



SPECIFICATION FOR TFT LCD MODULE

CUSTOMER : _____

CUSTOMER MODULE : _____

HL MODEL : _____ HG034SV004 _____

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



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1. Record of Revision

Version	Revise Date	Content	Editor
1.0	2023/10/19	First Release.	M



2 General Specifications

	Feature	Spec
Characteristics	Size	3.4 inch
	Resolution	800(horizontal)*800(Vertical)
	Interface	MIPI
	Connect type	Connector
	Color Depth	16.7M
	Technology type	a-Si
	Pixel pitch (mm)	-
	Pixel Configuration	R.G.B. Vertical Stripe
	Display Mode	Normally Black
	LCD Driver IC	JD9365
	Viewing Direction	ALL
	Gray Scale Inversion Direction	-
Mechanical	LCM (W x H x T) (mm)	96.6*99.79*3.8
	Active Area(mm)	87.6*87.6
	With /Without TSP	Without TSP
	Weight (g)	TBD
	LED Numbers	10 LED

Note 1: Viewing direction is following the data which measured by optics equipment.

Note 2: Requirements on Environmental Protection: RoHS

Note 3: LCM weight tolerance: +/- 5%



3 Input/Output Terminals

Pin.No	Symbol	Function
1-3	VLED+	Power for LED backlight (Anode)
5-8	VLED-	Power for LED backlight (Cathode)
9-10	GND	Power ground
11	D2P	DSI-D2+data signals
12	D2N	DSI-D2-data signals
13	GND	Power ground
14	D1P	DSI-D1+data signals
15	D1N	DSI-D1-data signals
16	GND	Power ground
17	CLKP	DSI-Clock+
18	CLKN	DSI-Clock-
19	GND	Power ground
20	D0P	DSI-D0+data signals
21	D0N	DSI-D0-data signals
22	GND	Power ground
23	D3P	DSI-D3+data signals
24	D3N	DSI-D3-data signals
25	GND	Power ground
26	NC	NC
27	RSTB	LCM RESET signals
28	GND	Power ground
29	IOVCC	Power Supply 1.8V-2.8V
30	VCI	Power Supply 2.8V



4 Absolute Maximum Ratings

Item	Symbol	MIN	MAX	Unit	Remark
Supply Voltage	V_{DD}	0.3	3.6	V	
Input Signal Voltage	V_{in}	-0.3	$V_{DD}+0.3$	V	
Logic Output Voltage	V_{OUT}	-0.3	$V_{DD}+0.3$	V	
Operating Temperature	T_{OPR}	-20	70	°C	
Storage Temperature	T_{STG}	-30	80	°C	

5 Electrical Characteristics

5.1 Operating conditions:

Parameter	Symbol	MIN	TYP	MAX	Unit	Remark
Operating Voltage	V_{CC}	2.6	2.8	3.3	V	
Supply Current	I_{DD}		30		mA	
Input Voltage	V_{IL}	0	-	$0.2V_{DD}$	V	
Input leakage current	I_{IL}	-1.0	-	1.0	uA	

5.2 Driving Backlight

Item	Symbol	MIN	TYP	MAX	Unit	Remark
LED current	I_F	-	180	-	mA	Note 1 Note 2,3
Power Consumption			-	-	mW	
LED Voltage	V_F	13.5	-	16.5	V	
LED Life Time	W_{BL}	25000		-	Hr	

Note 1 : There are 5*2 Groups LED

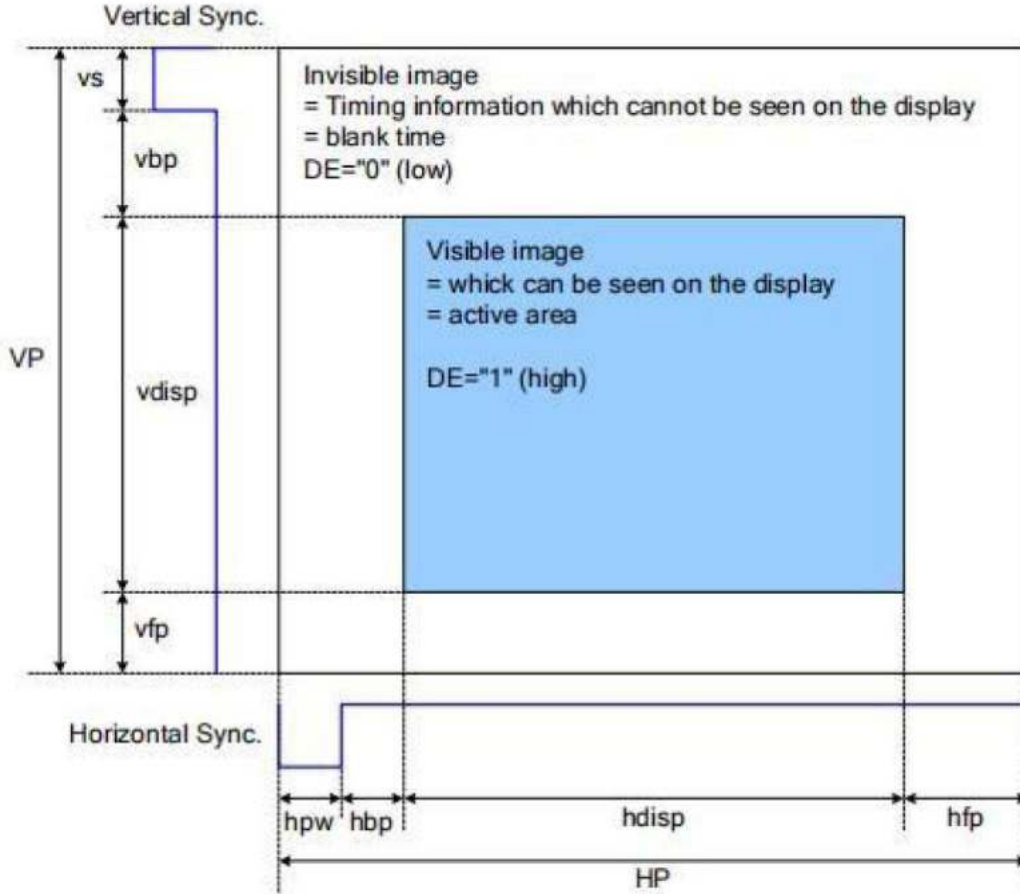
Note 2 : $T_a = 25^{\circ}C$

Note 3 : Brightness to be decreased to 50% of the initial value



6. Interface Timing

6.1 System Bus Read/Write Characteristics.



Please refer to the following table for the setting limitation of RGB interface signals.

Parameter	Symbol	Min.	Typ.	Max.	Unit
Horizontal Sync. Width	hbw	1	-	255	Clock
Horizontal Sync. Back Porch	hbp	1	-	255	Clock
Horizontal Sync. Front Porch	hfp	1	-	-	Clock
Vertical Sync. Width	vs	1	-	254	Line
Vertical Sync. Back Porch	vbp	1	-	254	Line
Vertical Sync. Front Porch	vfp	2	-	-	Line



7. Optical Characteristics

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle Range	Horizontal	Θ_3	CR > 10	80	85	-	Deg.	Note 4.1
		Θ_9		80	85	-	Deg.	
	Vertical	Θ_{12}		80	85	-	Deg.	
		Θ_6		80	85	-	Deg.	
Contrast Ratio		CR	$\Theta = 0^\circ$	1000	1200	-		HC+APF & Silicate BLU With B-ITO Note 4.2/4.3
Cell Transmittance		Tr		4.7	5.5	-	%	
Reproduction of color		Rx	$\Theta = 0^\circ$	0.637	0.667	0.697	-	CF @C Light Note 4.4
		Ry		0.293	0.323	0.353	-	
		Gx		0.241	0.271	0.301	-	
		Gy		0.561	0.591	0.621	-	
		Bx		0.104	0.134	0.164	-	
		By		0.091	0.121	0.151	-	
		Wx		0.262	0.292	0.322	-	
		Wy		0.303	0.333	0.363	-	
Color Gamut			$\Theta = 0^\circ$	65	70	-	%	
Response Time		Tr+Tf	Ta= 25°C $\Theta = 0^\circ$	-	30	35	ms	Note 4.5

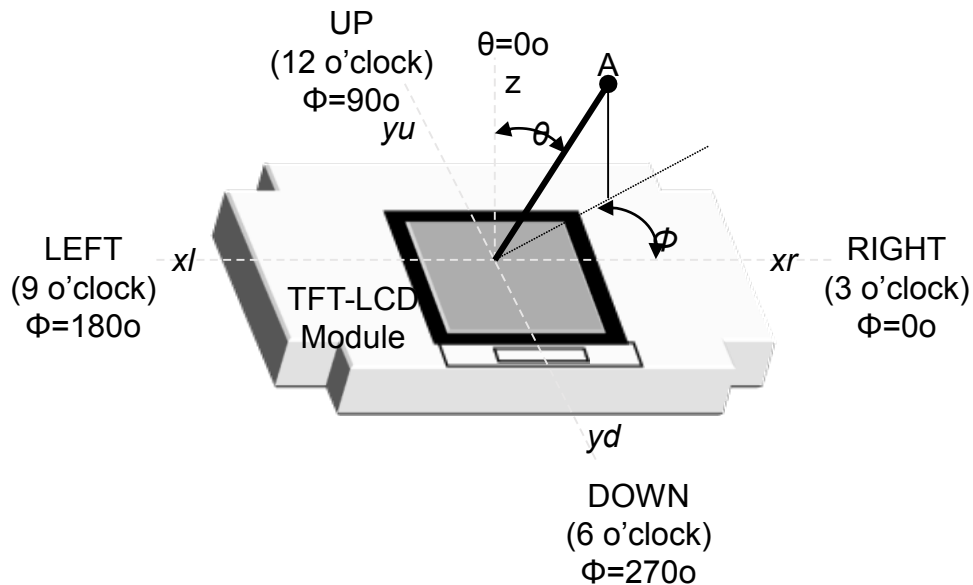
Test Conditions:

1. IF= 20mA (one channel),the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.



Note 5.1: 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 5).

<Figure 5. Viewing Angle Range Is Defined As Follows>



Note 5.2: Contrast measurements shall be made at viewing angle of $\Theta=0^\circ$ 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. Luminance Contrast Ratio (CR) is defined mathematically.

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

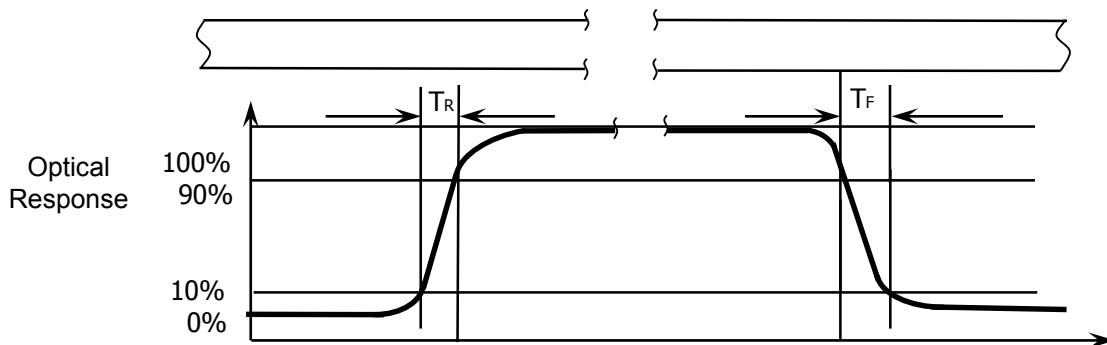
Note 5.3: Transmittance is the Value with Polarizer(HC+APF) & silicate BLU (Film structure is on Table 6) .



Note 5.4: 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.

Note 5.5: The electro-optical response time measurements shall be made as Figure 6 by switching the “data” input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is T_r , and 90% to 10% is T_f .

<Figure 6. Response Time Testing>





8. Environmental / Reliability Tests

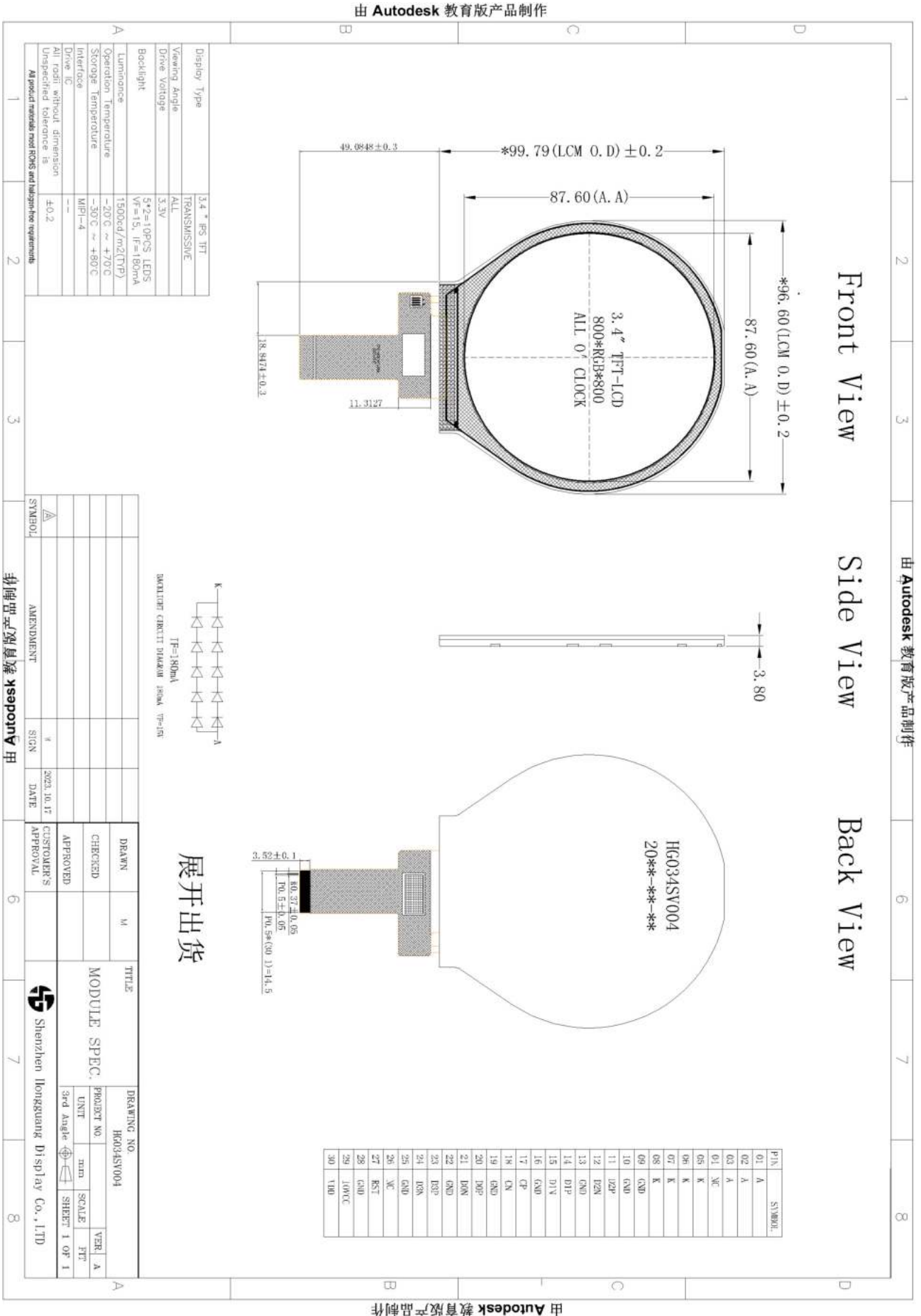
No	Test Item	Condition	Remarks
1	High Temperature Operation	T _s = +70°C, 240hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Operation	T _a = -20°C, 240hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	T _a = +80°C, 240hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	T _a = -30°C, 240hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	T _a = +60°C, 90% RH max, 160 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-30°C 30 min ~ +80°C 30 min Change time: 5min, 30 Cycle	Start with cold temperature, end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Discharge (Operation) Static	C=150pF, R=330 Ω, 5 points/panel Air:±8KV, 5 times; Contact: ±4KV, 5 times; (Environment: 15°C ~ 35°C, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 80 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

Note: 1. T_s is the temperature of panel's surface.

2. T_a is the ambient temperature of sample.

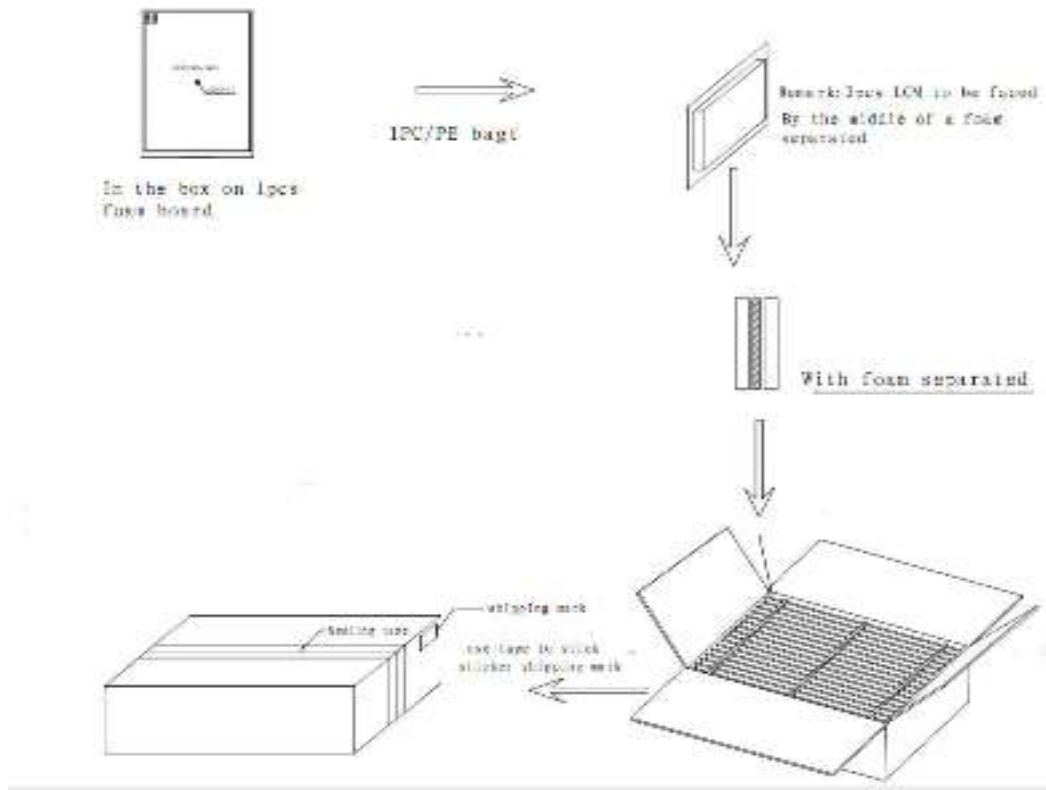


9. Mechanical Drawing





10. Packing and Label Format





11. Precautions for Use of LCD modules

11.1 Handling Precautions

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

11.1.2. 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.

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

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

11.1.5. 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
- Ketene
- Aromatic solvents

11.1.6. Do not attempt to disassemble the LCD Module.

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

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

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

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

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

11.1.8.4. 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.

11.2 Storage Precautions

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

11.2.2. 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°C ~ 40°C Relatively humidity: ≤80%

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

11.3 Transportation Precautions

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