



深圳市高信技术有限公司

Shenzhen Gaoxin Technology Co., Ltd

SPECIFICATION

FOR

LCD MODULE

Customer : _____

Customer P/N _____

Model No. : **GX088-40MB-A1**

Version : **V00**

Date : **2022-05-23**

Final Approval by Customer

LCM Machinery OK <input type="checkbox"/>	Checked By	
LCM Display OK <input type="checkbox"/>	Checked By	
LCM NG <input type="checkbox"/> LCM OK <input type="checkbox"/>	Approved By	

ShenZhen GX Confirmed :

DESIGN	CHECK	APPROVAL

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Revision History

Rev	Issued Date	Description	Page	Editor
1.0	Jun.22, 2022	First release	All	



1 General Specifications

Feature		Specifications
Display Spec.	LCD type	8.8inch
	Resolution (H*V)	480(RGB)×1920
	Technology Type	a-Si TFT
	Pixel Configuration	R.G.B. Vertical Stripe
	Display Mode	Normally Black
	Viewing Direction	ALL
	Gray Scale Inversion Direction	/
Mechanical Characteristics	OutlineDimensions (W x H x T) (mm)	64.05*231.1*4.75
	Active Area(mm)	54.72*218.88
	With /Without Touch screen	Without
	Match Connector Type	0.5 Pitch 40 Pin
	Backlight Type	White LED
	Weight (g)	TBD
Electrical Characteristics	Interface	MIPI
	Number of color	
	Driver IC	OTA7290B

Note 1:



2 Pin Assignment

NO.	PIN NAME	Description
1	GND	Ground
2	D0P	DSI-D0+ data signals
3	D0N	DSI-D0- data signals
4	GND	Ground
5	D1P	DSI-D1+ data signals
6	D1N	DSI-D1- data signals
7	GND	Ground
8	CLKP	DSI-Clock+ signals
9	CLKN	DSI-Clock- signals
10	GND	Ground
11	D2P	DSI-D2+ data signals
12	D2N	DSI-D2- data signals
13	GND	Ground
14	D3P	DSI-D3+ data signals
15	D3N	DSI-D3- data signals
16	GND	Ground
17	GND	Ground
18	IOVCC	Power Supply 1.8V
19	IOVCC	Power Supply 1.8V
20	REFCLK/NC	reference clock/NC
21	SDA	Data signal Dummy
22	SCL	Clock signal Dummy
23	BIST	Built-in Self Test
24	RSTB	LCM reset signals
25	STBYB	Touch Interrupt Dummy
26	AVDD/ NC	Touch IIC Data signal Dummy
27	GND	Touch IIC Clock signal Dummy
28	K	Touch Reset Signal Dummy
29	K	Touch Power supply Dummy
30	GND	Touch Power supply Dummy
31	VGL/NC	Gate OFF Voltage/NC
32	GND	Touch Power supply Dummy
33	GND	Touch Power supply Dummy
34	VGH/NC	Gate ON Voltage/NC
35	LEDA	LED anode
36	LEDA	LED anode
37	TE	Tearing effect output
38	VCI	Power Supply 3.3V
39	VCI	Power Supply 3.3V
40	VCOM/NC	VCOM voltage/NC

Note1: I/O definition: I-----Input O---Output P----Power/Ground



3 Absolute Maximum Ratings

GND=0V, Ta= 25℃

Item	Symbol	Value	Unit
Power supply voltage for logic	V _{CI}	-0.5~4	V
Input voltage	V _{in}	V _{VCI} +0.3	V
Operating temperature	T _{opr}	-20 to 70	°C
Storage temperature	T _{stg}	-30 to 80	°C

4 Electrical Characteristics

4.1 Driving TFT LCD Panel

GND=0V, Ta=25℃

Item	Symbol	Min	Typ	Max	Unit	Remark
Power & Operation Voltage						
Digital supply Voltage	V _{CI}	2.7	3.3	3.6	V	
TCON supply Voltage	IOVCC	1.4	1.5	1.6	V	
MIPI supply Voltage	VCC_IF	1.4	1.5	1.6	V	
Input /Output Voltage						
Logic Low level input voltage	V _{IL}	-	-	550	mV	
Logic High level input voltage	V _{IH}	880	-	lovcc	mV	
Vcom operation voltage	V _{COM}	4.5	4.8	5.2	V	
TFT Gage on Voltage	V _{GH}	-	18	-	V	
TFT Gage off Voltage	V _{GL}	-	-10	-	V	
TFT Avdd Voltage	AVDD	7.0	11.3	11.8	V	

Note: Voltage greater than above may damage the module.

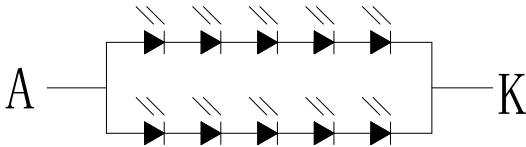
All voltages are specified relative to VSS=0V.

4.2 Driving Backlight



Item	Symbol	Min	Typ	Max	Unit	Remark
Forward Current	I _F	--	180	-	Ma	
Forward Voltage	V _F	-	15	-	V	
Connection mode	P	--	5S2P	--		
LED number	/		10		pcs	
LED life time		-	20000		Hrs	

Note1: Optical performance should be evaluated at Ta=25℃ only .If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

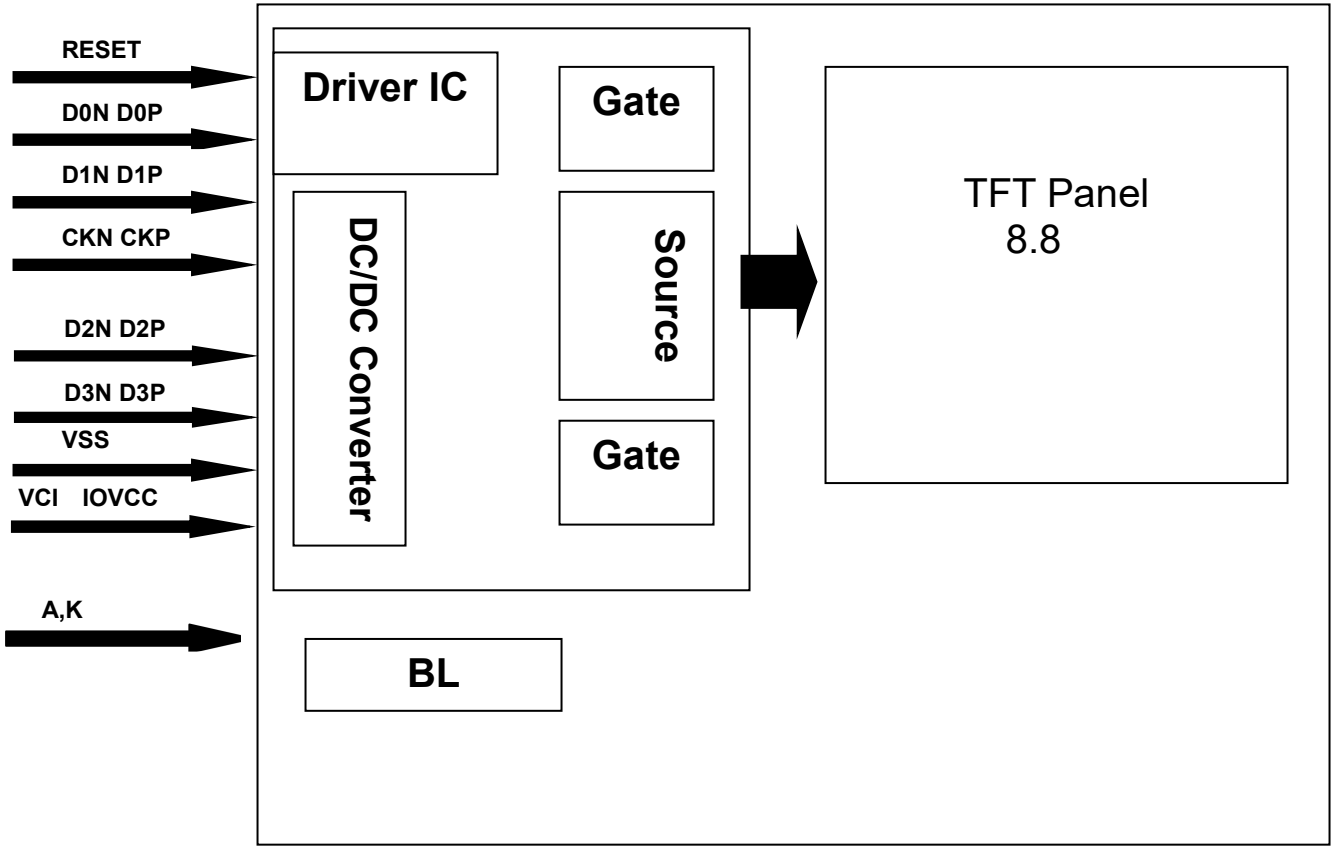


I_f=180mA, V_f=15V (TYP)

背光电路图



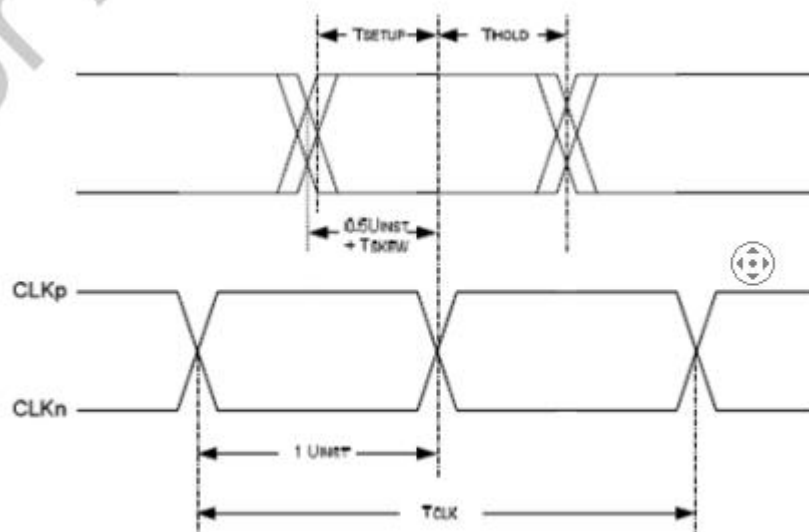
4.3 Block Diagram





5 INTERFACE TIMING

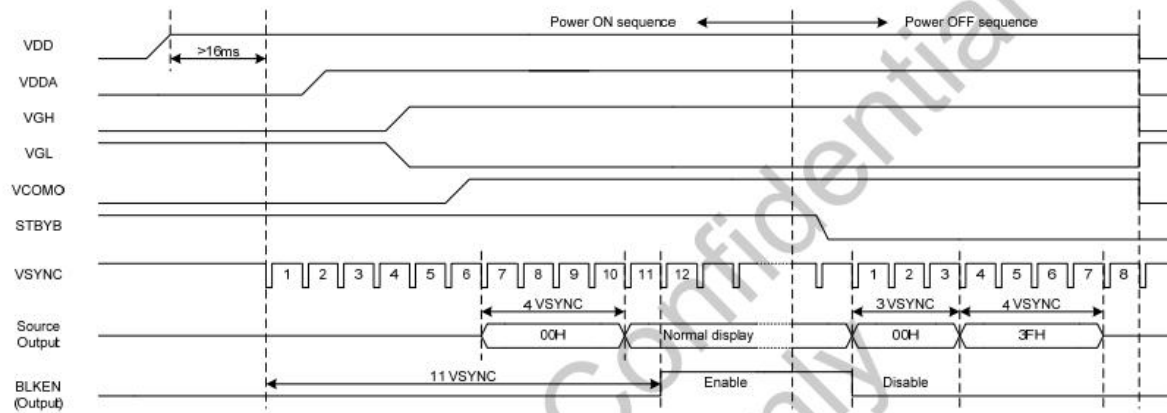
5.1 System Bus Read/Write Characteristics.



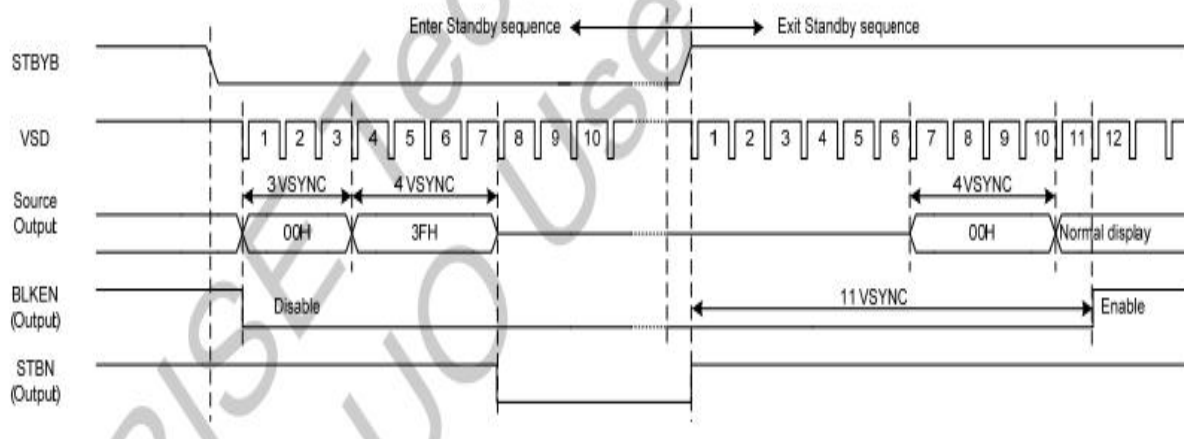
Parameter	Symbol	Rating			Unit	Note
		Min	Typ	Max		
Input pulse rejection	e_{SPIKE}	-	-	300	V-ps	1,2,3
Minimum pulse width response	T_{MIN-RX}	20	-	-	ns	
Peak interference amplitude	V_{INT}	-	-	200	mV	
Interference frequency	f_{INT}	450	-	-	MHz	
Logic 1 input voltage	V_{IH}	880	-	-	mV	
Logic 0 input voltage, not in ULP State	V_{IL}	-	-	550	mV	
Logic 0 input voltage, ULP State	$V_{IL-ULPS}$	-	-	300	mV	
Input Hysteresis	V_{HYST}	25	-	-	mV	
Logic 1 contention threshold	V_{IHCD}	450	-	-	mV	
Logic 0 contention threshold	V_{ILCD}	-	-	200	mV	



Power-On/Off Timing Sequence:



Enter and Exit Standby Mode Sequence:





Ta=25℃

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles	θT	$CR \geq 10$	75	80	-	Degree	Note 2
	θB		75	80	-		
	θL		75	80	-		
	θR		75	80	-		
Contrast Ratio	CR	$\theta=0^\circ$	800	1000	-	-	Note1 Note3
Transmittance (with Polarizer)	T (%)		4.03	4.53			
Response Time	T_{ON}	25℃	-	30	40	ms	Note1 Note4
	T_{OFF}						
Uniformity	U	-	70	80	-	%	Note1 Note6
NTSC	-	-	-	70	-	%	Note 5
Luminance	L			300	-	cd/m ²	Note1 Note7

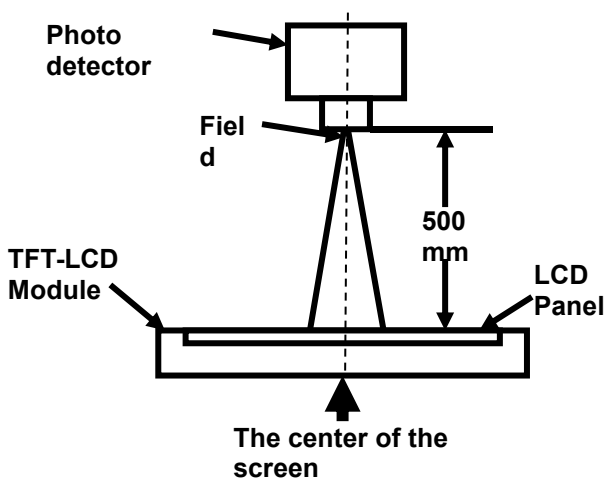
Test Conditions:

1. $V_F=15\text{ V}$, $I_F=180\text{mA}$, the ambient temperature is 25℃.
2. The test systems refer to Note 1 and Note 2.



Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	SR-3A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	BM-7A	2°

Note 2: Definition of viewing angle range and measurement system.

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

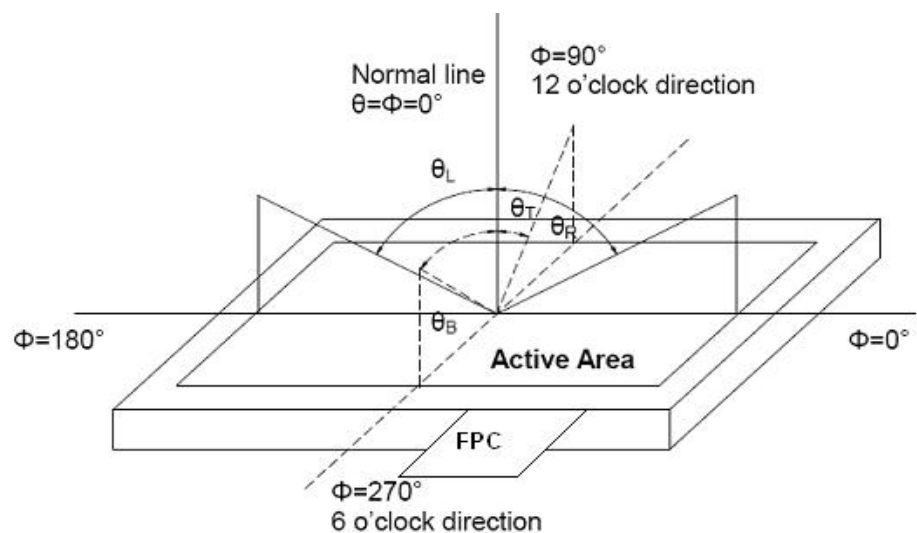


Fig. 1 Definition of viewing angle



Note 3: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

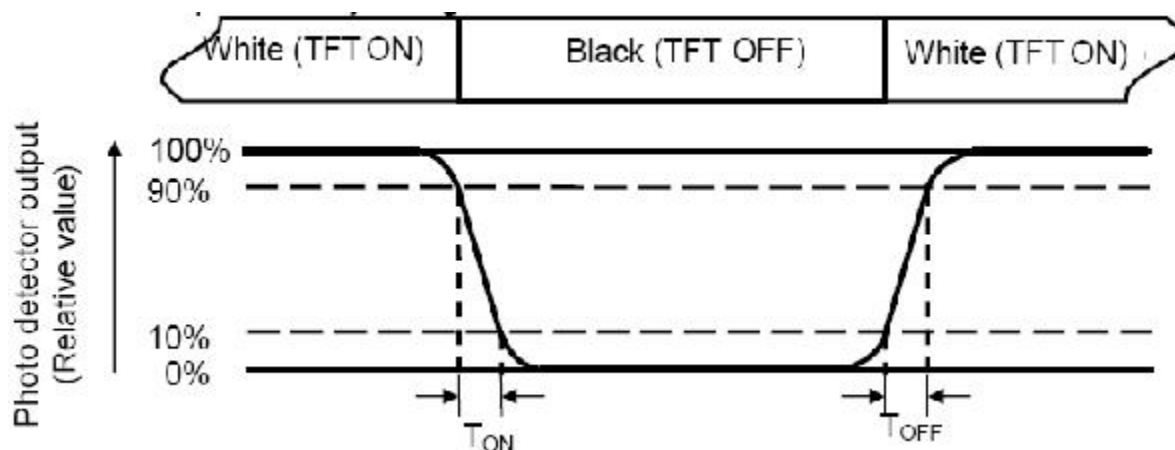
“White state “:The state is that the LCD should be driven by Vwhite.

“Black state”: The state is that the LCD should be driven by Vblack.

Vwhite: To be determined Vblack: To be determined.

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.



Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity (U) = L_{min} / L_{max}

L-----Active area length W----- Active area width

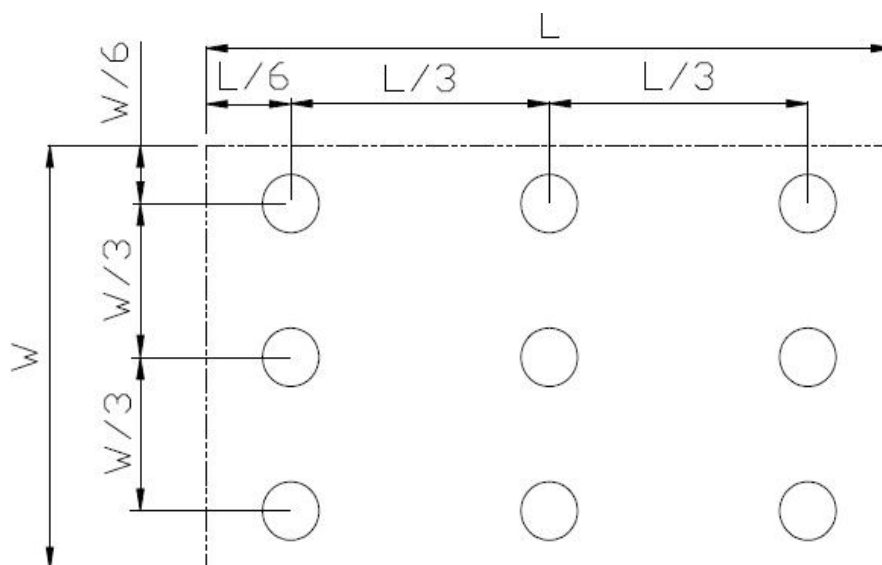


Fig. 2 Definition of uniformity

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

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

Note 7: Definition of Luminance:

Measure the luminance of white state at center point.



7 Environmental / Reliability Test

Item	Condition	Time (hrs)	Assessment
High temp. Storage	80°C	120	No abnormalities in functions and appearance
High temp. Operating	70°C	120	
Low temp. Storage	-30°C	120	
Low temp. Operating	-20°C	120	
Humidity	60°C/ 90%RH	120	
Thermal Shock(Non-operation)	-20°C ← 25°C →70°C (0.5 hour ← 5 min → 0.5 hour)	10cycles	

Remark:

- 1.The test samples should be applied to only one test item.
- 2.Sample size for each test item is 1~10pcs.
- 3.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.



8 Mechanical Drawing

Rev. 1.0



9 Precautions For Use of LCD Modules

9.1 Handling Precautions

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

9.1.1.2 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.

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

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

9.1.1.5 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

9.1.1.6 Do not attempt to disassemble the LCD Module.

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

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

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

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

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

9.1.1.12 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.

9.1.1.13 Storage precautions

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

9.1.1.15 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:

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

9.2 Transportation Precautions

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