PRODUCT SPECIFICATIONS

Module No.: NTD-4.3S480272R100D

TFT(Thin-Film-Transistor) Color Liquid Crystal Display Module

General Specification

- 4.3 inch Diagonal
- 480xRGBx272 resolution
- 24 bit RGB interface
- LED Blacklight (600cd/m^2)
- 16.7 M colors Normally Black
- Wide Viewing Angles
- RoHS Compliant

For Customer's Acceptance:

Approved By	Comment

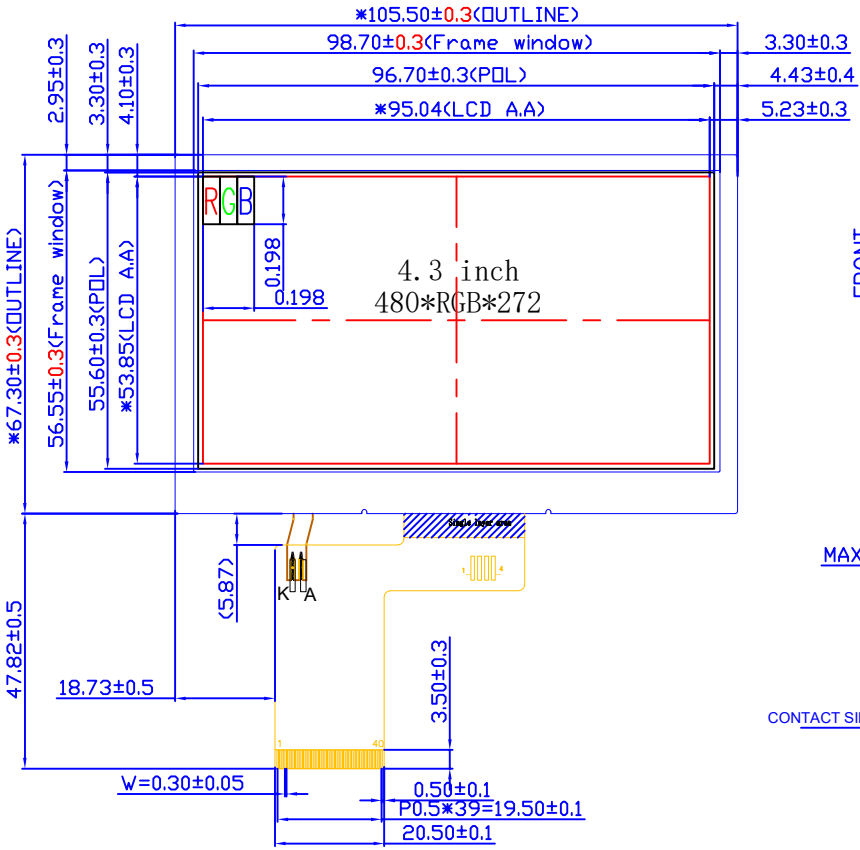
From: NewTrend Display Technology Co., Ltd.

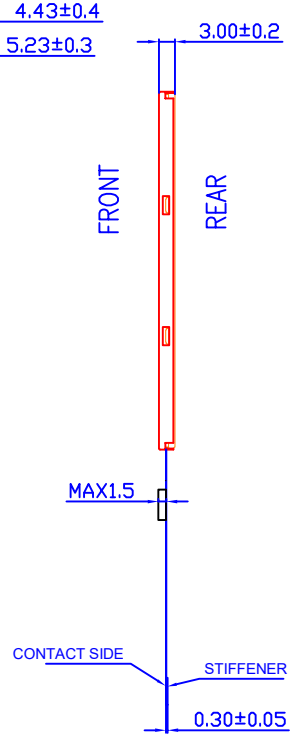
Document Revision History

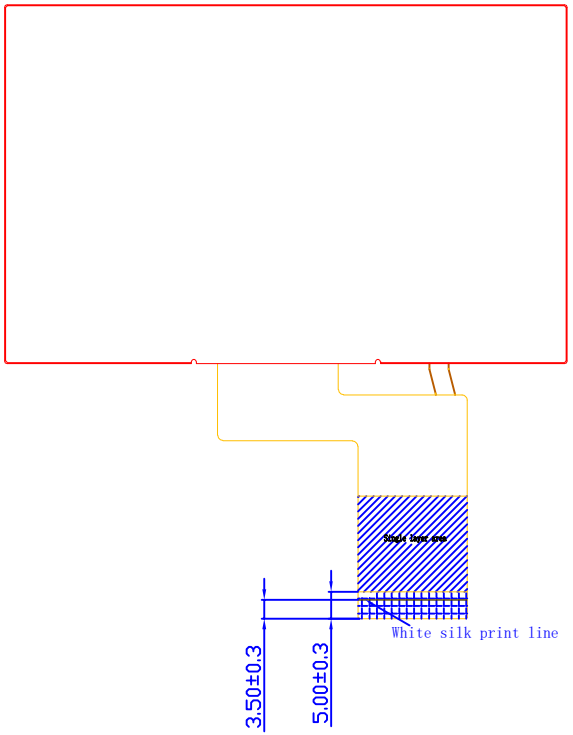
Revision	Date	Description	Changed by
0		Initial Release	

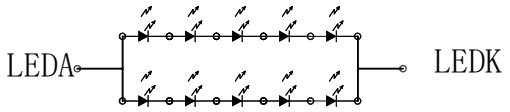
Outline Drawing

SYMBOL	REVISION	DATE
V0	First	









BACKLIGHT DIAGRAM

PIN NO.	SYMBOL
1	VLEDK
2	VLEDA
3	GND
4	VDD
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	DCLK
31	DISP
32	HSYNC
33	VSYNC
34	DE
35	NC
36	GND
37	NC
38	NC
39	NC
40	NC

NOTES:

1. DISPLAY TYPE: 4.3" TFT, Transmissive, Normally Black
2. VIEWING DIRECTION: U/L/D/R 80/80/80/80
3. Top: −20°C~+70°C, Tst: −30°C~+80°C
4. TFT Interface :24−bit RGB Interace, VDD=3.3V
5. LCM Luminance:LED/500cd/m^2(TYP) IF=40mA,VF=16V(TYP)
6. RoHS

UNLESS OTHERWISE SPECIFIED Unit:mm THIRD ANGLE PROJECTION:	**NewTrend Display Technology**
UNLESS OTHERWISE NOTED TOLERANCES :±0.2mm	DRAWING_NO. NTD-4.3S480272R100D

SCALE	SHEET	DRAWN BY:	APPROVED BY:
1:1	1 OF 1		

Pin Description:

Pin No.	Symbol	Function Description	Remark
1	LEDK	LED backlight (Cathode).	
2	LEDA	LED backlight (Anode).	
3	GND	Ground for logic.	
4	VDD	Power supply for voltage	
5-12	R0-R7	Red Data.	
13-20	G0-G7	Green Data.	
21-28	B0-B7	Blue Data.	
29	GND	Ground for logic.	
30	CLK	Dot clock signal input.	
31	DISP	Display on/off.	
32	HSYNC	Horizontal sync input. Negative polarity.	
33	VSYNC	Vertical sync input. Negative polarity.	
34	DE	Data enable input. Active high to enable the input data bus.	
35	NC	No connection	
36	GND	Ground for logic.	
37	NC	NC.	
38	NC	NC.	
39	NC	NC.	
40	NC	NC.	

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	-	+70	℃
Storage Temperature Range	Tst	Absolute Max	-30	-	+80	℃
Digital Supply Voltage	V_{DD}	-	3.0	3.3	3.6	V
Input logic high voltage	V_{IH}	-	0.7*V_{DD}	-	V_{DD}	V
Input logic low voltage	V_{IL}	-	GND	-	0.3*V_{DD}	V

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Backlight Supply Voltage	Vf	Top=25°C If=40mA	14.8	16.0	17	V
Backlight Supply Current	If		-	40		mA
Backlight Lifetime	-	Top=25°C If=40mA		50000		Hrs

*Backlight lifetime is rated as Hours until half-brightness, under normal operating conditions. The LED of the backlight is driven by current drain, drive voltage is for reference only. Drive voltage must be selected to ensure backlight current drain is below MAX level stated.

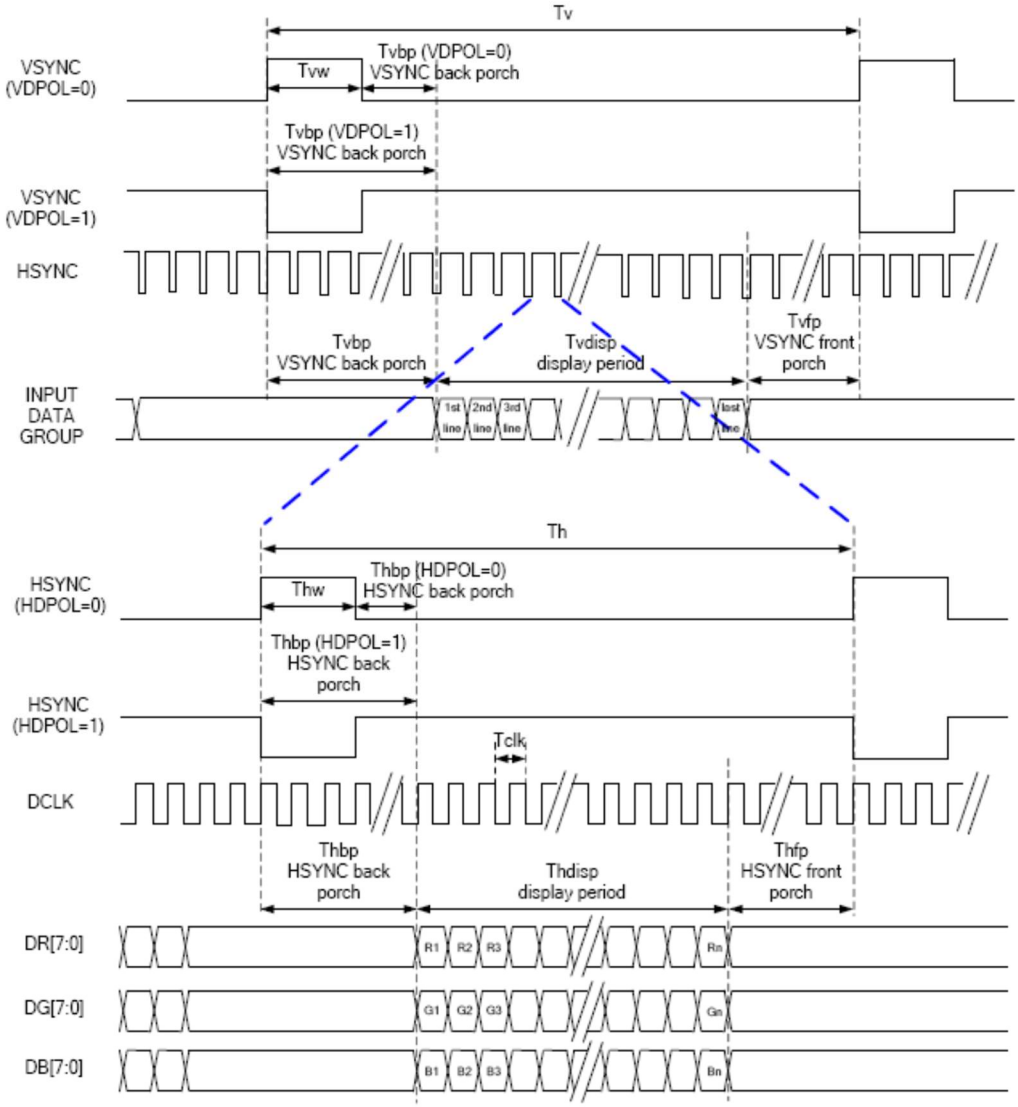
Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Viewing Angles	Top	-	CR≥10		80	-	Deg
	Bottom	-			80	-	
	Left	-			80	-	
	Right	-			80	-	
Contrast Ratio		CR	Center	600	800	-	-
Luminance		Lv		450	500		cd/m^2
Response Time		Tr+Tf			60		ms
Chromaticity	Red	X_R	-	TYP-0.05	0.5931	TYP+0.05	-
		Y_R			0.358		
	Green	X_G	-		0.3396		-
		Y_G			0.5880		
	Blue	X_B	-		0.1618		-
		Y_B			0.1390		
	White	X_W	-		0.3258		-
		Y_W	-		0.3652		-

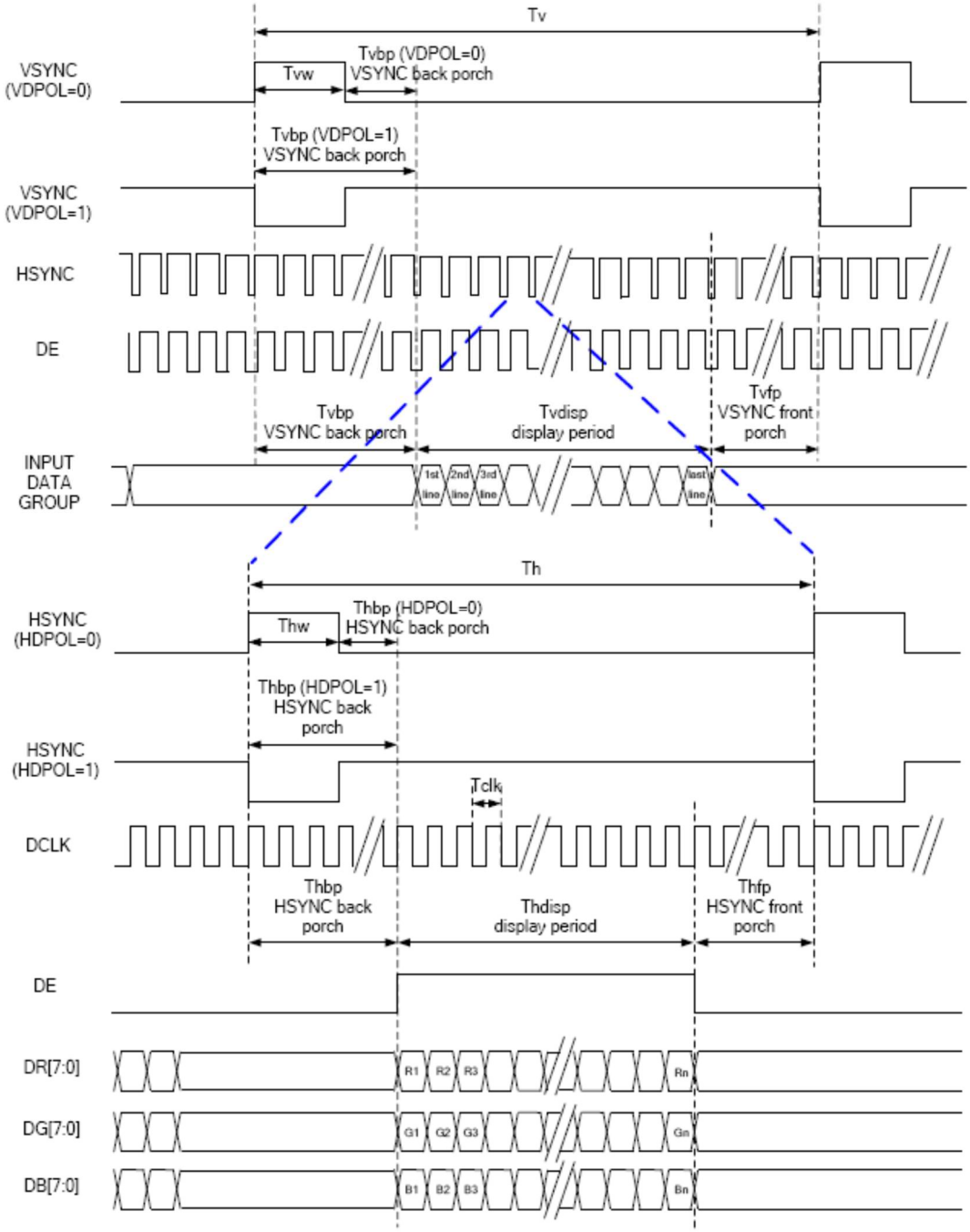
Note (1) Measurement Setup: The LCD module should be stabilized at given temp. 25°C for 15 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.

AC Electrical Characteristics

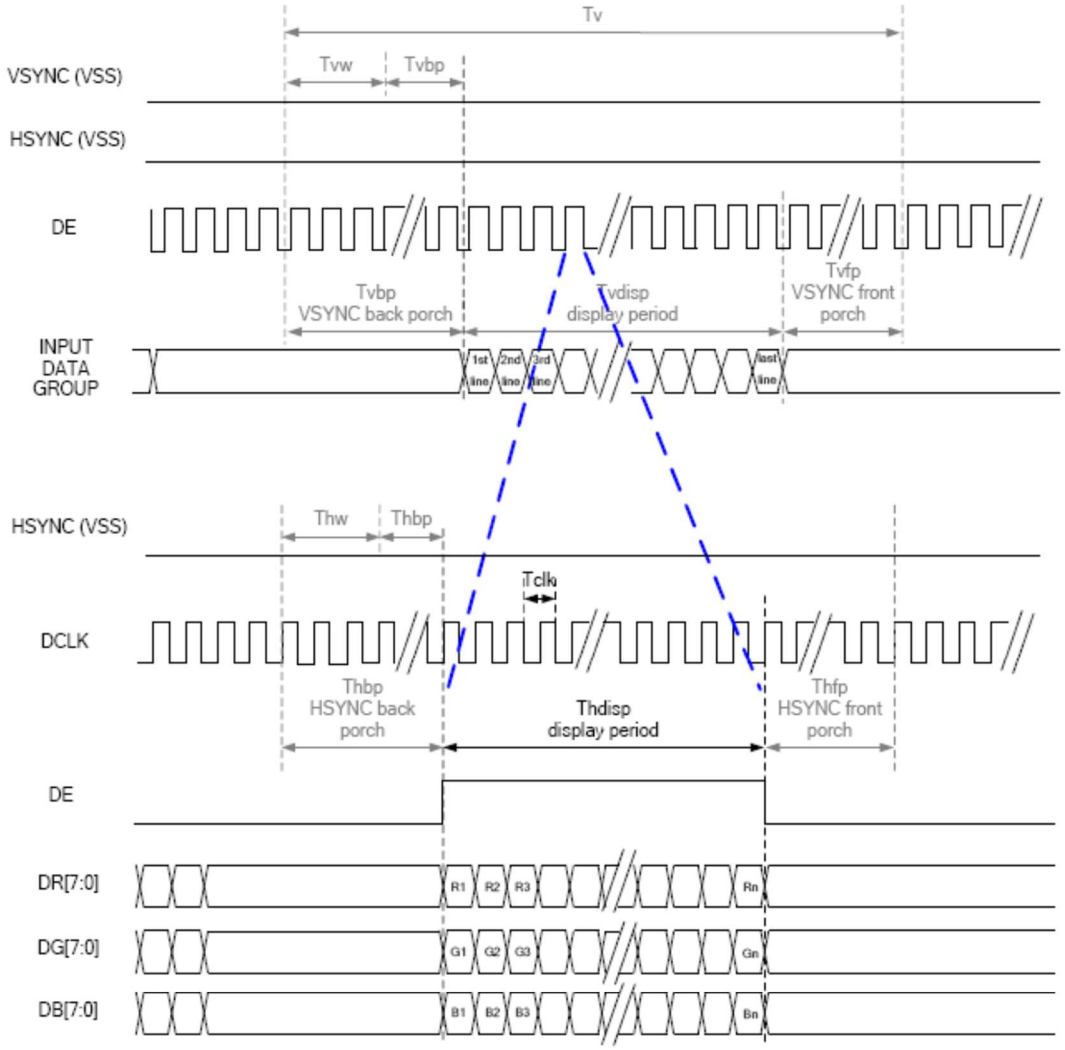
SYNC Mode



SYNC-DE Mode


Tv
VSYNC (VDPOL=0)
Tvw
Tvbp (VDPOL=0) VSYNC back porch
Tvbp (VDPOL=1) VSYNC back porch
VSYNC (VDPOL=1)
HSYNC
DE
Tvbp VSYNC back porch
Tvdisp display period
Tvfp VSYNC front porch
INPUT DATA GROUP
1st line
2nd line
3rd line
last line
Th
HSYNC (HDPOL=0)
Thw
Thbp (HDPOL=0) HSYNC back porch
Thbp (HDPOL=1) HSYNC back porch
HSYNC (HDPOL=1)
Tclk
DCLK
Thbp HSYNC back porch
Thdisp display period
Thfp HSYNC front porch
DE
DR[7:0]
R1
R2
R3
Rn
DG[7:0]
G1
G2
G3
Gn
DB[7:0]
B1
B2
B3
Bn

DE Mode



RGB Mode Selection Table	DCLK	HSYNC	VSYNC	DE
SYNC - DE Mode	Input	Input	Input	Input
SYNC Mode	Input	Input	Input	GND
DE Mode	Input	GND	GND	Input

Note: "Input" means these signals are driven by host side.

Parallel 24-bit RGB Timing Table

Parallel 24-bit RGB Input Timing (PVDD=VDD=VDDI= 3.3V, AGND= 0V, TA=25°C)

480RGB X 272 Resolution Timing Table							
Item		Symbol	Min.	Typ.	Max.	Unit	Remark
DCLK Frequency		Fclk	8	9	12	MHz	
DCLK Period		Tclk	83	111	125	ns	
HSYNC	Period Time	Th	485	531	598	DCLK	
	Display Period	Thdisp		480		DCLK	
	Back Porch	Thbp	3	43	43	DCLK	By H_BLANKING setting
	Front Porch	Thfp	2	8	75	DCLK	
	Pulse Width	Thw	2	4	43	DCLK	
VSYNC	Period Time	Tv	276	292	321	HSYNC	
	Display Period	Tvdisp		272		HSYNC	
	Back Porch	Tvbp	2	12	12	HSYNC	By V_BLANKING setting
	Front Porch	Tvfp	2	8	37	HSYNC	
	Pulse Width	Tvw	2	4	12	HSYNC	

Note: It is necessary to keep Tvbp =12 and Thbp =43 in sync mode. DE mode is unnecessary to keep it.

Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	80℃±2℃ 96H Restore 4H 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 4H at 25℃， Power off	
3	High Temperature Operation	70℃±2℃ 96H Restore 4H at 25℃， Power on	
4	Low Temperature Operation	-20℃±2℃ 96H Restore 4H at 25℃， Power on	
5	High Temperature/Humidity Storage	50℃±2℃ 90%RH 96H Power off	
6	Temperature Cycle	-30°C → +25℃ → 80°C → +25℃ (30mins) (5mins) (30mins) (5mins) 5 Cycle Restore 4H at 25℃， Power off	

Precautions for Use of LCD Modules

1． Handling Precautions

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.

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.

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

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

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

1.6 Do not attempt to disassemble the LCD Module.

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

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.

2． Storage precautions

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

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 : 10℃～ 40℃

Relatively humidity: ≤60%

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

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