Hong Xian Display Technology Limited

LCM Specification

( )Preliminary Specification
(✓) Final Specification

PRODUCT TYPE: TFT MODULE

PRODUCT P/N: 101B331M-D9401

VERSION: V0

HXWY

DESIGNED BY	
CHECKED BY	
APPROVED BY	

Customer

INSPECTION RESULT	
TESTED BY	
APPROVED BY	

2.Revision Record

Rev	Date	Sub-Model	Description of change
A	**2017.10.30**		**Preliminary Product Specification was first issued.**

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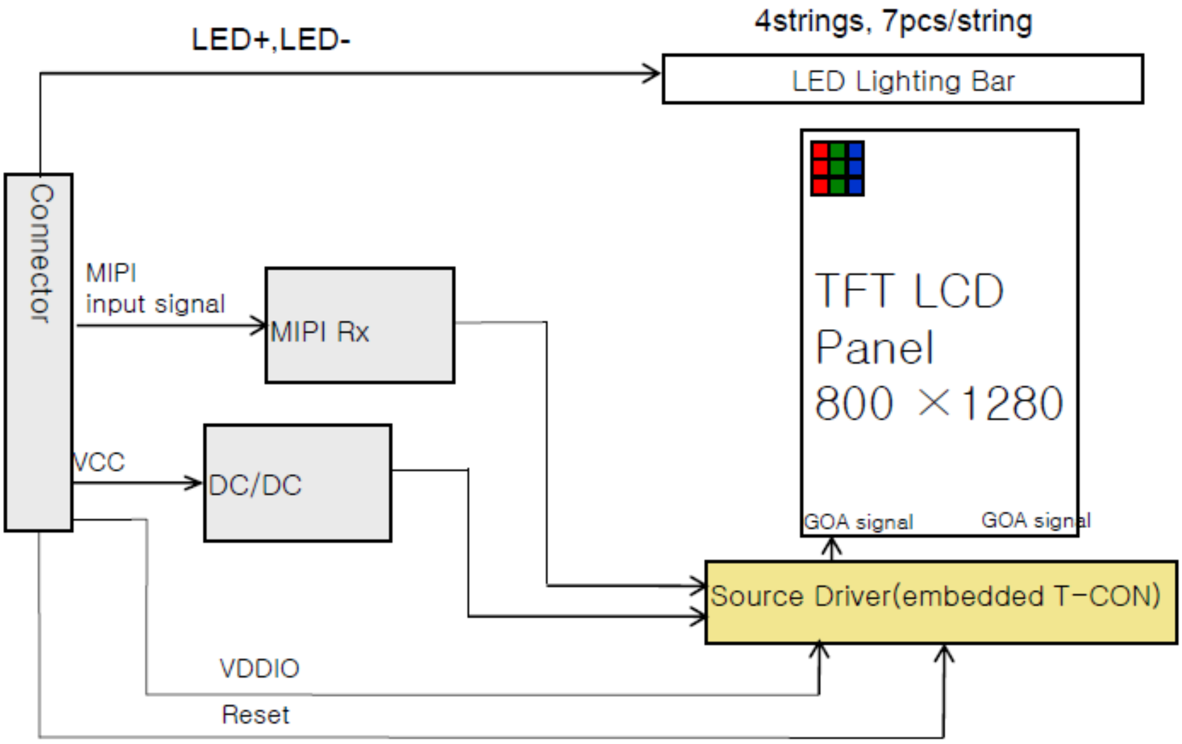
1. General description

1.1 Introduction

101B331M-D9401 is a color active matrix TFT LCD product using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 10.1 inch diagonally measured active area with WXGA resolutions (800 horizontal by 1280 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots By applying 8 bit digital data, 800×RGB (3)×1280, 16.7M-color images are displayed on the 10.1" diagonal screen


LED+,LED-
4strings, 7pcs/string
LED Lighting Bar
Connector
MIPI input signal
MIPI Rx
TFT LCD Panel 800 ×1280
VCC
DC/DC
GOA signal
GOA signal
Source Driver(embedded T-CON)
VDDIO
Reset

1.2 Features

- High Transmittance: 6.1%
- 0.5 t Array Glass*0.5t CF Glass

1.3 Application

- Tablet & Application Mini-PC

1.4 General Specification

< Table 1. General Specifications >

Parameter	Specification	Unit	Remarks
Number of pixels	800(H)×1280(V)	pixels	
Pixel pitch	0.1692(H)×0.1692(V)	mm	
Active area	135.36(H)x216.576(V)	mm	
CF size	139.76(H)×222.1(V)	mm	
Panel size	139.76(H)×225.8(V)	mm	
Pixel arrangement	Pixels RGB stripe arrangement		
Display colors	16.7M	colors	
Color gamut (BLU)	60(Typ.)	%	
Display mode	Normally Black		
View angle	80/80/80/80	°	
Q-Panel size	Q1: 718.8(H)×687.4(V)/ Q2: 566.04(H)×687.4(V)	mm	
Weight (Single)	35.6 (Typ.)	g	
Weight (Q-Panel)	Q1: 965.4 (Typ.)/Q2: 1152.9(Typ.)	g	
Response time	30 (Typ.)	ms	
推荐Source IC	NT35521S(mipi接口)		

IC:天钰 9365AA

2.0 ABSOLUTE MAXIMUM RATINGS

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter	Symbol	Min.	Max.	Unit	Remarks
LC operating Voltage	V_{OP}		4.5	V	Ta=25+/-2°C
Operating Temperature (Humidity)	T_{OP}	-20	+60	℃	
Storage Temperature (Humidity)	T_{ST}	-30	+80	℃	

*1) Liquid Crystal driving voltage

Due to the characteristics of LC Material, this voltage varies with environmental temperature.

3.0 ELECTRICAL SPECIFICATIONS

3.1 Electrical Specifications

< Table 3. LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter	Symbol	Value	Unit	Remarks
TFT Gate ON Voltage	VGH	15	V	
TFT Gate OFF Voltage	VGL	-11	V	
Analog Power Supply Voltage	AVDD/AVEE	5/-5	V	

4.0 OPTICAL CHARACTERISTICS

4.1 Overview

The test of Optical specifications shall be measured in a dark room (ambient luminance ≤ 1lux and temperature = 25±2℃) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-5) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to θØ=0 (=θ3) as the 3 o'clock direction (the "right"), θØ=90 (= θ12) as the 12 o'clock direction ("upward"), θØ=180 (= θ9) as the 9 o'clock direction ("left") and θØ=270(= θ6) as the 6 o'clock direction ("bottom"). While scanning θ and /or Ø, the center of the measuring spot on the Display surface shall stay fixed. The backlight should be operating for 30 minutes prior to measurement. VDD shall be 3.3±0.3V for LVDS interface or 1.8±0.09V for MIPI interface at 25°C.

4.2 Optical Specifications

<Table 5. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle range	Horizontal	Θ_3	CR > 10	75	80	-	Deg.	Note 1
		Θ_9		75	80	-	Deg.	
	Vertical	Θ_{12}		75	80	-	Deg.	
		Θ_6		75	80	-	Deg.	
Color Gamut				55	60	-	%	@BLU
Luminance Contrast ratio		CR	Θ = 0°	800	1000			Note 2
Transmittance		T(%)	Θ = 0°		6.1		%	Base on BLU Note 3
White Chromaticity		x_W	Θ = 0°	0.274	0.304	0.334		Note 4
		y_W		0.29	0.32	0.35		
Reproduction of color (BLU)	Red	x_R	Θ = 0°	0.588	0.618	0.648		
		y_R		0.338	0.368	0.398		
	Green	x_G		0.295	0.325	0.355		
		y_G		0.573	0.603	0.633		
	Blue	x_B		0.128	0.158	0.188		
		y_B		0.066	0.096	0.126		
Response Time (Rising + Falling)		T_{RT}	Ta= 25° C Θ = 0°	-	30		ms	Note 5

Notes : 1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).

2. Contrast measurements shall be made at viewing angle of Θ= 0 and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state . (see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

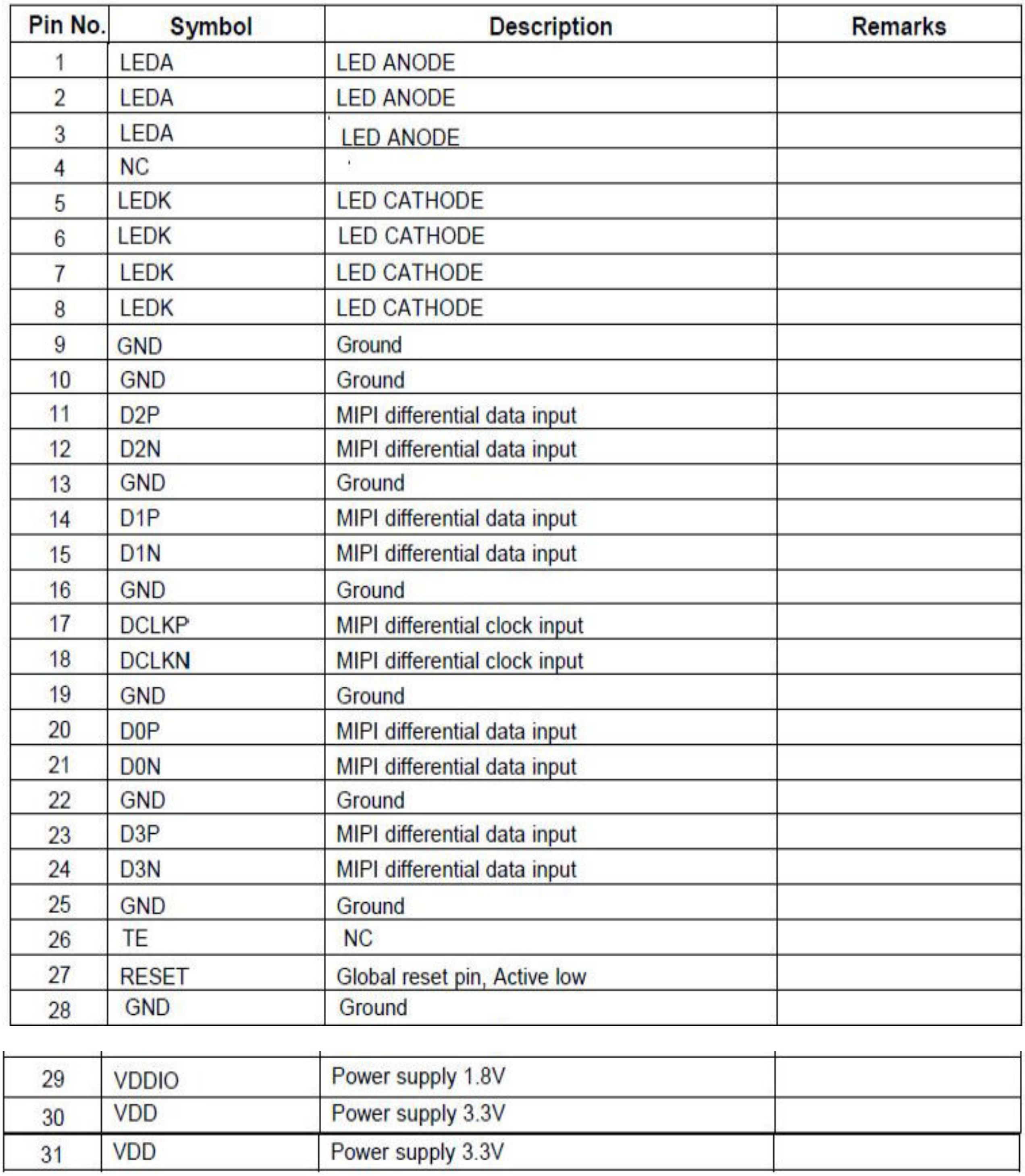
$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Transmittance is the Value with Polarizer

4. The color chromaticity coordinates specified in Table 5 shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

5. The electro-optical response time measurements shall be made as FIGURE 3 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.

5.0 INTERFACE PIN CONNECTION



Pin No.	Symbol	Description	Remarks
1	LEDA	LED ANODE	
2	LEDA	LED ANODE	
3	LEDA	LED ANODE	
4	NC		
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	

6.0 ELECTRICAL CHARACTERISTICS

6.1 TFT LCD Module

Item	Symbol	Min.	Type	Max.	Unit.	Note
Power supply voltage	VDD	3.0	3.3	3.6	V	GND=0
Power supply ripple voltage	VRP			350	mV	GND=0
Power supply current	IDD	--	225	251	mA	GND=0
Power consumption	PD	--	0.735	0.830	W	AGND=0
Rush current	I rush	--	-	1	A	
BL input current	Ibl	--	--	-	mA	
BL input voltage	Vbl	--	--	23	V	
LED Reverse Voltage	Vr	-	20	--	mA	Each LED
LED Forward Current	If	-	3.0	3.3	V	Each LED

Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

Note 2: VR Conditions: Zener Diode 20mA

7.0 Reliability test items

N0.	TEST ITEM	CONDITIONS
1	HighTemperature Operation	50° C , 96 hrs
2	Low Temperature Operation	-10° C , 96 hrs
3	High Temperature and High Humidity Operation	50 ° C , 90% RH, 96 hrs

NOTE

1. All judgement of display are performed after temperature of panel return to room temperature.
2. Display function should be no change under normal operating condition.
3. Under no condensation of dew.
4. CPT only guarantee the above 3 test items, and without guarantee the others.

8. WARRANTY

The period is within 3 months since the date of shipping out under normal using and storage conditions.

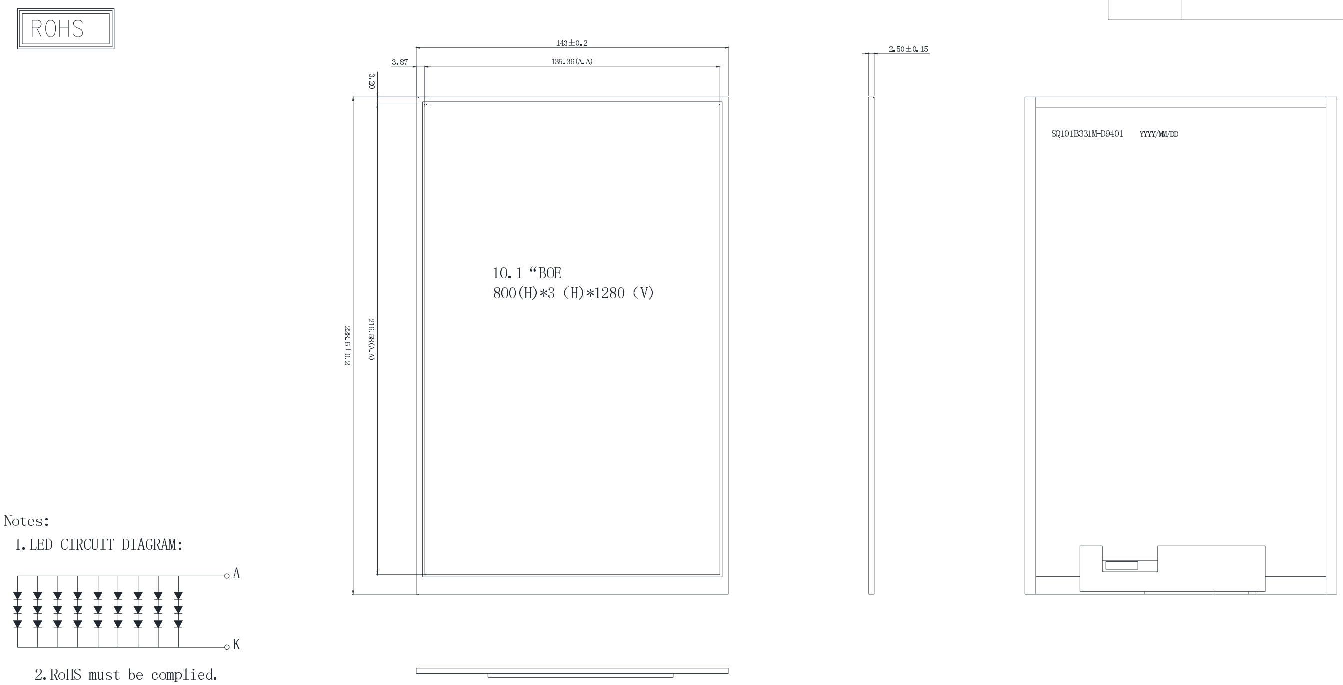
The warranty will be avoided in case of defect induced by customer.

Confidential

8.0 OUTLINE DIMENSION

客 户 For Customer:
客 户 料 号 :
客 户 版 本 :
承 认 日 期 :
承 认 签 名 :

REV修订	DESCRIPTION修订内容	REVISER修订者	DATE修订日期



Notes:

1. LED CIRCUIT DIAGRAM:

2. RoHS must be complied.

3. Modification rev. number

4. Draft angle 1.5° :

5. All radii without dimension R0.3 ,Unspecified Tolerances is: ±0.2

Electrical-Optical Characteristics(Ta=25° C):

Item (项目)		Symbol(符号)	min.(最小)	typ.(典型)	max.(最大)	Unit(单位)	Condition(测定条件)
Main screen (主屏)	Luminance (亮度)	Lv		500		cd/m^2	If= 180 mA(恒定电流测试)
	Uniformity (均匀度)	Avg	75			%	
	Colour (色度坐标) Coordinate	X	0.26		0.315		
		Y	0.27		0.325		
Sub screen (副屏)	Luminance (亮度)	Lv	---			cd/m^2	Measure tolerance: Luminance:±5% Colour coordinate:±0.008 Voltage:±0.1V
	Uniformity (均匀度)	Avg	---			%	
	Colour (色度坐标) Coordinate	X	---		---		
		Y	---		---		
Forward Voltage (正向电压)		Vf	9	---	10.5	V	
Reverse Current (反向电流)		Ir		20		mA	Vr= 0.8V
●Operating Temperature (工作温度)		-10~+50° C	●Storage Temperature (贮存温度)			-20~+60° C	
●Storage condition Recommended:		temperature (25° C±5° C) and humidity (65%RH±20%RH)					

MODEL NO.:	101B331M-D9401		
UNIT(单位) mm	(第三角法)	EDITION 版本号:	A/0
DESIGN 设计:		DATE日期:	
CHECKED 审核:		DATE日期:	
APPROVED批准:		DATE日期:	

Hong Xian Display Technology Limited

9.0 GENERAL PRECAUTION

9.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life threatening or otherwise catastrophic.

9.2 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

9.3 Breakage of LCD Panel

9.3.1.If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

9.3.2. If liquid crystal contacts mouth or eyes, rinse out with water immediately.

9.3.3. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

9.3.4. Handle carefully with chips of glass that may cause injury, when the glass is broken.

9.4 Electric Shock

9.4.1. Disconnect power supply before handling LCD module.

9.4.2. Do not pull or fold the LED cable.

9.4.3. Do not touch the parts inside LCD modules and the fluorescent LED's connector or cables in order to prevent electric shock.

9.5 Absolute Maximum Ratings and Power Protection Circuit

9.5.1. Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged. 9.5.2. Please do not leave LCD module in the environment of high humidity and high temperature for a long time. 11.5.3. It's recommended to employ protection circuit for power supply.

9.6 Operation

9.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.

9.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons

handle the LCD module for incoming inspection or assembly.

9.6.3 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

9.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

9.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

9.7 Mechanism

Please mount LCD module by using mouting holes arranged in four corners tightly.

9.8 Static Electricity

9.8.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

9.8.2. Because LCD module use CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge. Persons who handle the module should be grounded through adequate methods.

9.9 Strong Light Exposure

The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

9.10 Disposal

When disposing LCD module, obey the local environmental regulations.