深圳市晶彩世界科技有限公司

PRODUCT SPECIFICATION

MODEL: JCB1011PS-42A

<◇>PRELIMINARY SPECIFICATION

<◆>APPROVAL SPECIFICATION

	DESIGNED	CHECKED	APPROVED
CUSTOMER APPROVED			

	DESIGNED	CHECKED	APPROVED
SUPPLIER APPROVED			

REVISION STATUS

Version	Revise Date	Page	Content	Modified by
V1.0	2019.07.02	-	First Issued.	CYZ

1.0 GENERAL DESCRIPTION

1.1 Introduction

The model JCB101IPS-42A is a color active matrix thin film transistor (TFT) liquid crystal display without plagiarizer. This model is composed of amorphous silicon TFT as a switching device. This TFT LCD has a 10.1-inch wide (16:9) diagonally measured active display area with WVGA (1024 horizontal by 600 vertical pixel) resolution. Each pixel is divided into Red, Green, Blue dots which are arranged in vertical stripes.

1.2 Features

- 10.1 inch configuration.
- 16.7M color by 8 bit R.G.B. signal input
- RoHS/Halogen Free Compliance

1.3 Applications

- Mobile NB
- Digital Photo frame
- Display terminal for AV application

1.4 General information

Item	Specification	Unit
Screen Size	10.1 inches	Diagonal
Number of Pixel	1024 RGB (H) ×600(V)	Pixels
Display area	222.72(H) x 125.28(V)	mm
Outline Dimension	235.0 x 143.0 x 4.50(Typ)	mm
Display mode	Normally Black	--
Pixel arrangement	RGB Vertical stripe	--
Pixel pitch	0.2175(H) ×0.2088(V)	mm
Back-light	LED Side-light type	--
Surface treatment	Anti - glare	--
Interface	LVDS	

1.5 Mechanical Information

Item		Min.	Typ.	Max.	Unit
Module Size	Horizontal (H)	234.8	235.0	235.2	mm
	Vertical (V)	142.8	143.0	143.2	mm
	Depth (D)	4.30	4.50	4.70	mm
Weight		--	TBD	--	g

2.0 ABSOLUTE MAXIMUM RATINGS

2.1 Electrical Absolute Rating

2.1.1 TFT LCD Module

Item	Symbol	Min	Max	Unit	Note
Power supply voltage	VDD	-0.5	3.96	V	GND=0
	AVDD	--	14.85	V	AGND=0

Note:

1. **Stresses above those listed under" Absolute Maximum Rating" may cause permanent damage to the device. These are stress ratings only. Functional operation of this device at indicated in the operational sections(6.1) of this specification.**

2. **Ta=25±2℃**

2.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Storage temperature	T_{STG}	-30	80	℃	
Operating temperature	T_{OPR}	-20	70	℃	

Note: If users use the product out off the environmental operation range(temperature and humidity), it will have visual quality concerns.

3.0 OPTICAL CHARACTERISTICS

3.1 Optical specification

Item		Symbol	Condition	Min	Type	Max	Unit	Note
White luminance (Center)		YL	Θ=0 Normal Viewing Angle	--	500	TBD	nits	(1)(4)(6)
Response time		$T_r + T_f$		--	30	40	msec	(1)(3)
Contrast ratio		CR		--	800	--	--	(1)(2)
Color Chromaticity (CIE 1931)	white	Wx		0.260	0.310	0.360		(1)(4)
		Wy		0.280	0.330	0.380		
Viewing Angle	Hor.	ΘL	CR≥10	80	85	--		(1)(4)
		ΘR		80	85	--		
	Ver.	ΘU		80	85	--		
		ΘD		80	85	--		
Brightness		B_{UNI}	Θ=0	70	80	--	%	(5)
Color gamut (NTSC)		S		--	50	--	%	C-light
Optima View Direction		ALL VIEW						

1)，客户签样亮度±10% = 大货亮度,小于10%视为不良。

2)，大货同一批色调一致的情况下（目视同为冷色或暖色）与客户签样相比，X色坐标相差±0.015,

Y色坐标相差±0.02以内视为正常OK品。

3.2 Measuring Condition

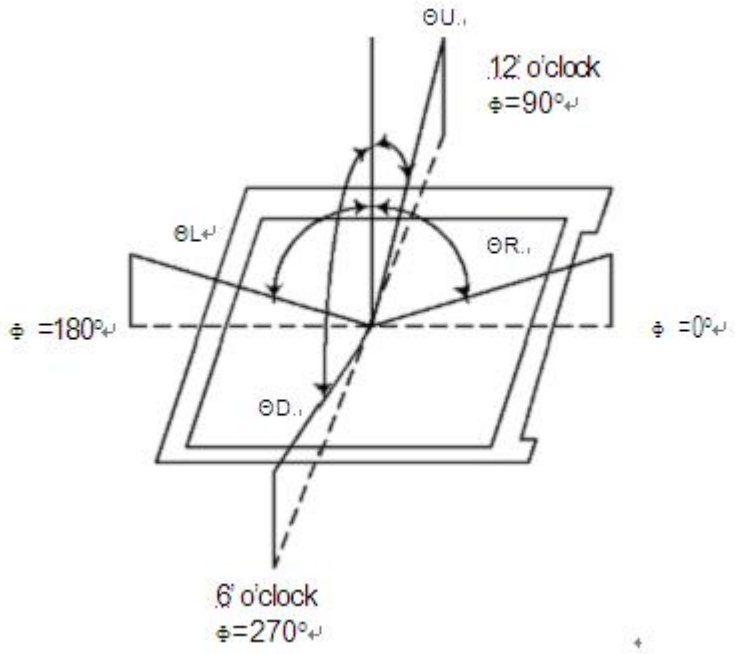
- Measuring surrounding: dark room
- LED current IL: 180mA
- Ambient temperature: 25±2°C
- 30min. warm-up time

3.3 Measuring Equipment

- BM-7 optical characteristics.
- Measuring spot size: 20 ~ 21mm

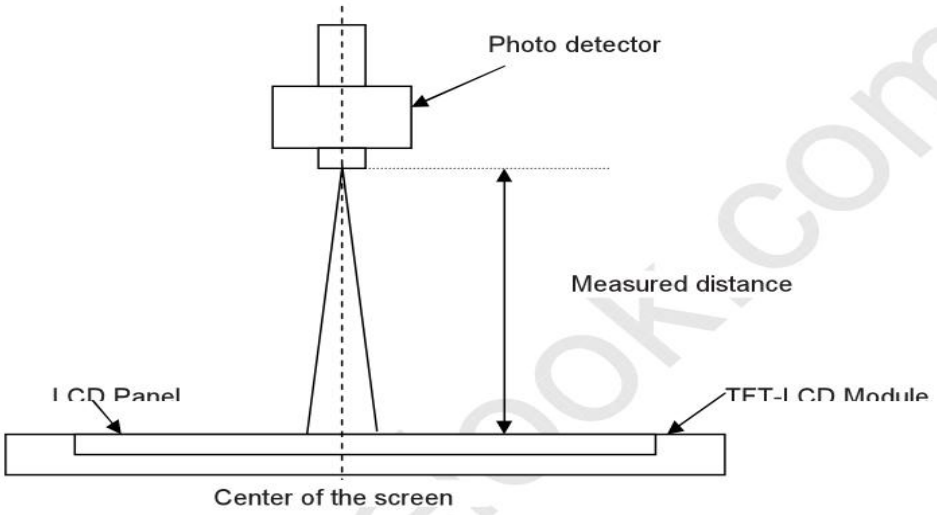
Note (1) Definition of Viewing angle range:

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).

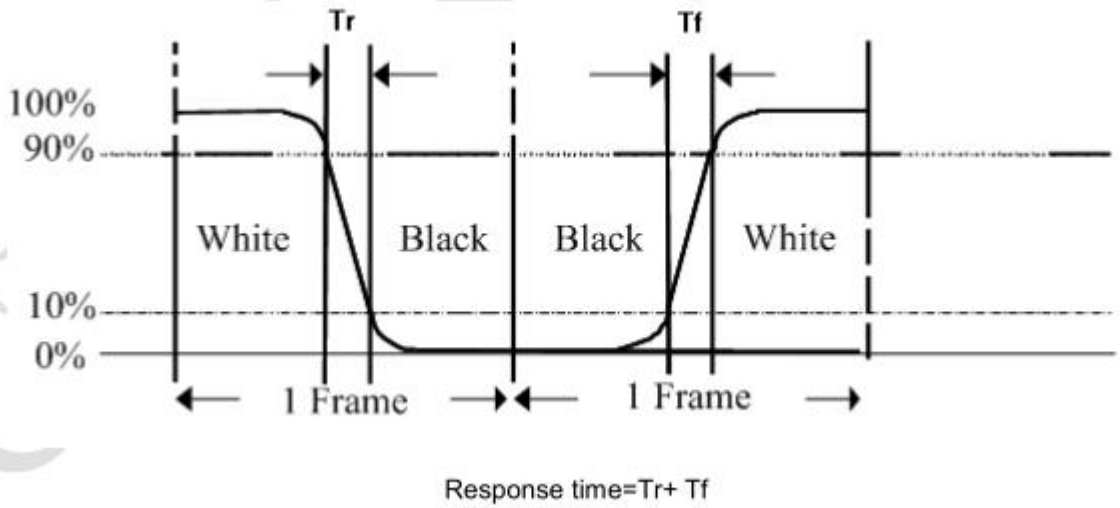


Note (2) Definition of Contrast Ratio(CR):Measured at the center point of panel

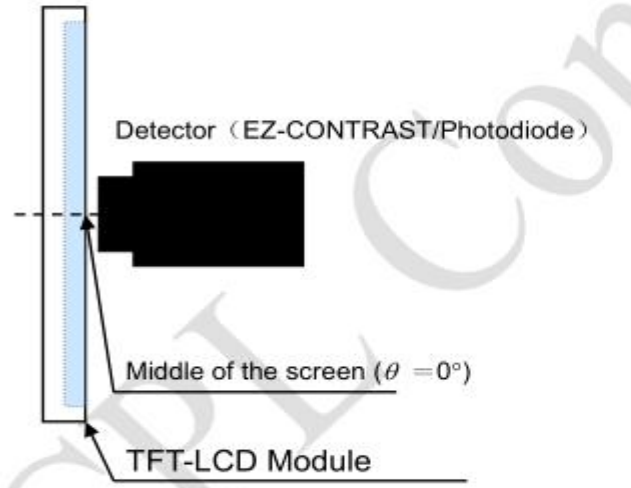
$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$



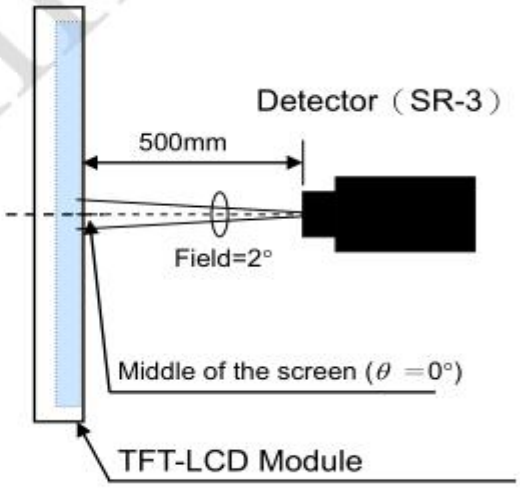
Note (3) Definition of Response Time: Sum of TR and TF



Note (4) Definition of optical measurement setup

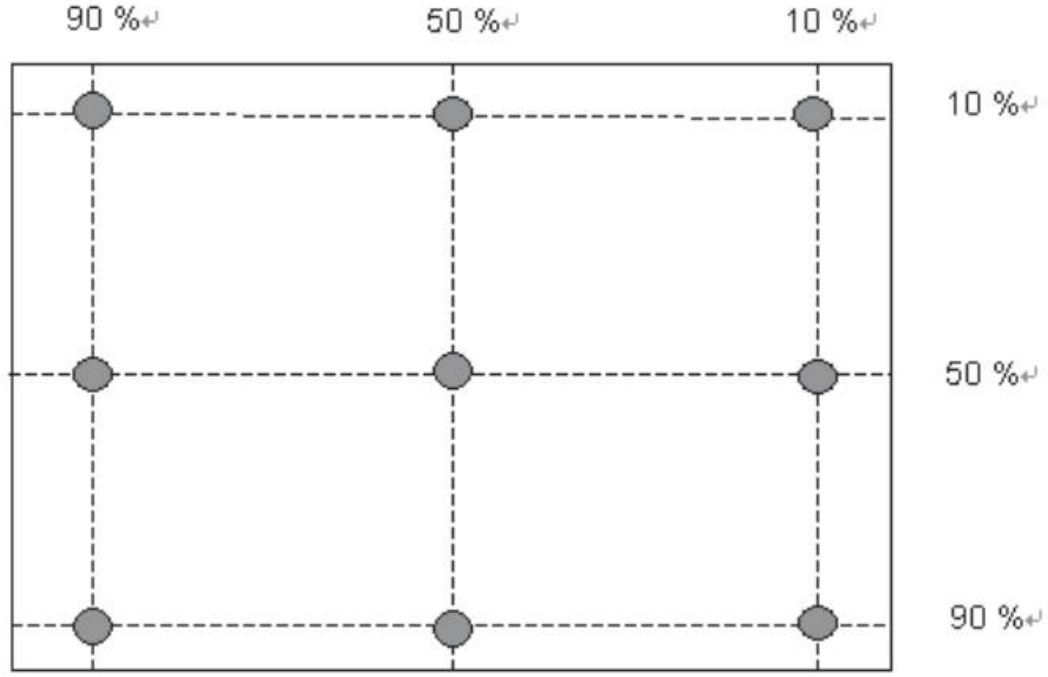


Measurement of viewing angle range, Response time.



Measurement of Contrast, Luminance, Chromaticity.

Note (5) Definition of brightness uniformity

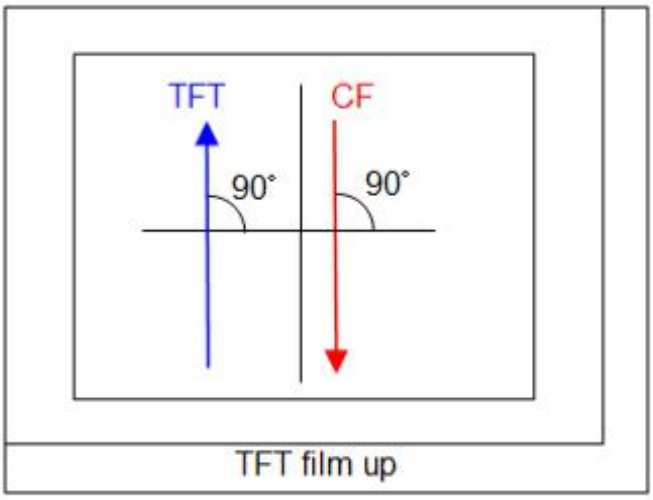


(Min Luminance of 9 points)

Luminance uniformity = _____ ×100 %

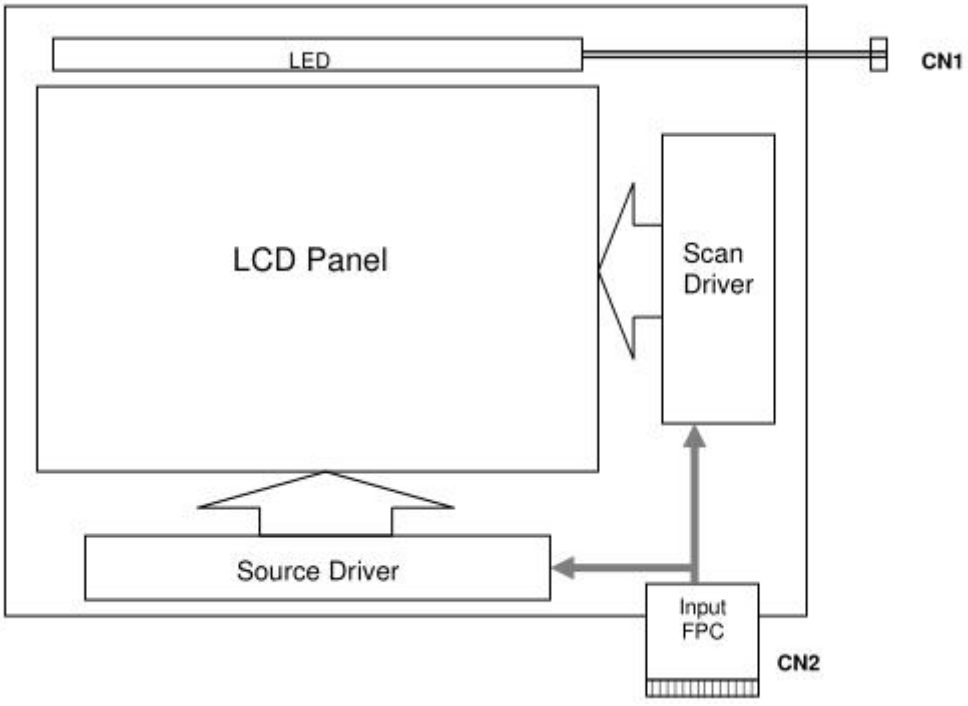
(Max Luminance of 9 points)

Note (6) Rubbing Direction (The different Rubbing Direction will cause the different optima view direction.

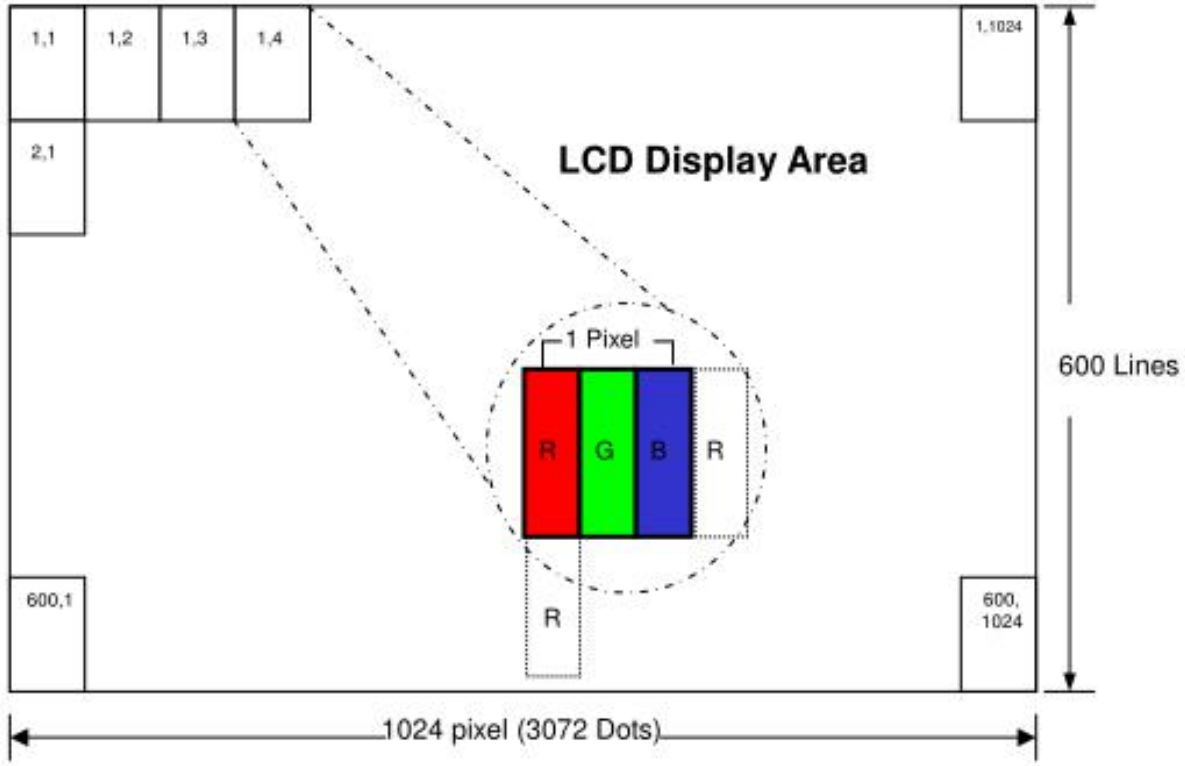


4.0 BLOCK DIAGRAM

4.1 TFT LCD Module



4.2 Pixel Format



5.0 INTERFACE PIN CONNECTION

5.1 TFT LCD Module: FPC UP Connector, (FH28-60S-0.5H (HIROSE), 60pin,pitch = 0.5mm)

Pin No.	Symbol	Function	Remark
1	AGND	Analog ground	
2	AVDD	Power for Analog Circuit	
3	VDD	Digital Power	
4	GND	Power ground	
5	VCOM	Common Voltage	
6	VDD	Digital Power	
7	GND	Power ground	
8	NC	No connection	
9	NC	No connection	
10	NC	No connection	
11	NC	No connection	
12	NC	No connection	
13	NC	No connection	
14	NC	No connection	

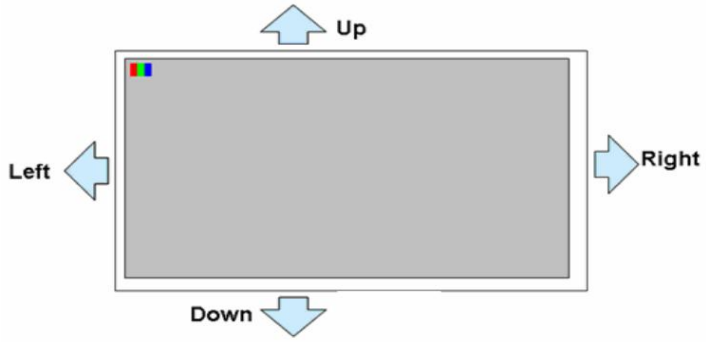
15	GND	Power ground	
16	VDD_LVDS	LVDS Power	
17	GND	Power ground	
18	PIND3	Positive LVDS differential data inputs	
19	NIND3	Negative LVDS differential data inputs	
20	GND	Power ground	
21	PINC	Positive LVDS differential clock inputs	
22	NINC	Negative LVDS differential clock inputs	
23	GND	Power ground	
24	PIND2	Positive LVDS differential data inputs	
25	NIND2	Negative LVDS differential data inputs	
26	GND	Power ground	
27	PIND1	Positive LVDS differential data inputs	
28	NIND1	Negative LVDS differential data inputs	
29	GND	Power ground	
30	PIND0	Positive LVDS differential data inputs	
31	NIND0	Negative LVDS differential data inputs	
32	GND	Power ground	
33	GND_LVDS	LVDS ground	
34	RESET	Global reset pin. Active low to enter reset state. Suggest to connecting with RC reset circuit for stability. Normally pull high. (R=10KΩ、C=0.1uF)	Note1

Pin No.	Symbol	Function	Remark
35	STBYB	Standby mode, Normally pulled high STBYB = “1”, normal operation STBYB = “0”, timing controller, source driver will turn off, all output are High-Z	
36	NC	No connection	
37	VDD	Digital Power	
38	NC	No connection	
39	AGND	Analog ground	
40	AVDD	Power for Analog Circuit	
41	VCOM	Common Voltage	
42	NC	No connection	
43	GND	Power ground	
44	VDD	Digital Power	
45	GND	Power ground	
46	NC	No connection	
47	NC	No connection	
48	NC	No connection	
49	NC	No connection	

50	NC	No connection	
51	NC	No connection	
52	NC	No connection	
53	GND	Power ground	
54	VDD	Digital Power	
55	SELB	6bit/8bit mode select DINT=1:8-bit(Default) DINT=0:6-bit	
56	VGH	Positive power for TFT	
57	VDD	Digital Power	
58	VGL	Negative power for TFT	
59	GND	Power ground	
60	NC/BIST	No connection	

Note1： Global reset pin: Active low to enter reset mode. Suggest connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ, C=0.1μF)

Note: If RC is not added, users must follow the rule, T2 > 15ms on page 18 item 6.5 power on/off sequence.



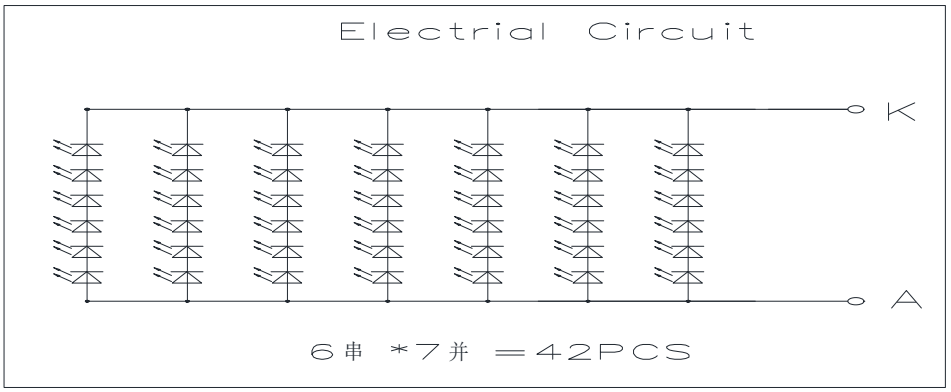
5.2 Back-Light Unit

The backlight system is an edge-lighting type with 6C * 7P=42 LED.

The characteristics of the LED are shown in the following tables.

Item	Symbol	Min	Typ	Max	Unit	Note
LED current	IL	160	180	200	mA	
LED voltage	VL	17.0	19.2	21.0	V	
Operating LED life time	Hr	20000	25000	--	Hour	(1)

Note (1) LED life time (Hr) can be defined as the time in which it continues to operate under the condition: Ta=25±3 ℃， typical IL value indicated in the above table and the fL=50k Hz until the brightness becomes less than 50%.



6.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Digital Power Supply Voltage For LCD	DVDD	3.0	3.3	3.6	V	
Analog Power Supply Voltage	AVDD	8.5	9.6	10.5	V	调整对比度， 调大颜色变深，调小颜色变浅
Gate On Power Supply Voltage	VGH	17.0	18.0	19.0	V	
Gate Off Power Supply Voltage	VGL	-6.5	-6.0	-5.5	V	
Common Power Supply Voltage	VCOM	3.1	3.2	3.3	V	Note 1
Operation frequency	FCLK	--	--	200	KHZ	

Note 1: Please adjust VCOM to make the flicker level be minimum. Typ VCOM 电压值只做参考，具体以实际效果为准（根据FLICKER 状态可调整）

Note (2): Be sure to apply the power Voltage as the power sequence spec.

Note (3): GND=0V

6.2 Input Timing Table(For 1024RGB x 600 panel)

DE mode

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency @Frame rate=60hz	fclk	40.8	51.2	67.2	Mhz
Horizontal display area	thd		1024		DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC blanking	thb+thfp	90	320	376	DCLK
Vertical display area	Tvd		600		H
VSYNC period time	Tv	610	635	800	H
VSYNC blanking	Tvb+Tvfp	10	35	200	H

HV mode
Horizontal input timing

Parameter		Symbol	Value			Unit
Horizontal display area		thd		1024		DCLK
DCLK frequency@ Frame rate=60hz		fclk	Min.	Typ.	Max.	
			44.9	51.2	63	Mhz
1 Horizontal Line		th	1200	1344	1400	DCLK
HSYNC pulse width	Min.	thpw		1		
	Typ.			—		
	Max.			140		
HSYNC blanking		thb	160	160	160	
HSYNC front porch		thfp	16	160	216	

HV mode
Vertical input timing

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
Vertical display area	tvd		600		H
VSYNC period time	tv	624	635	750	H
VSYNC pulse width	tvpw	1	—	20	H
VSYNC back porch	tvb	23	23	23	H
VSYNC front porch	tvfp	1	12	127	H

6.3 AC Electrical Characteristics

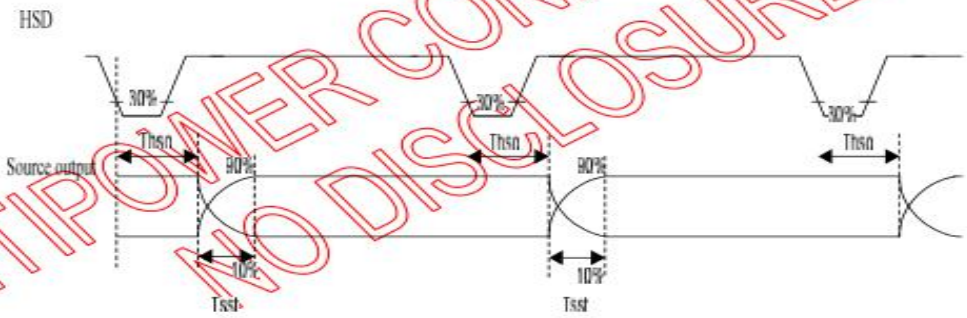
(TA = -20 to 85° C, VDD = 2.3 to 3.6V, AVDD = 8 to 13.5V, GND = AGND = 0V)

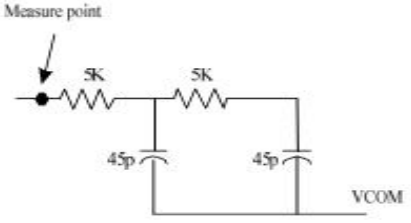
TTL mode

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
VDD Power On Slew rate	TPOR	From 0V to 90% VDD	-	-	20	ms
RSTB pulse width	TRST	DCLK = 65MHz	50	-	-	us
DCLK cycle time	Tcph	-	14	-	-	ns
DCLK pulse duty	Tcwh	-	40	50	60	%
VSD setup time	Tvst	-	5	-	-	ns
VSD hold time	Tvhd	-	5	-	-	ns
HSD setup time	Thst	-	5	-	-	ns
HSD hold time	Thhd	-	5	-	-	ns
Data set-up time	Tdsu	D0[7:0], D1[7:0], D2[7:0] to DCLK	5	-	-	ns
Data hold time	Tdhd	D0[7:0], D1[7:0], D2[7:0] to DCLK	5	-	-	ns
DE setup time	Tesu	-	5	-	-	ns
DE hold time	Tehd	-	5	-	-	ns
Output stable time	Tsst	10% to 90% target voltage. CL=90pF, R=10K ohm(Cascade)	-	-	6	us
		Dual gate			3	

Output Timing Table

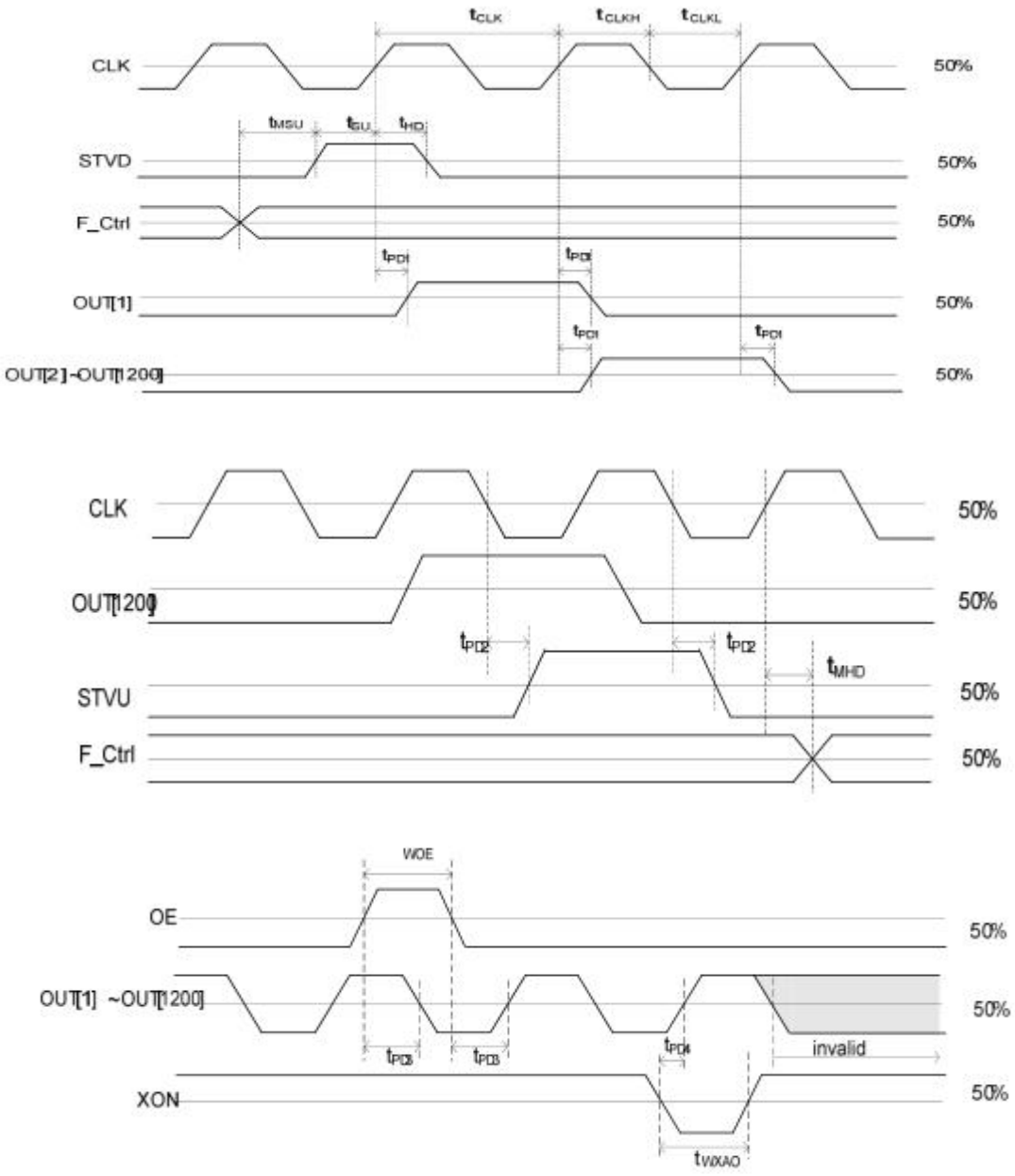
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
DCLK frequency	Fclk	-	65	71	MHz	VDD =2.3~3.6V
DCLK cycle time	Tclk	14.1	15.4		ns	
DCLK pulse duty	Tcwh	40	50	60	%	Tclk
Time from HSD to Source Output	Thso	-	64	-	DCLK	
Time from HSD to LD	Thld	-	64	-	DCLK	
Time from HSD to STV	Thstv	-	2	-	DCLK	
Time from HSD to CKV	Thckv	-	20	-	DCLK	
Time from HSD to OEV	Thoev	-	4	-	DCLK	
LD pulse width	Twld	-	10	-	DCLK	
CKV pulse width	Twckv	-	66	-	DCLK	
OEV pulse width	Twoev	-	74	-	DCLK	



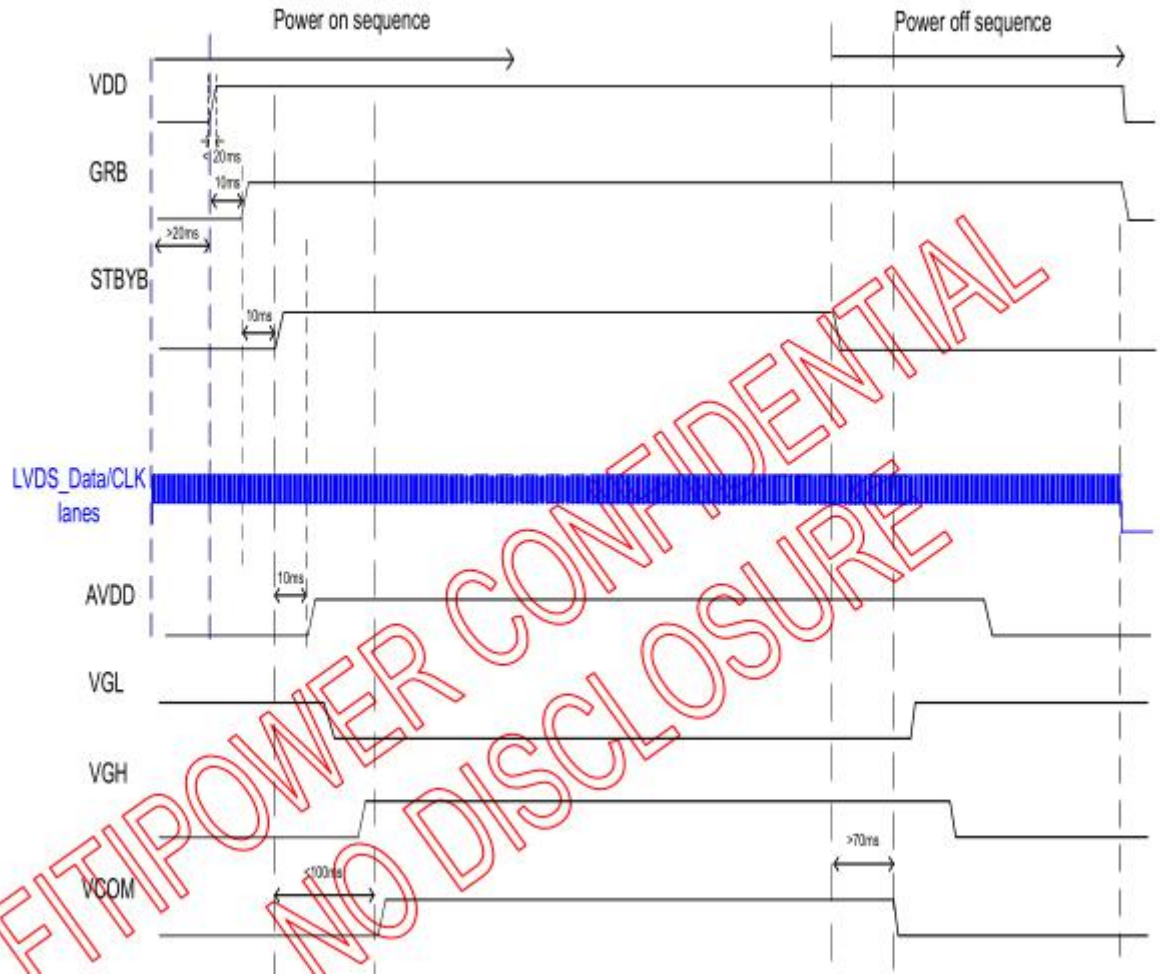


Source Output Timing(Cascade)

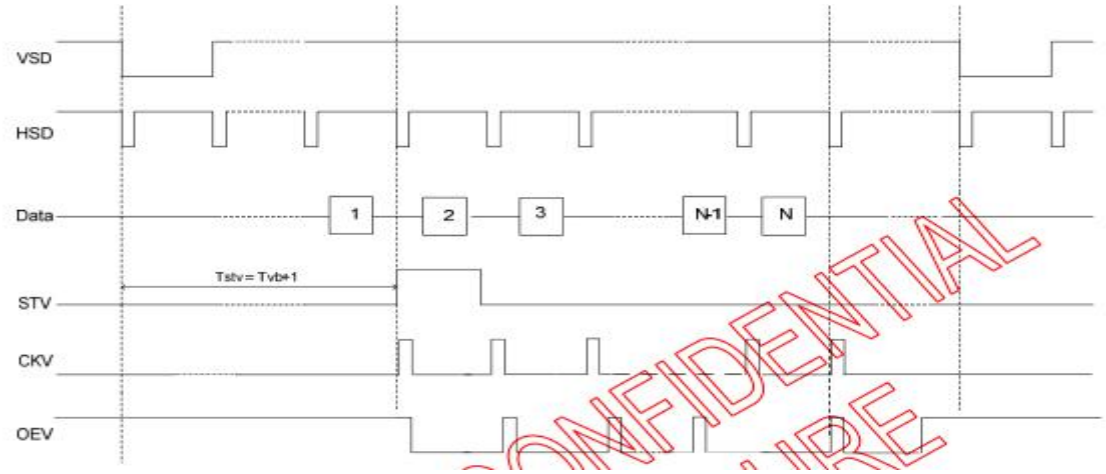
6.4 Timing Waveform



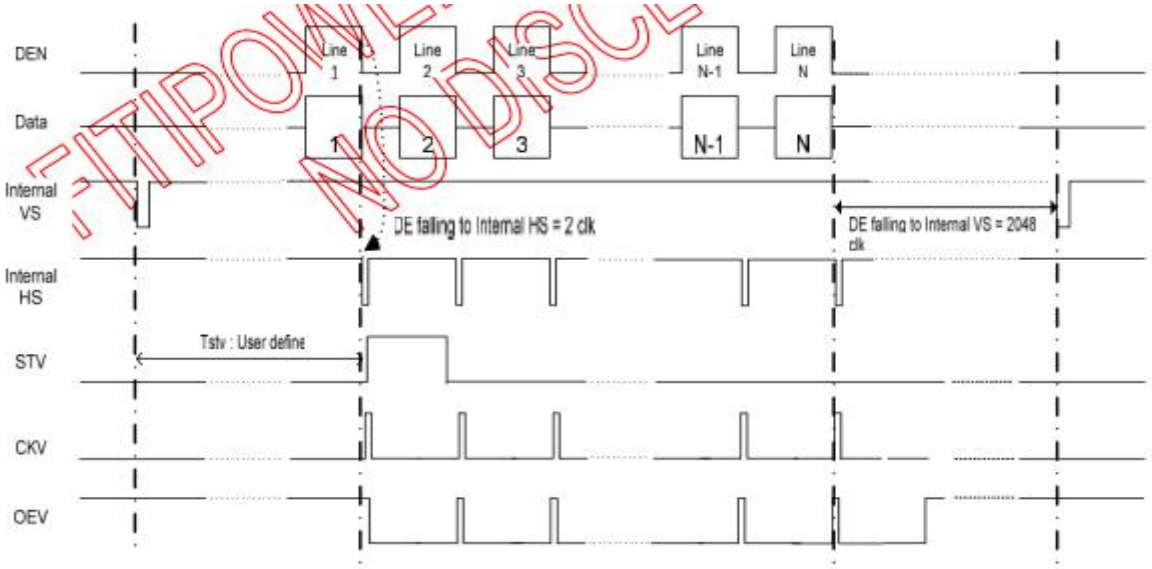
6.4.3 Power-On/Off Timing Sequence for LVDS Interface



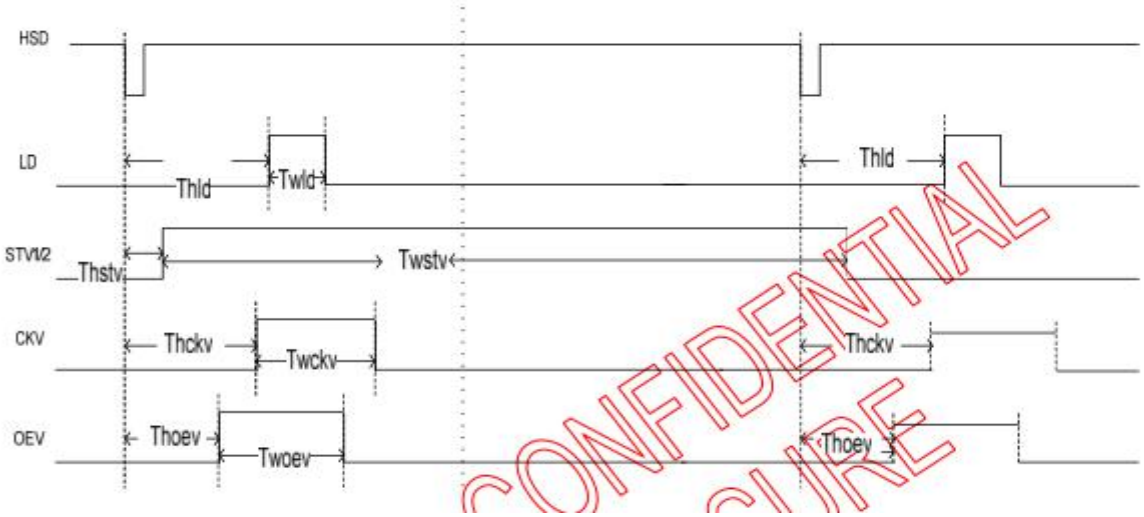
6.4.4 Vertical Timing Diagram HV mode(Cascade)



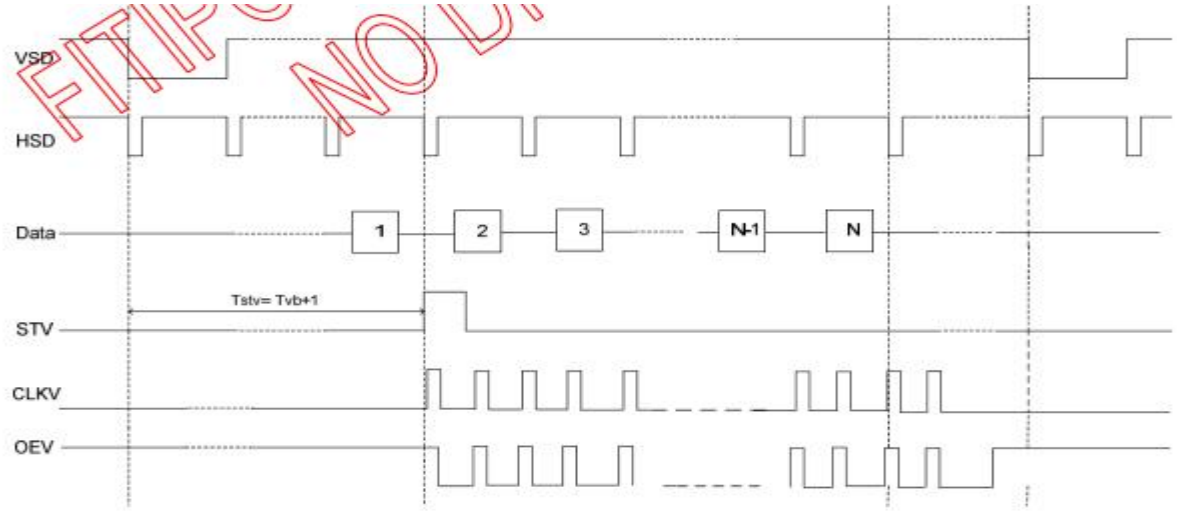
6.4.5 Vertical Timing Diagram DE mode(Cascade)



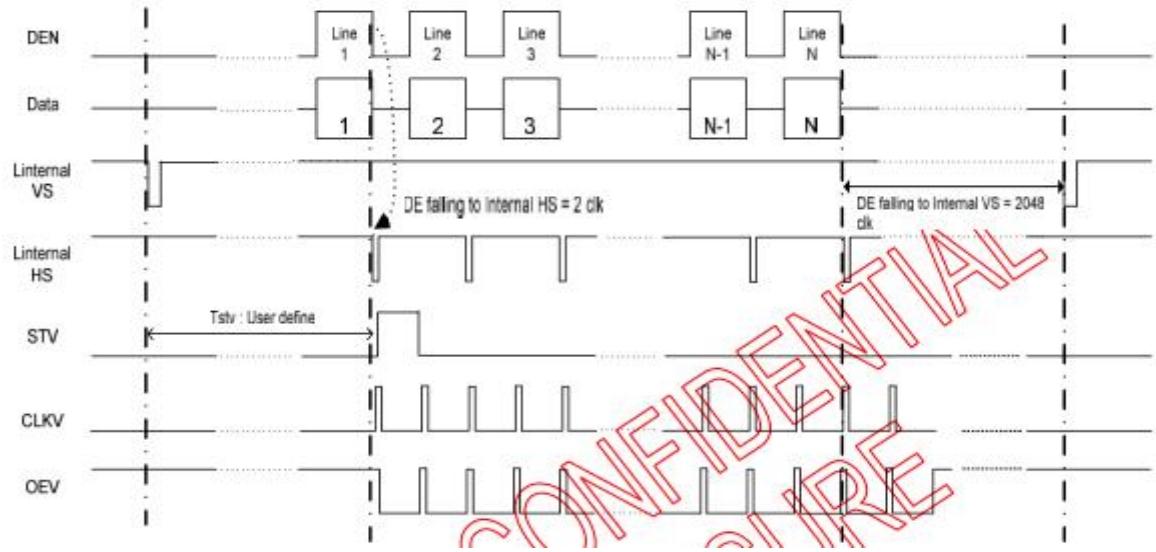
6.4.6Gate output timing diagram(Cascade)



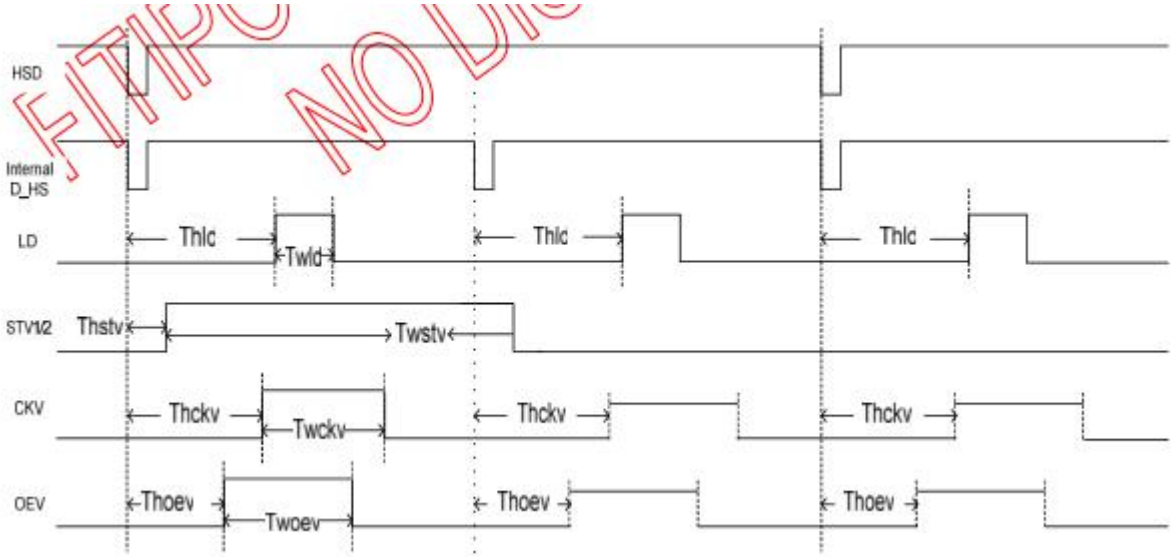
6.4.7Vertical Timing Diagram HV mode(Dual Gate)



6.4.8Vertical Timing Diagram DE mode(Dual Gate)



6.4.9Gate output timing diagram(Dual Gate)



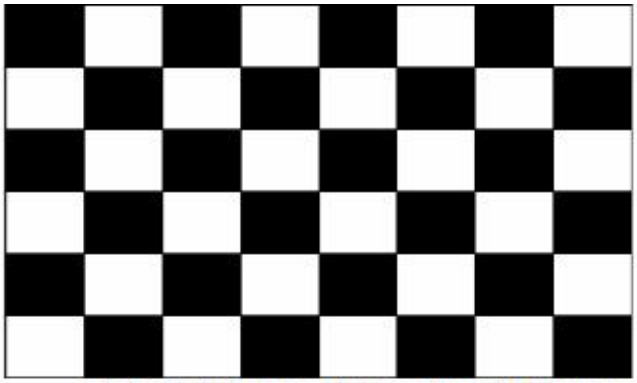
7.0 RELIABILITY TEST ITEMS

No.	Test Item	Conditions	Note
1	High Temperature Storage	Ta=+80℃, 12hrs	
2	Low Temperature Storage	Ta=-30℃, 12hrs	
3	High Temperature Operation	Ta=+70℃, 12hrs	
4	Low Temperature Operation	Ta=-20℃, 12hrs	
5	High Temperature and High Humidity(operation)	Ta=+60℃, 80%RH 24hrs	
6	Thermal cycling Test	-20℃/30 min ~ +70℃/30 min for a total 10cycles, Start with cold temperature and end with high temperature.	
7	Vibration Test (Non-operation)	● Frequency range:8~33.3Hz ● Stoke：1.3 mm ● Vibration: sinusoidal wave, perpendicular axis(both x, z axis: 2hrs ,y axis: 4hrs). ● Sweep: 2.9G,33.3 Hz -400 Hz ● Cycle time: 15 min	
8	Shock Test (Non-operation)	● Shock level: 980m/s 2 (equal to 100G). ● Waveform: half sinusoidal wave,6ms. ● Number of shocks: ±X,±Y,±Z axes for a total of six shock inputs.	
9	ESD Test	150pF，330Ω，±8kV&±15kV air& contact test	1
		200pF，0Ω，±200V contact test	2

Note 1: LCD glass and metal bezel

Note 2: IF connector pins

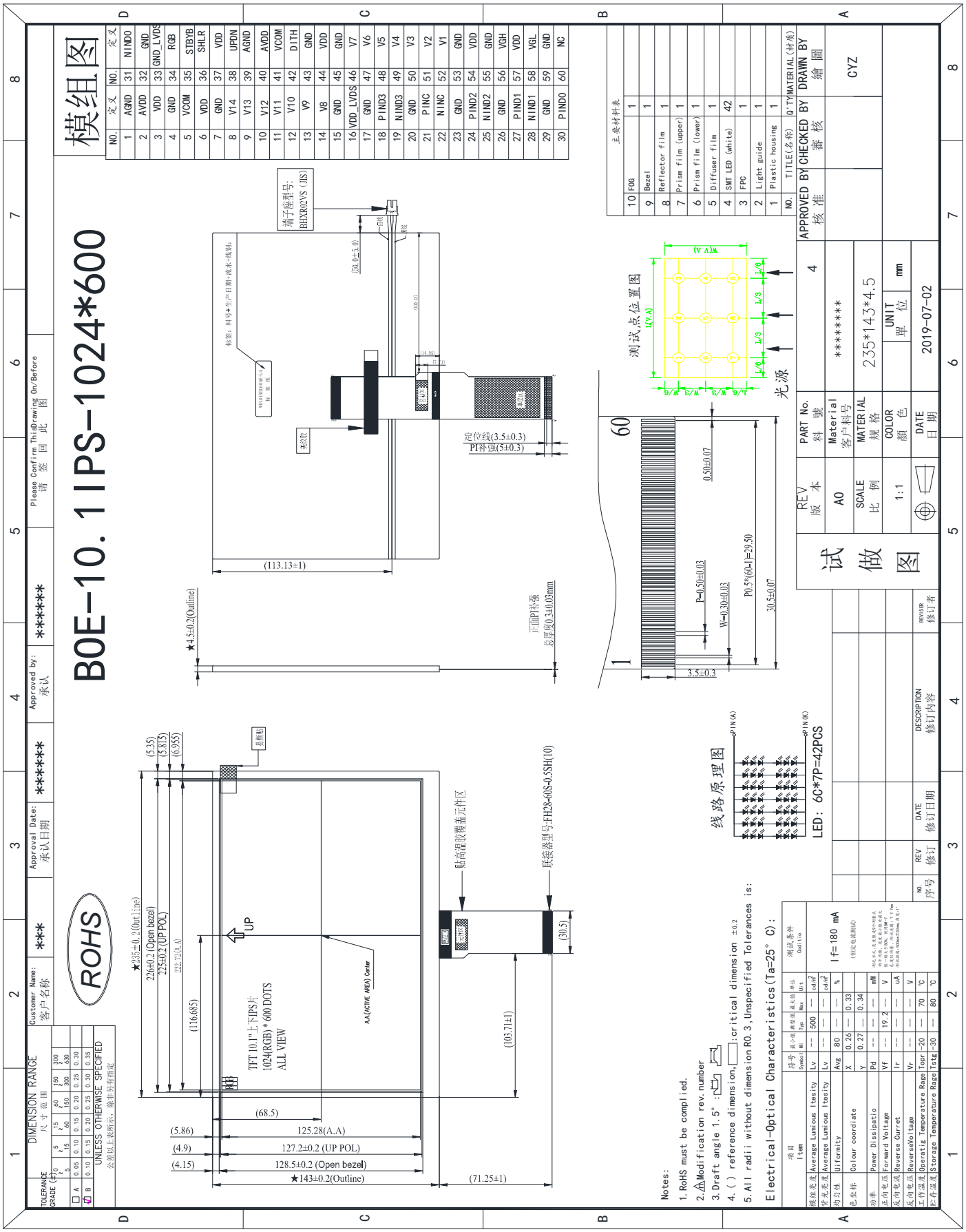
Note 3: Operation with test pattern sustained for 4hrs, then change to gray pattern immediately.



(a) Test Pattern (chess board Pattern)

(b) Gray Pattern

8.0 OUTLINE DIMENSION



NO.	定义	NO.	定义
1	AGND	31	N1NDO
2	AVDD	32	GND
3	VDD	33	GND_LVDS
4	GND	34	RGB
5	VCOM	35	STBYB
6	VDD	36	SHLR
7	GND	37	VDD
8	V14	38	UPDN
9	V13	39	AGND
10	V12	40	AVDD
11	V11	41	VCOM
12	V10	42	D1TH
13	V9	43	GND
14	V8	44	VDD
15	GND	45	GND
16	VDD_LVDS	46	V7
17	GND	47	V6
18	P1ND3	48	V5
19	N1ND3	49	V4
20	GND	50	V3
21	P1NC	51	V2
22	N1NC	52	V1
23	GND	53	GND
24	P1ND2	54	VDD
25	N1ND2	55	GND
26	GND	56	VGH
27	P1ND1	57	VDD
28	N1ND1	58	VGL
29	GND	59	GND
30	P1NDO	60	NC

NO.	TITLE(名称)	Q'TY	MATERIAL(材质)
10	FOG	1	
9	Bezel	1	
8	Reflector film	1	
7	Prism film (upper)	1	
6	Prism film (lower)	1	
5	Diffuser film	1	
4	SMT LED (white)	42	
3	FPC	1	
2	Light guide	1	
1	Plastic housing	1	

主要材料表

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit	测试条件 Condition
模组亮度	Lv	---	500	---	cd/m²	If=180 mA
背光亮度	Lv	---	---	---	cd/m²	(测试电流测试)
均匀性	Uniformity	Avg	80	---	---	%
色坐标	Colour coordiate	X	0.26	---	0.33	
		Y	0.27	---	0.34	
功率	Power Dissipatio	Pd	---	---	---	mW
正向电压	Forward Voltage	Vf	---	19.2	---	V
反向电流	Reverse Curret	Ir	---	---	---	uA
反向电压	ReverseVoltage	Vr	---	---	---	V
工作温度	Operatig Temperature Rage	Topr	-20	---	70	°C
贮存温度	Storage Temperature Rage	Tstg	-30	---	80	°C

9.0 LOT MARK

9.1 Location of Lot Mark

(1) Location: The label is attached to the backside of the LCD module.

(2) Detail of the Mark: as attached below.

(3) This is subject to change without prior notice.

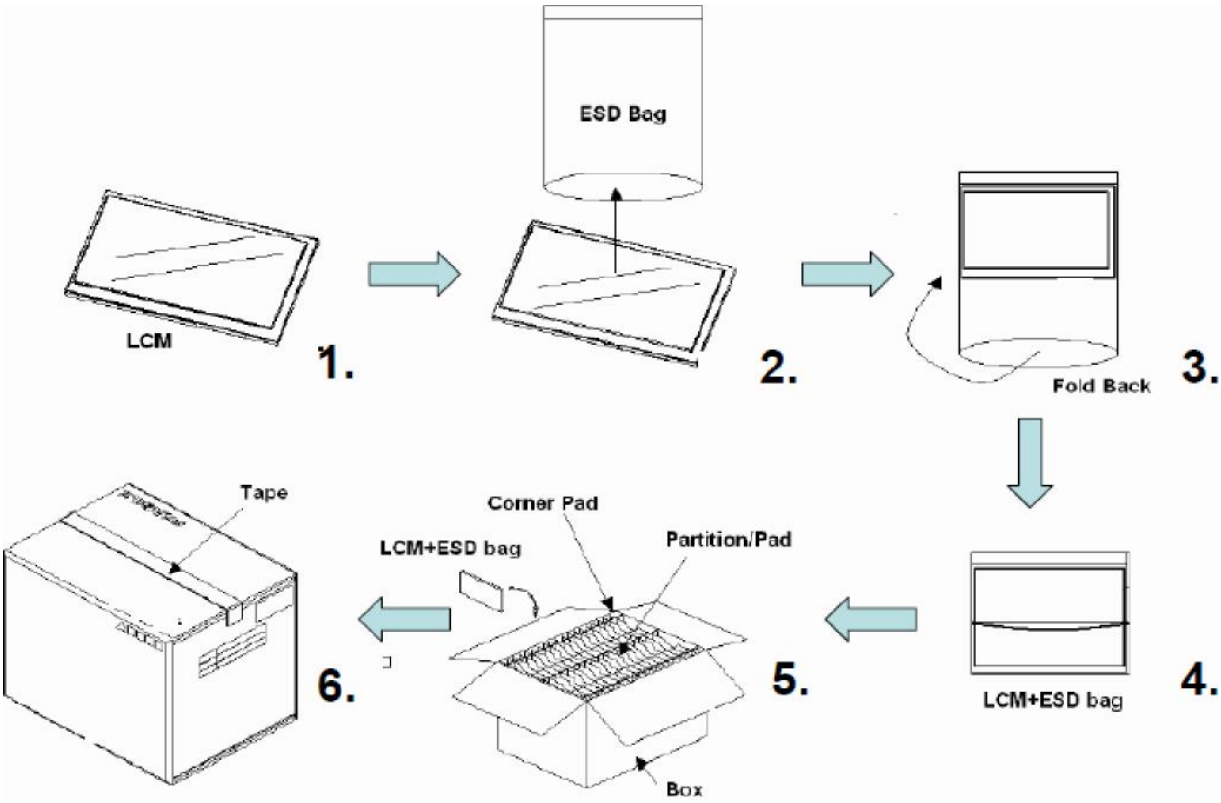
---T.B.D

10.0 PACKAGE SPECIFICATION

10.1 Packing form

LCM Model	LCM Qty. in the box	Inner Box Size (mm)	Note
	50 pcs/box	455±5 x 305±5 x 205±5	

10.2 Packing assembly drawings



Items	Material	Notice
Box	Corrugated Paper Board	AB Flute
Partition/Pad	Corrugated Paper Board	B Flute
Corner Pad	Corrugated Paper Board	AB Flute
ESD bag	PE	

11.0 GENERAL PRECAUTION

11.1 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.

11.2 Assembly Precaution

11.2.1 Please use the mounting hole on the module side in installing and do not bending or wrenching LCD in assembling. And please do not drop, bend or twist LCD module in handling.

11.2.2. Please design display housing in accordance with the following guide lines.

11.2.2.1 Housing case must be destined carefully so as not to put stresses on LCD all sides and not to wrench module. The stresses may cause non-uniformity even if there is no non-uniformity statically.

11.2.2.2 Keep sufficient clearance between LCD module back surface and housing when the LCD module is mounted. The clearance in the design is recommended taking into account the tolerance of LCD module thickness and mounting structure height on the housing.

11.2.3 Please do not push or scratch LCD panel surface with any-thing hard. And do not soil LCD panel surface by touching with bare hands.(Polarizer film, surface of LCD panel is easy to be flawed.)

11.2.4 Please do not press any parts on the rear side such as source IC, gate IC, and FPC during handling LCD module, If pressing rear part is unavoidable, handle the LCD module with care not to damage them.

11.2.5 Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.

11.2.6 Please wipe out drops of adhesives like saliva and water on LCD panel surface immediately. They might damage to cause panel surface variation and color change.

11.2.7 Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.

11.3 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. Century does not warrant the module, if customers disassemble or modify the module.

11.4 Breakage of LCD Panel

11.4.1.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.

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

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

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

11.5 Absolute Maximum Ratings and Power Protection Circuit

11.5.1. 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.

11.5.2. 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.

11.6 Operation

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

11.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

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

11.6.4 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.

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

11.7 Static Electricity

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

11.7.2. 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.

11.7.3 Persons who handle the module should be grounded through adequate methods.

11.8 Disposal

When disposing LCD module, obey the local environmental regulations.

11.9 Others

11.9.1 A strong incident light into LCD panel might cause display characteristics' changing inferior because of Polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight Land Strong UV rays.

11.9.2 Please pay attention to a panel side of LCD module not to contact with other materials in pressing it alone.

11.9.3 For the packaging box, please pay attention to the followings:

11.9.3.1 Packaging box and inner case for LCD are designed to protect the LCDs from the damage or scratching during transportation. Please do not open except picking LCDs up from the box.

11.9.3.2 Please do not pile them up more than 6 boxes(They are not designed so) And please do not turn over.

11.9.3.3 Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.

11.9.3.4 Packing box and inner case for LCDs are made of cardboard, So please pay attention not to get them wet(Such like keeping them in high humidity or wet place can occur getting them wet.)