PRODUCT SPECIFICATION

KADI Model: KD070QWS143HP

CUSTOMER Model: -

Description: 7.0 ” TFT-LCD Module

Version: 1.0

KADI	PREPARED BY	CHECKED BY	APPROVED BY
SIGNATURE			
DATE	2025.7.15	2025.7.15	2025.7.15

	SIGNATURE	DATE
CUSTOMER APPROVAL		

Record of Revisions

Version	Revise Date	Description	Page
1.0	2025-7-15	First Release	-

Contents

1. General Specifications

1.1 LCM General Information

Item	Specification	Unit
LCD Size	7.0	inch
Number of Pixels	1024 (H) RGB x 600 (V)	pixels
Display Mode	Normally Black	-
Viewing Direction	Free	-
Interface	LVDS	-
Display Colors	16.7M	colors
Outline Dimension	164.26 (H) x 99.26 (V) x 5.46 (D)	mm
Active Area	154.21 (H) x 85.92 (V)	mm
Pixel Pitch	0.1505 (H) x 0.1432 (V)	mm
Driver IC	HX8282+HX8696	-
Operation Temperature	-20~70	℃
Storage Temperature	-30~80	℃

Note1:Requirements on environmental protection RoHS compliant.

2. Absolute Maximum Ratings

Item	Symbol	MIN.	MAX.	Unit	Note
Analog Supply voltage	TFT_VDD	-0.5	3.96	V	Note 1

Note 1:Permanent damage may occur to the LCD module if beyond this specification.
Functional operation should be restricted to the conditions described under normal operating conditions.

3. Elecrical Characteristics

3.1 Recommended Operating Condition for TFT LCD

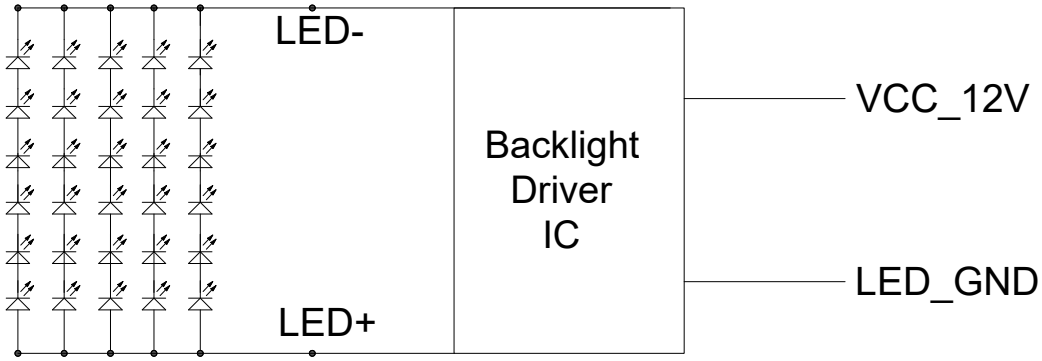
Item	Symbol	Min.	Typ.	Max.	Unit	Note
Analog Supply voltage	TFT_VDD	3.0	3.3	3.6	V	
Analog supply current	I_{TFT_VDD}	-	180	235	mA	TFT_VDD=3.3V（BLUE）
Logic input voltage	VIH	0.7*TFT_VDD	-	TFT_VDD	V	
	VIL	GND	-	0.3*TFT_VDD	V	

3.2 Recommended Driving Condition for Backlight

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Driving Current	I_{BLU}	-	190	-	mA	
Driving Voltage	V_{BLU}	-	12	-	V	
Power consumption	W_{BLU}	-	2.28	-	W	
LED Life-Time	N/A	-	50,000	-	Hours	Ta=25℃ Note 1

Note 1:LED lifetime is defined as the module brightness decay 50% of original brightness at Ta=25 degree, typical current.

Note 2:LED circuit :



CIRCUIT DIAGRAM

VF =16.2~20.4V; IF = 100mA
30 CHIP WHITE LED, 6S5P

4. Interface Pin Assignment

4.1 LCM Pin Assignment

No.	Symbol	Description
1	LV0N	- LVDS differential data input
2	LV0P	+ LVDS differential data input
3	GND	Ground
4	LV1N	- LVDS differential data input
5	LV1P	+ LVDS differential data input
6	GND	Ground
7	LV2N	- LVDS differential data input
8	LV2P	+ LVDS differential data input
9	GND	Ground
10	LVCLKN	-LVDS differential clock input
11	LVCLKP	+LVDS differential clock input
12	GND	Ground
13	LV3N	- LVDS differential data input
14	LV3P	+ LVDS differential data input
15	LED_GND	LED_GND
16	LED_GND	LED_GND
17	VCC_12V	Power for BL-driver
18	VCC_12V	Power for BL-driver
19	CTP_VDD_5V0(NC)	No connection
20	CTP_USB_D-(NC)	No connection
21	CTP_USB_D+(NC)	No connection
22	CTP_GND(NC)	No connection
23	LED_PWM	PWM control signal for LED driver
24	I2C_INT_CTP(NC)	No connection
25	I2C_RESET_CTP(NC)	No connection
26	I2C_SDA_CTP/EEPROM(NC)	No connection
27	LED_EN	Backlight on/off control
28	I2C_SCL_CTP/EEPROM(NC)	No connection
29	CTP_VDD_3V3(NC)	No connection
30	TFT_VDD_3V3	Power supply（3.3V）

5. Interface Characteristics

5.1 Power Sequence

To prevent the device damage from latch up, the power on/off sequence shown below must be followed.

Power on: VDD, GND → AVDD, AGND → V1 to V14
Power off: V1 to V14 → AVDD, AGND→ VDD, GND

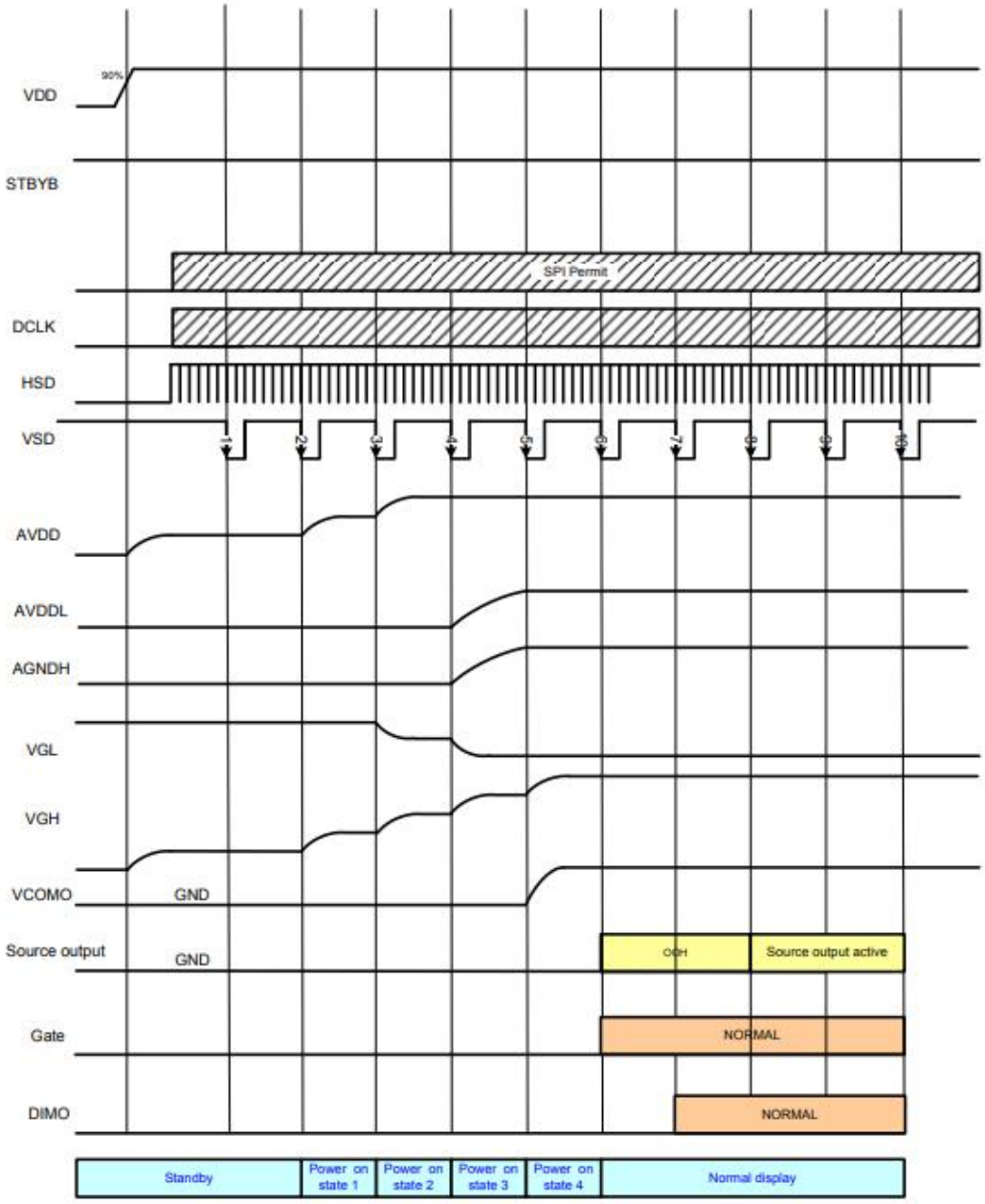
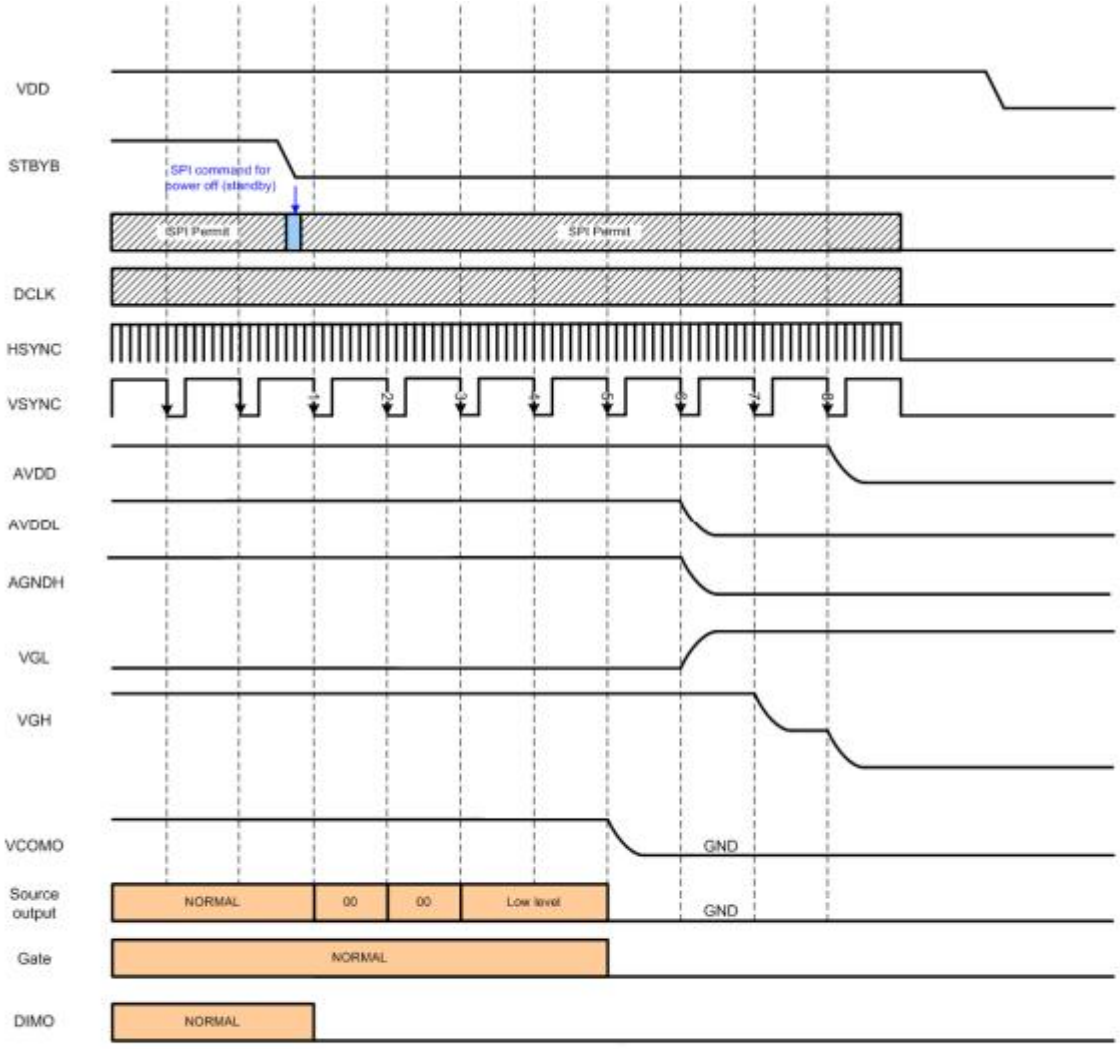


Figure 8.1: Power on timing sequence



Note: (1) Low level=3FH, when NBW=L. **(Normally white)**
(2) Low level=00H, when NBW=H. **(Normally black)**

Figure 8.2: Power off timing sequence

5.2 DC Characteristics

5.2.1 LVDS mode DC electrical characteristics

Parameter	Symbol	Condition	Spec.			Unit
			Min.	Typ.	Max.	
Differential input high Threshold voltage	R_{XVTH}	R_{XVCM}=1.2V	-	-	+0.1	V
Differential input low threshold voltage	R_{XVTL}		-0.1	-	-	V
Input voltage range **(Singled-end)**	R_{XVIN}	-	0	-	VDD-1.2+ $\|V_{ID}\|/2$	V
Differential input common mode voltage	R_{XVCM}	-	$\|V_{ID}\|/2$	-	VDD-1.2	V
Differential input voltage	$\|V_{ID}\|$	-	0.2	-	0.6	V
Differential input leakage Current	RV_{Xliz}	-	-10	-	+10	μA
LVDS digital operating Current	Iddlvds	Fclk=65MHz, VDD=3.3V	-	15	30	mA
LVDS digital stand-by Current	Istlvds	Clock & all functions are stopped	-	10	50	μA

Table 9.3: LVDS mode DC electrical characteristics

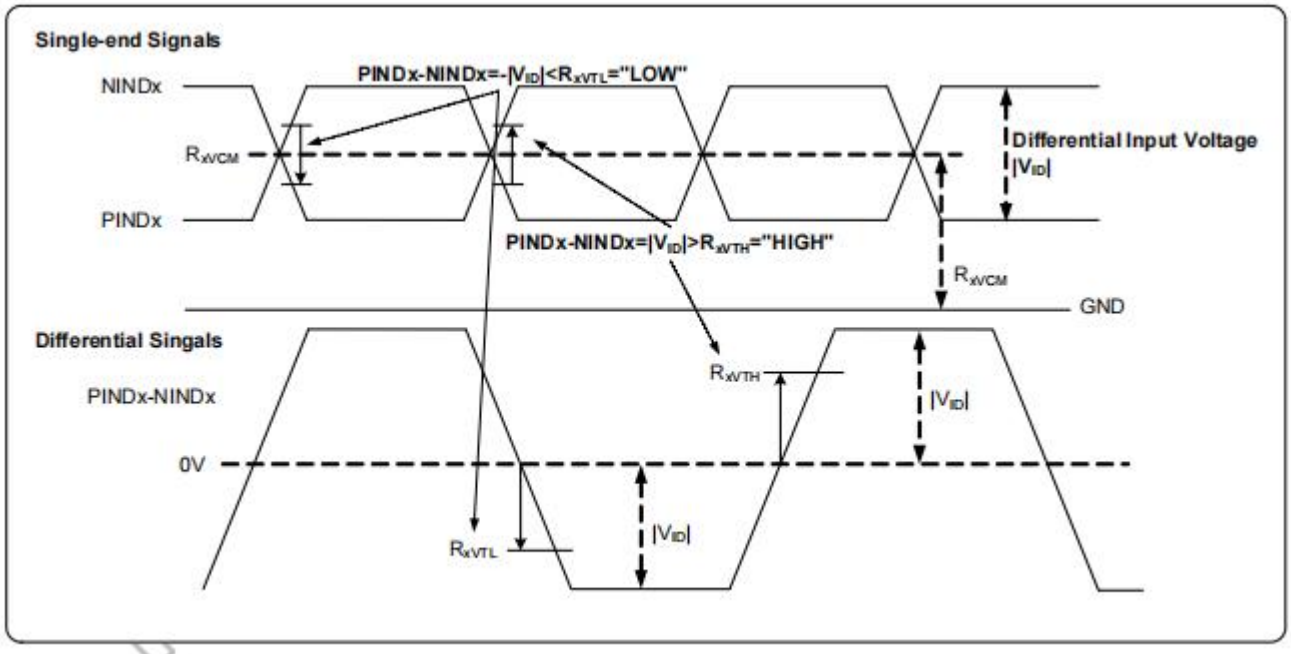


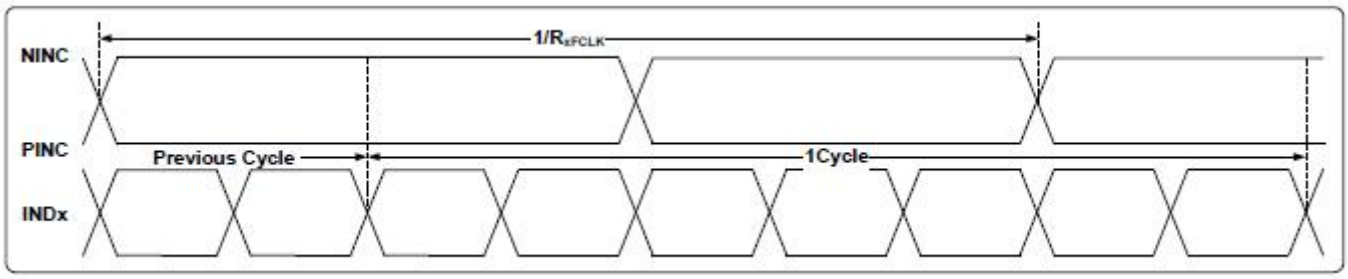
Figure 9.1: Single-end signals

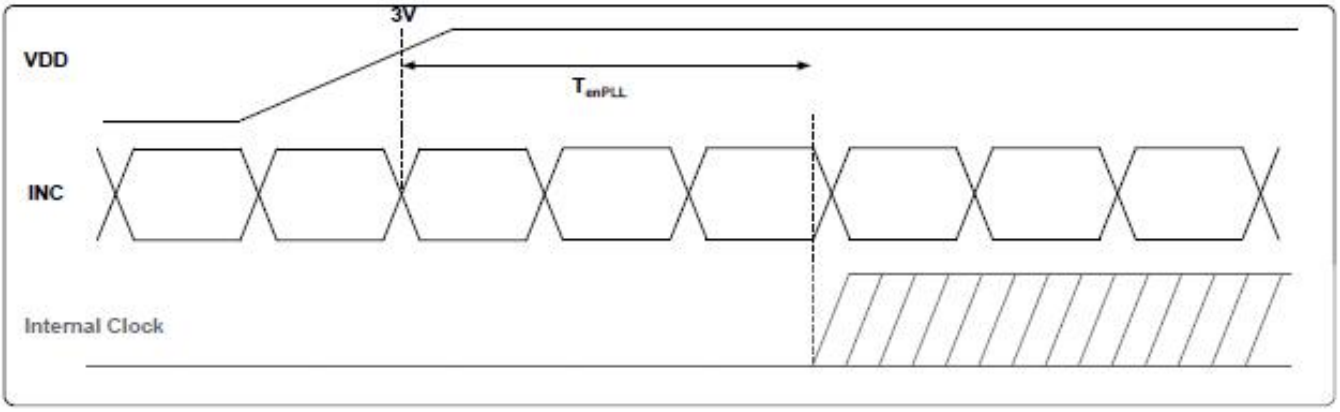
5.3 AC Characteristics

5.3.1 LVDS mode AC electrical characteristics

Parameter	Symbol	Condition	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
Clock frequency	R_{XFCLK}	-	20	-	71	MHz
Input data skew margin	T_{RSKM}	| V_{ID} |=400mV R_{XVCM}=1.2V R_{XFCLK}=71MHz	500	-	-	pS
Clock high time	T_{LVCH}	-	-	$4/(7xR_{XFCLK})$	-	ns
Clock low time	T_{LVCL}	-	-	$3/(7xR_{XFCLK})$	-	ns
PLL wake-up time	T_{enPLL}	-	-	-	150	μs

Table 10.2: LVDS mode AC electrical characteristics





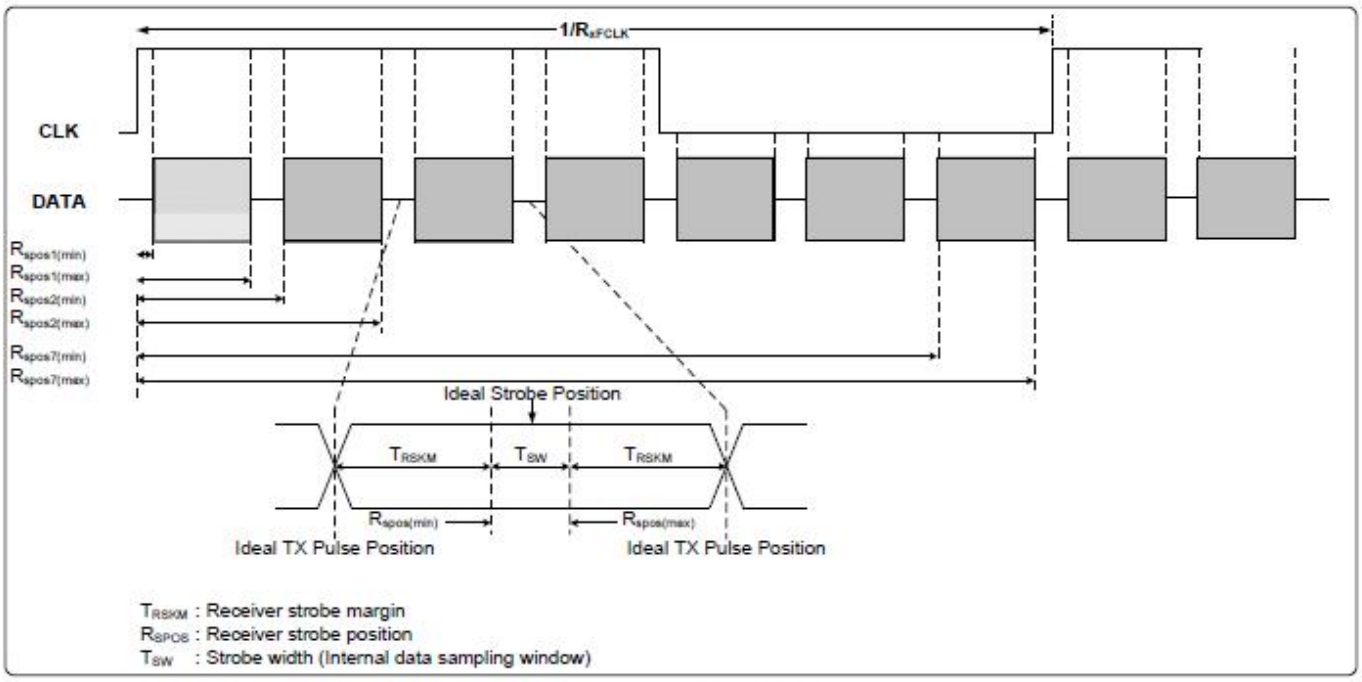


Figure 10.1: LVDS figure

Parameter	Symbol	Condition	Spec. Min.	Spec. Typ.	Spec. Max.	Unit
Modulation frequency	SSC_{MF}	-	23	-	93	KHz
Modulation rate	SSC_{MR}	LVDS clock=71MHz center spread	-	-	±3	%

Table 10.3: SSC table

5.3.2 LVDS mode data input format

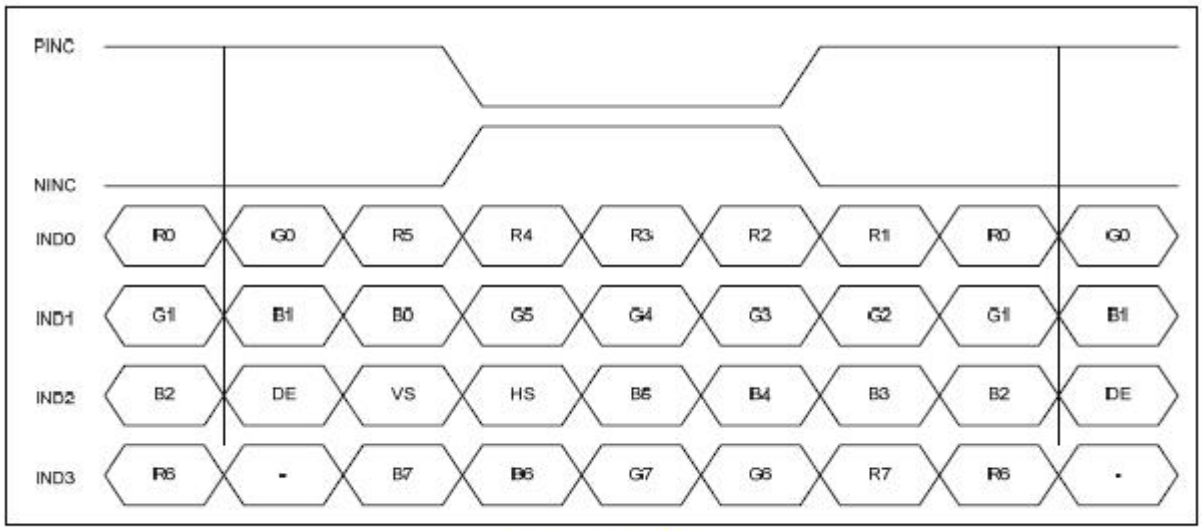


Figure 10.5: 8-bit LVDS input

5.3.3 Parallel RGB input timing table

DE mode

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
DCLK frequency	fclk	40.8	51.2	67.2	MHz
Horizontal display area	thd		1024		DCLK
HSD period	th	1114	1344	1400	DCLK
HSD blanking	thb+thfp	90	320	376	DCLK
Vertical display area	tvd		600		T_H
VSD period	tv	610	635	800	T_H
VSD blanking	tvbp+tvfp	10	35	200	T_H

Table 10.4: DE mode (1024x600)

5.4 Timing diagram

5.4.1 Input clock and data timing diagram

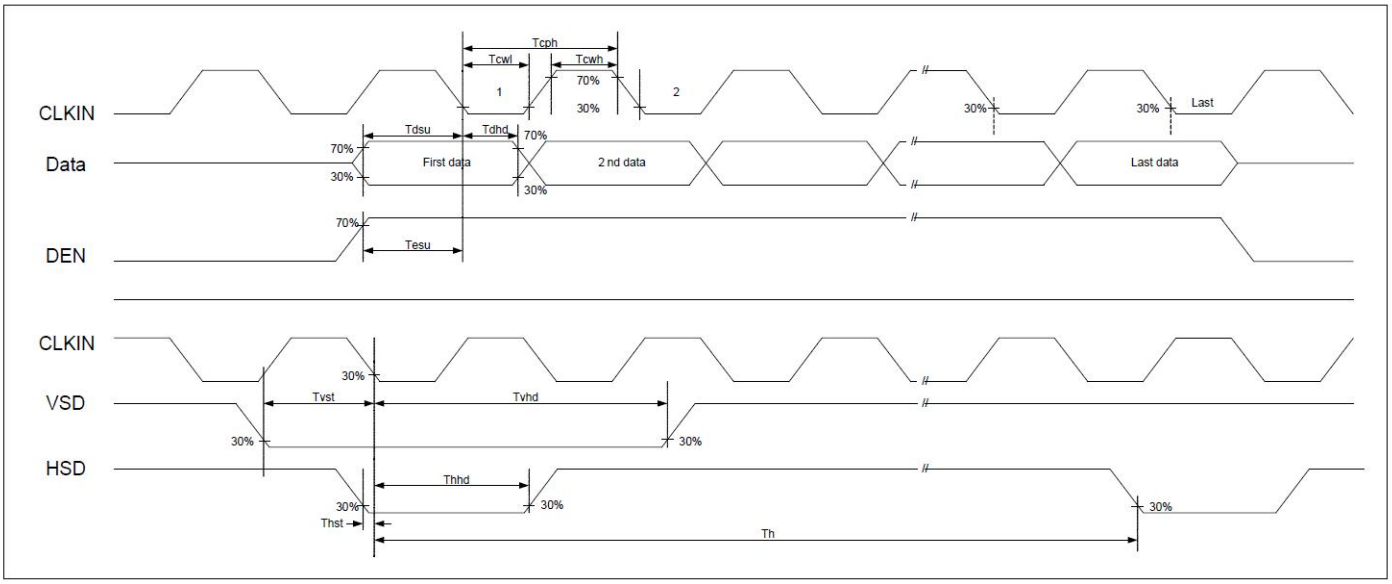


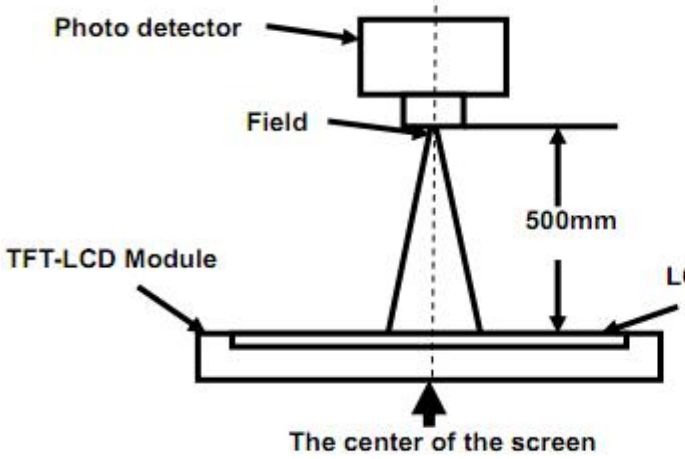
Figure 11.1: Input clock and data timing diagram

6. Optical Specifications

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Viewing Angle (CR≥10) B/L ON	θ_T	Φ=90°(12 o'clock)	80	85	-	deg	Note2
	θ_B	Φ=270°(6 o'clock)	80	85	-	deg	Note2
	θ_L	Φ=180°(9 o'clock)	80	85	-	deg	Note2
	θ_R	Φ=0°(3 o'clock)	80	85	-	deg	Note2
Response Time	T_{ON}	Normal θ=Φ=0°	-	12	17	msec	Note4
	T_{OFF}		-	12	17	msec	Note4
Contrast Ratio	CR		800	1000	-	-	Note1 Note3
Color Chromaticity	W_X		TBD	TBD	TBD	-	Note1 Note5
	W_Y		TBD	TBD	TBD	-	Note1 Note5
Luminance	L		420	500	-	cd/m²	Note1 Note7
Luminance Uniformity	Y_U		75	80	-	%	Note1 Note6
NTSC	-		45	50	-	%	-

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°

Fig 1

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).

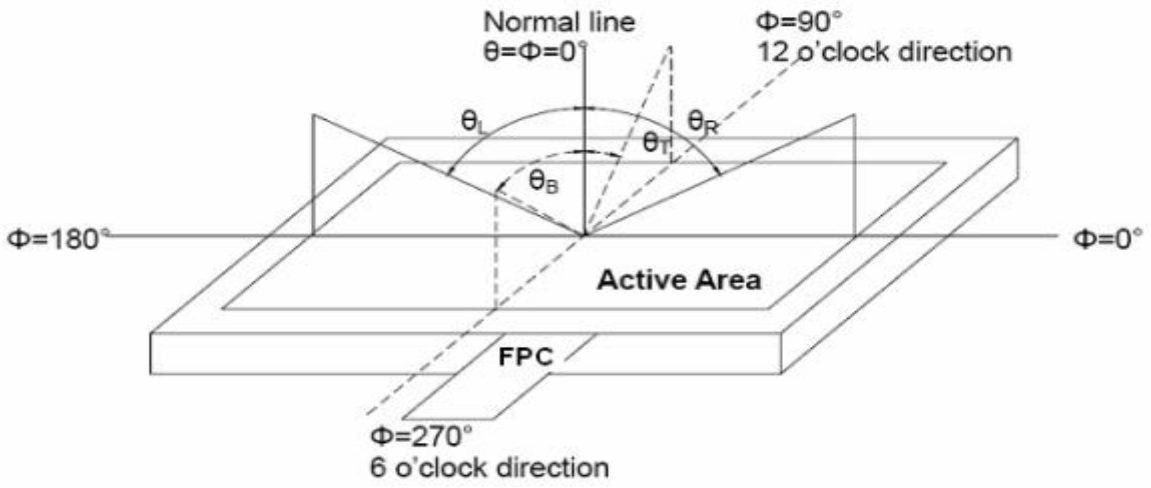


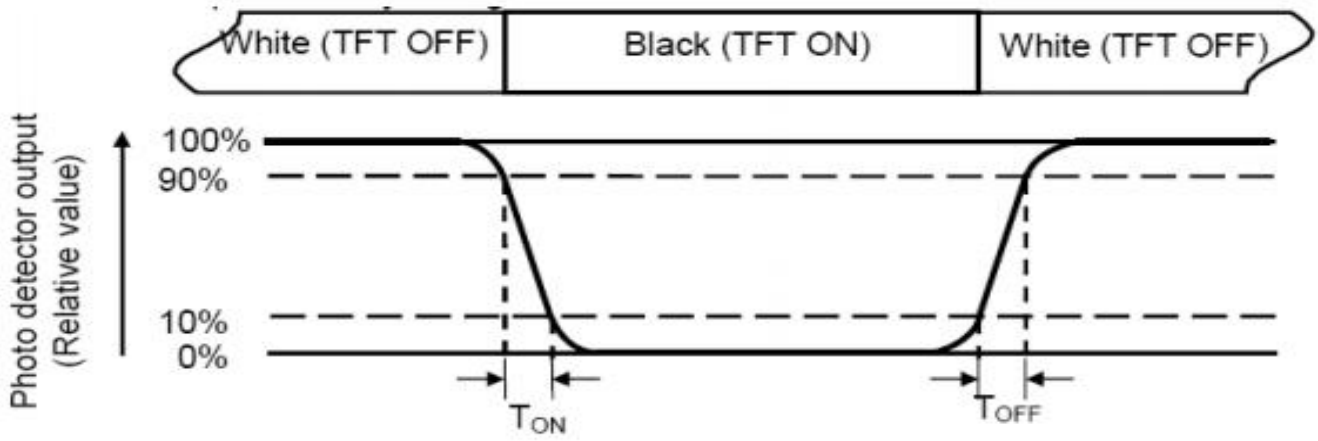
Fig 2 Definition of viewing angle

Note 3: Definition of contrast ratio

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

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

The luminance uniformity in surface luminance is determined by measuring luminance at each test position 1 through n, and then dividing the maximum luminance of n points luminance by minimum luminance of n points luminance.For more information see FIG.3-a/b

Note 7:Surface luminance is the luminance with all pixels displaying white.

Lv = Average Surface Luminance with all white pixels(P1,P2,P3, ...,Pn)

For more information see FIG.3-a/b

Note 8:

H,V : Active area(see Figure b)

Light spot size ⌀ =5mm(BM-5) or ⌀ =7.7mm (BM-7)50cm distance or compatible distance from the LCD surface to detector lens. test spot position : see Figure b.

measurement instrument : TOPCON's luminance meter SR-3A or BM-7 or compatible (see Figure 1).

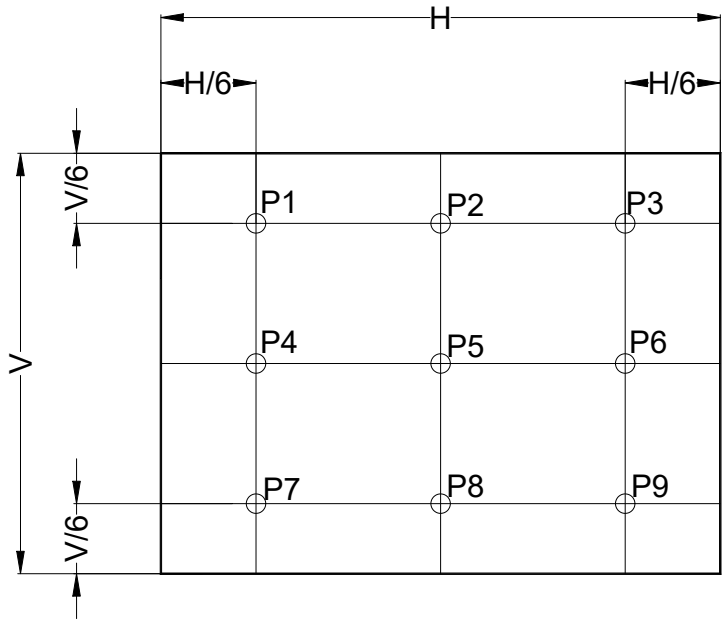


Fig. 3-b Definition of points

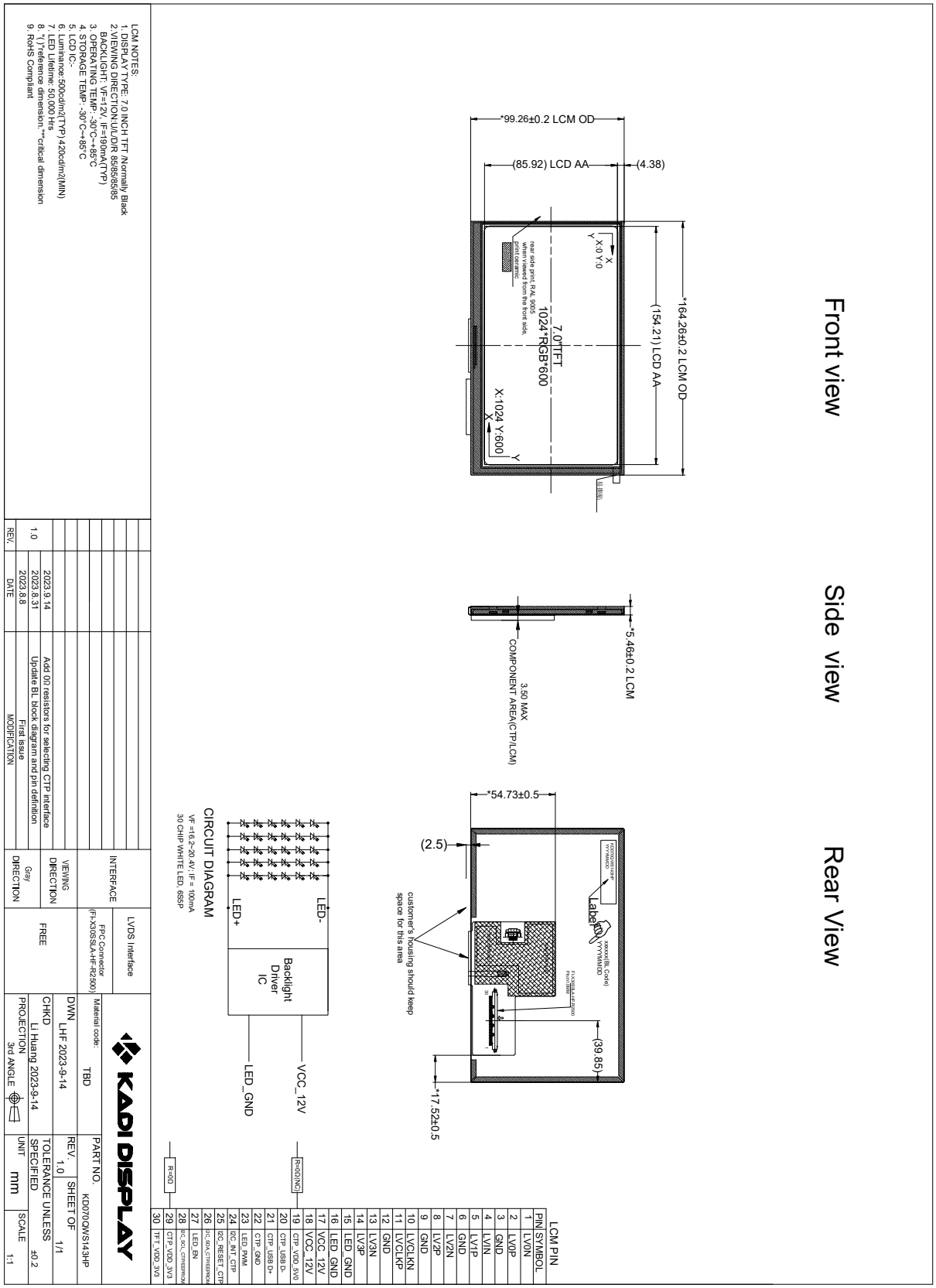
7. Reliability Test Items

Test Item	Test Conditions	
High Temperature Storage	Ta= +80℃	96hrs
Low Temperature Storage	Ta= -30℃	96hrs
High Temperature Operation	Ta= +70℃	96hrs
Low Temperature Operation	Ta= -20℃	96hrs
High Temperature and Humidity Storage	Ta= +60℃, 90% RH	96hrs
Thermal Shock (Non-operation)	-30℃/30 min ~ +80℃/30 min for 20 cycles Start with cold temperature end with high temperature	
Electro Static Discharge	Contact = ± 4 kV, class B Air = ± 8 kV, class B R=330Ω,C=150pF	
Vibration	Sweep: 10Hz~55Hz~10Hz Stroke: 1.5mm 2 hrs for each direction of X .Y. Z.	
Mechanical Shock	60G 6ms,±X,±Y,±Z 3 times for each direction	
Package Drop Test	Height: 60 cm 1 corner, 3 edges, 6 surfaces	

Notes: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if appear these defects:

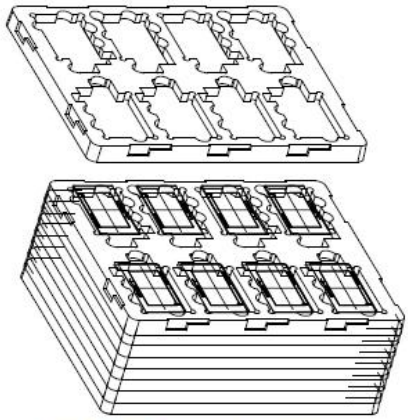
1). Air bubble in the LCD
2). Seal leak or Glass crack
3). Non display or abnormal display
4). Brightness reduction >50%

8. Mechanical Drawing

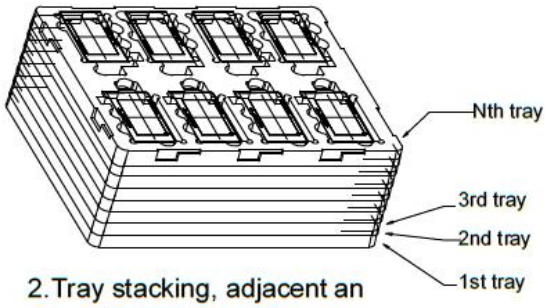


9. Packing

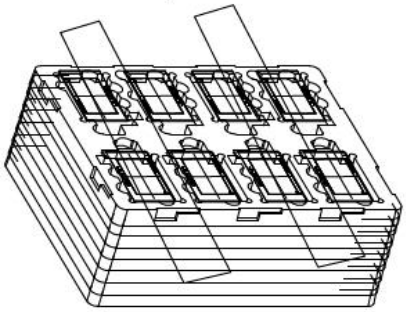
Packing Method



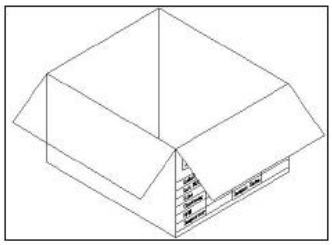
1.Put LCD module into tray cavity



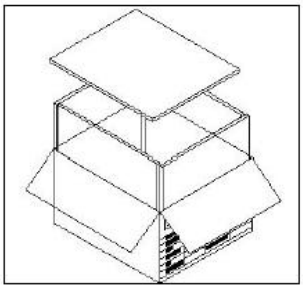
2.Tray stacking, adjacent an upper lower layer with a 180-degree rotation



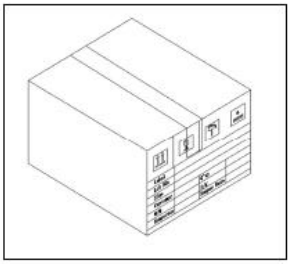
3.Medium Carton: Fix the tray stack with stretch film
Large Carton： Fix the tray stack with stretch film, then place it into a transparent PE antistatic bag



4. put the tray stack into carton



5. 6 sides of white foams inside the box



6. Carton sealing with adhesive tape

10. Precautions for Use of LCD modules

10.1 Handling Precautions

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

10.1.2. 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.

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

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

10.1.5. 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

10.1.6. Do not attempt to disassemble the LCD Module.

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

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

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

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

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

10.1.8.4. 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.

10.2 Storage Precautions

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

10.2.2.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℃ ~40℃ Relatively humidity: ≤80%

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

10.3 Transportation Precautions

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

10.4 Packaging instructions

When the customers using trays, they have to stack the adjacent trays in a 180° staggered to prevent pressure that could cause product damage.