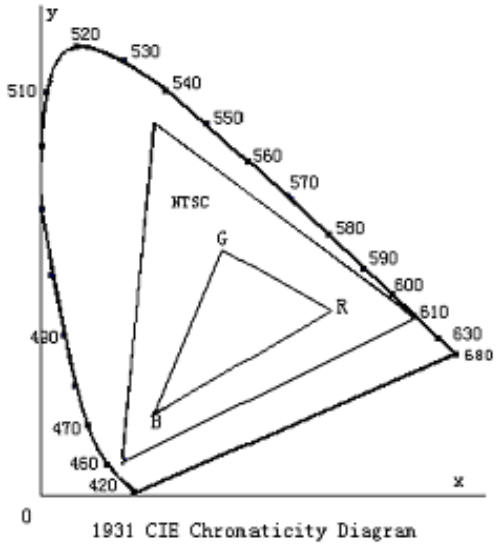
Note 5: Definition of Response time. (Test LCD using DMS501):

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



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.

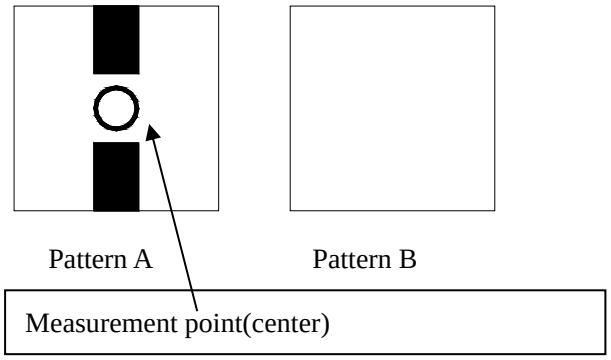


Color gamut:

$$\mathbf{S = \frac{area\ of\ RGB\ triangle}{area\ of\ NTSC\ triangle} \times 100\%}$$

Note 7: Definition of cross talk.

Cross talk ratio(%)=|pattern A Brightness-pattern B Brightness|/pattern A Brightness*100



Electric volume value=3F+/-3Hex

7. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	80℃±2℃ 96H Restore 2H at 25℃ 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	-30℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	70℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	-20℃±2℃ 96H Restore 4H at 25℃ Power on	
5	High Temperature/Humidity Operation	60℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	-30℃←————→80℃ 30min 5min 30min after 5 cycle, Restore 2H at 25℃ 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:+/-8KV, Contact discharge:4KV	

Note: Operation: Supply 2.8V 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

8 Quality level

As Quality department <<Product Cosmetic SPEC>>

9. Precautions for Use of LCD Modules

9.1 Handling Precautions

9.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

9.1.2 If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

9.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

9.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

9.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

— Isopropyl alcohol

— Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

— Water

— Ketone

— Aromatic solvents

9.1.6 Do not attempt to disassemble the LCD Module.

9.1.7 If the logic circuit power is off, do not apply the input signals.

9.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

a. Be sure to ground the body when handling the LCD Modules.

b. Tools required for assembly, such as soldering irons, must be properly ground.

c. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

d. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

9.2 Storage precautions

9.2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

9.2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃

Relatively humidity: ≤80%

9.2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

9.2.4 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.