



SPECIFICATION

INNOLUX

G070ACE-L01

7" – WVGA – LVDS

Version: 2.3

Date: 29.05.2023

Note: This specification is subject to change without prior notice

Doc. Number :

- Tentative Target Specification
- Preliminary Specification
- Approval Specification

MODEL NO.: G070ACE
SUFFIX: L01

Customer:	
APPROVED BY	SIGNATURE
<u>Name / Title</u> _____	_____
Note	
<hr/> Please return 1 copy for your confirmation with your signature and comments.	

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REVISION HISTORY

Version	Date	Page	Description
2.0	Sep.6, 2019	All	Spec Ver. 2.0 was first issued.
2.1	Apr.30, 2020	29	Modify 2D drawing.
	Jun. 15, 2020	26	Add UL code on module label.
2.2	Mar.5, 2021	All	Approval Specification was first issued
2.3	Dec.20, 2022	19	Add 4.7 THE INPUT DATA FORMAT

1. GENERAL DESCRIPTION

1.1 OVERVIEW

G070ACE-L01 is a 7" TFT Liquid Crystal Display module with WLED Backlight unit and 30 pins 1ch-LVDS interface. This module supports 800xRGBx480 AAS mode and can display 262k or 16.7M colors.

1.2 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Screen Size	7" real diagonal		
Driver Element	a-si TFT active matrix	-	-
Pixel Number	800 x R.G.B. x 480	pixel	-
Pixel Pitch	0.1905 (H) x 0.1905 (V)	mm	-
Pixel Arrangement	RGB stripe	-	-
Display Colors	16.7M / 262K	color	-
Transmissive Mode	Normally Black	-	-
Surface Treatment	AG type, 3H hard coating,	-	-
Luminance, White	500(Typ.)	Cd/m2	
Color Gamut	70 % of NTSC(Typ.)	-	-
Power Consumption	Total 2.48 W (Typ) @ cell 0.48 W (Typ), BL 2.0 W (Typ)		

2. MECHANICAL SPECIFICATIONS

Item	Min.	Typ.	Max.	Unit	Note	
Module Size	Horizontal (H)	169.5	170	170.5	mm	(1) (2)
	Vertical (V)	109.5	110	110.5	mm	
	Thickness (T)	5.5	6	6.5	mm	
Bezel Area	Horizontal	154.1	154.40	154.7	mm	
	Vertical	93.14	93.44	93.74	mm	
Active Area	Horizontal	-	152.4	-	mm	
	Vertical	-	91.44	-	mm	
Weight	173.66	182.8	191.94	g		

Note (1) Module Outline Size without User hold. (Based on 2D Drawing)

(2) Module Thickness Size without PCBA/Connector. (Based on 2D Drawing)

3. ABSOLUTE MAXIMUM RATINGS

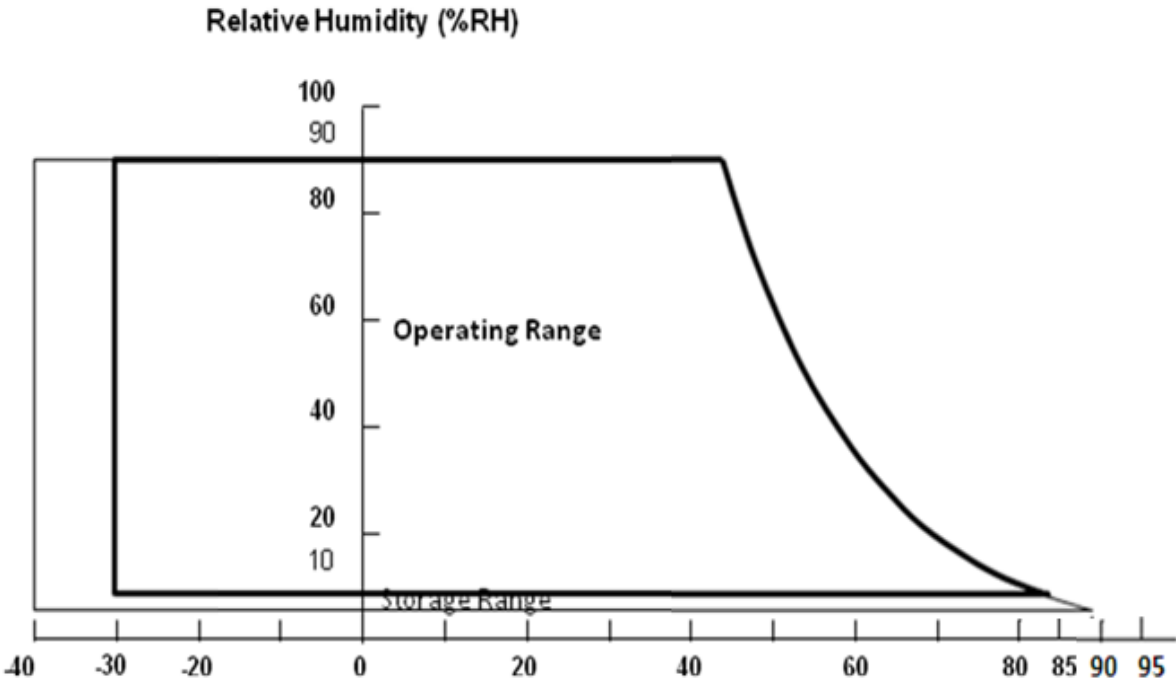
3.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	Tst	-40	90	°C	(1), (2)
Operating Ambient Temperature	Top	-30	85	°C	(1), (2)

Note (1) Temperature and relative humidity range is shown in the figure below.

- (a) 90 %RH Max. ($T_a \leq 40\text{ °C}$).
- (b) Wet-bulb temperature should be 39 °C Max. ($T_a > 40\text{ °C}$).
- (c) No condensation.

(2) The absolute maximum rating values of this product are not allowed to be exceeded at any times. The module should not be used over the absolute maximum rating value. It will cause permanently unrecoverable function fail in such an condition



3.2 ELECTRICAL ABSOLUTE RATINGS

3.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	V _{CC}	-0.3	3.6	V	(1)
Logic Input Voltage	V _{IN}	-0.3	3.6	V	

3.2.2 BACKLIGHT CONVERTER

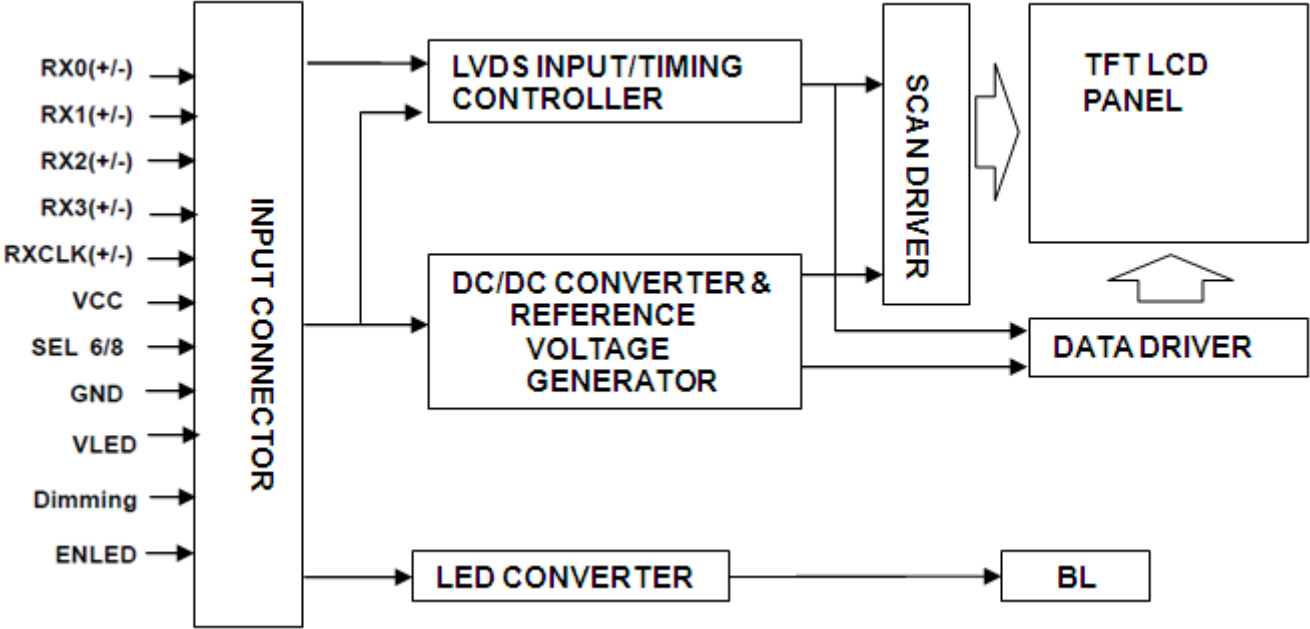
Item	Symbol	Value			Unit	Note
		Min.	Typ	Max.		
Converter Voltage	LED_V _{in}	0	12.0	18.0	V	(1), (2)
Enable Voltage	LED_EN	0	3.3 / 5	7	V	Duty=100%
Backlight Adjust	LED_PWM	0	3.3 / 5	7	V	(1), (2) Pulse Width ≤ 10msec. and Duty ≤ 10%

Note (1) Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

Note (2) Specified values are for input pin of LED light bar at Ta=25±2 °C (Refer to 4.3.3 and 4.3.4 for further information)

4. ELECTRICAL SPECIFICATIONS

4.1 FUNCTION BLOCK DIAGRAM



4.2. INTERFACE CONNECTIONS

PIN ASSIGNMENT

Pin No.	Symbol	Description	Note
1	12V	LED power	-
2	12V	LED power	-
3	12V	LED power	-
4	12V	LED power	-
5	ENLED	Enable pin	-
6	Dimming	Backlight Adjust	-
7	NC	No Connction (Reserve for INX test)	(3)
8	NC	No Connction (Reserve for INX test)	(3)
9	VCC	Power supply: +3.3V	-
10	VCC	Power supply: +3.3V	-
11	GND	Ground	-
12	GND	Ground	-
13	RX0-	Negative transmission data of pixel 0	-
14	RX0+	Positive transmission data of pixel 0	-
15	GND	Ground	-
16	RX1-	Negative transmission data of pixel 1	-
17	RX1+	Positive transmission data of pixel 1	-
18	GND	Ground	-
19	RX2-	Negative transmission data of pixel 2	-
20	RX2+	Positive transmission data of pixel 2	-
21	GND	Ground	-
22	RXCLK-	Negative of clock	-
23	RXCLK+	Positive of clock	-
24	GND	Ground	-
25	RX3-	Negative transmission data of pixel 3	-
26	RX3+	Positive transmission data of pixel 3	-
27	GND	Ground	-
28	SEL6/8	LVDS 6/8 bit select function control,	(2)
		Low → 6 bit Input Mode	
		High or NC → 8bit Input Mode	
29	GND	Ground	-
30	GND	Ground	-

Note (1) Connector Part No.: P-TWO 187114-30091 or equivalent.

Note (2) User's connector Part No.: JAE FI-X30H(L) or equivalent.

Note (3) "Low" stands for 0V. "High" stands for 3.3V

Note (4) Pin7, Pin8 input signals should be set to no connection or ground, this module would operate normally.

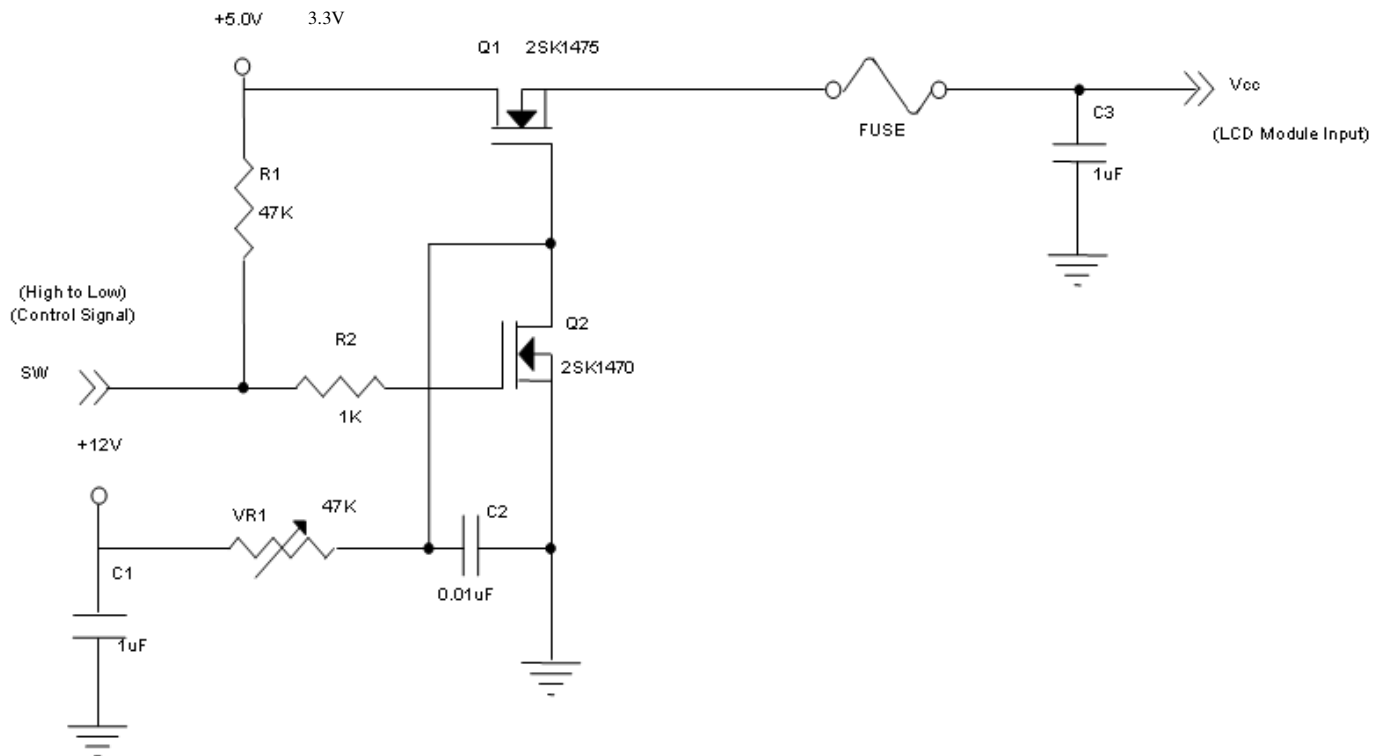
4.3 ELECTRICAL CHARACTERISTICS

4.3.1 LCD ELETRONICS SPECIFICATION

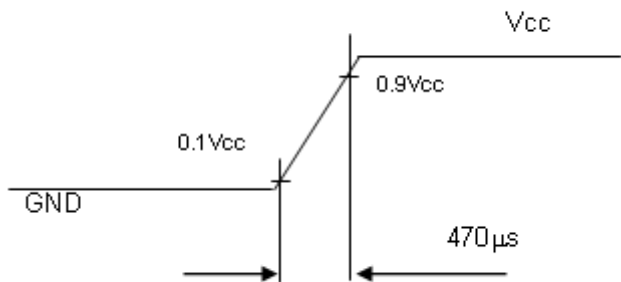
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V _{CC}	3.0	3.3	3.6	V	-
Ripple Voltage	V _{RP}	-	-	100	mVp-p	-
Rush Current	I _{RUSH}	-	-	2	A	(2)
Power Supply Current	White	-	135	200	mA	(3)a
	Black	-	85	135	mA	(3)b
	Vertical Stripe	-	145	220	mA	(3)c
Power Consumption	PLCD	-	0.48	0.73	W	
LVDS differential input voltage	V _{id}	200	-	600	mV	
LVDS common input voltage	V _{ic}	1.0	1.2	1.4	V	
LVDS terminating resistor	R _T	-	100	-	ohm	

Note (1) The ambient temperature is $T_a = 25 \pm 2 \text{ }^\circ\text{C}$.

Note (2) Measurement Conditions:

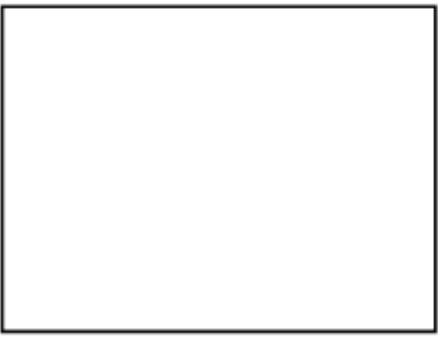


Vcc rising time is 470µs



Note (3) The specified power supply current is under the conditions at Vcc = 3.3 V, Ta = 25 ± 2 °C, Fr = 60Hz, whereas a power dissipation check pattern below is displayed.

a. White Pattern



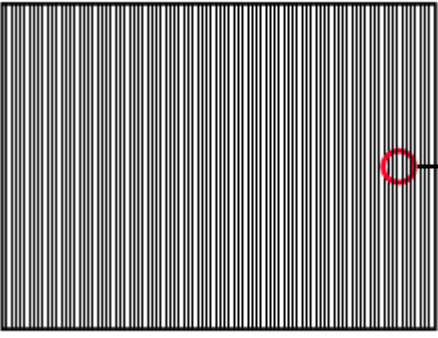
Active Area

b. Black Pattern

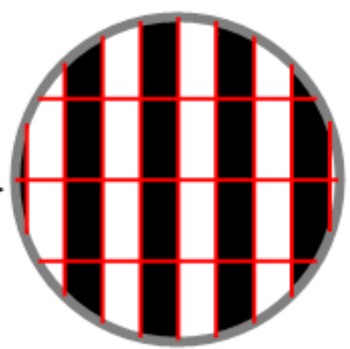


Active Area

c. Vertical Stripe Pattern

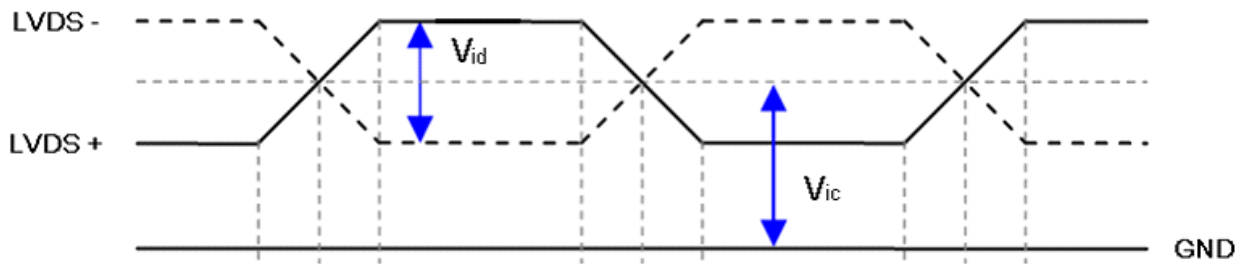


Active Area



Note (4) The power consumption is specified at the pattern with the maximum current.

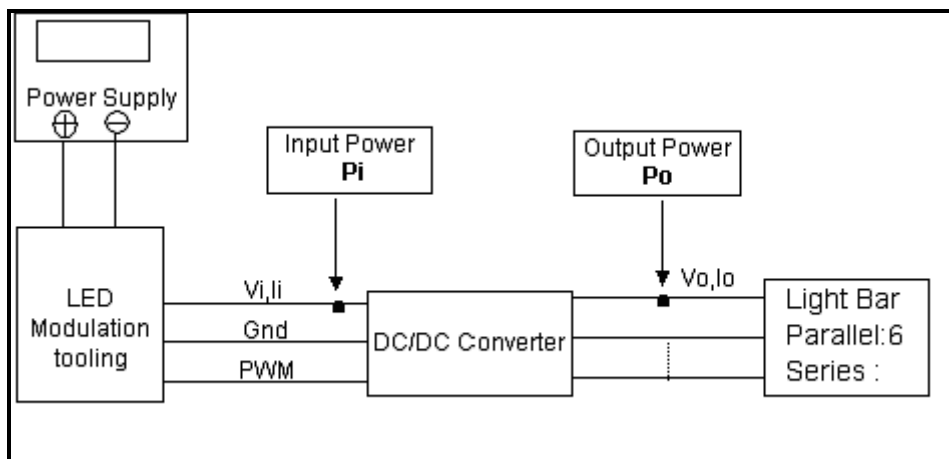
Note (5) VID waveform condition



4.3.2 BACKLIGHT UNIT

Parameter	Symbol	Value			Unit	Note	
		Min.	Typ.	Max.			
(Converter input voltage)	V_i	10.8	12.0	13.2	V_{DC}	(Duty 100%)	
(Converter input ripple voltage)	V_{iRP}	-	-	500	mV		
(Converter input current)	I_i	0.1	0.17	0.2	A_{DC}	@ $V_i = 12V$ (Duty 100%)	
(Converter inrush current)	I_{iRUSH}	-	4.3		A	@ V_i rising time=10ms ($V_i=12V$)	
Input Power Consumption	P_i	-	2.0	2.3	W	(1)	
EN Control Level	Backlight on	ENLED (BLON)	2.5	3.3	5.0	V	
	Backlight off		0	---	0.3	V	
PWM Control Level	PWM High Level	Dimming (E_PWM)	2.5	---	5.0	V	
	PWM Low Level		0	---	0.15	V	
PWM Noise Range	V_{Noise}	-	-	0.1	V		
PWM Control Frequency	f_{PWM}	190	200	300	Hz	(3)	
PWM Control Duty Ratio	-	5		100	%	(3),@ 190Hz < f_{PWM} < 1kHz	
		20		100	%	(3),@ 1kHz ≤ f_{PWM} < 20kHz	
LED Life Time	L_{LED}	50000	-	-	Hrs	(2)	

Note (1) LED current is measured by utilizing a high frequency current meter as shown below.



Note (2) The lifetime of LED is estimated data and defined as the time when it continues to operate under the conditions at $T_a = 25 \pm 2 \text{ }^\circ\text{C}$ and Duty 100% until the brightness becomes $\leq 50\%$ of its original value. Operating LED at high temperature condition will reduce life time and lead to color shift.

Note (3) At 190 ~1kHz PWM control frequency, duty ratio range is restricted from 5% to 100%.

1K ~20kHz PWM control frequency, duty ratio range is restricted from 20% to 100%.

If PWM control frequency is applied in the range from 1KHz to 20KHz, The“non-linear”phenomenon on the Backlight Unit may be found. So It’s a suggestion that PWM control frequency should be less than 1KHz.

4.4 LVDS INPUT SIGNAL SPECIFICATIONS

4.4.1 LVDS DATA MAPPING TABLE

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gray Scale Of Red	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	Red(253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Gray Scale Of Green	Green(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0		
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0		
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0		
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0		
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0		
Gray Scale Of Blue	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮			
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0		
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0		
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1		

Note (1) 0: Low Level Voltage, 1: High Level Voltage

4.5 DISPLAY TIMING SPECIFICATIONS

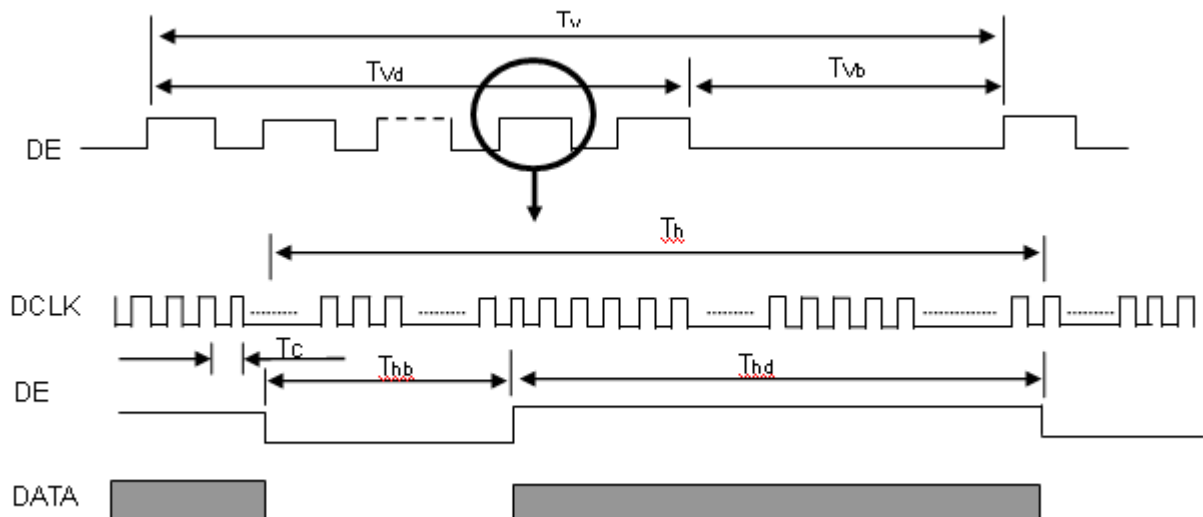
The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Clock	Frequency	Fc	25.2	25.4	35.7	MHz	-
	Period	Tc		39.37		ns	
	Input cycle to cycle jitter	Trcl	-0.02*Tc	-	0.02*Tc	ns	(3)
	Input clock to data skew	TLVCCS	-0.02*Tc	-	0.02*Tc	ns	(4)
	Spread spectrum modulation range	Fclkin_mod	FC*98%	-	FC*102%	MHz	(5)
	Spread spectrum modulation frequency	FSSM	23	-	93	KHz	
Vertical Display Term	Frame Rate	Fr	-	60	-	Hz	Tv=Tvd+Tvb
	Total	Tv	488	490	611	Th	-
	Active Display	Tvd	480	480	480	Th	-
	Blank	Tvb	8	10	131	Th	-
Horizontal Display Term	Total	Th	860	864	974	Tc	Th=Thd+Thb
	Active Display	Thd	800	800	800	Tc	-
	Blank	Thb	60	64	174	Tc	-

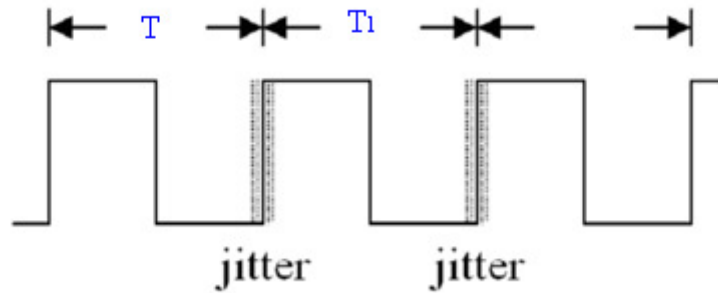
Note (1) Because this module is operated by DE only mode, Hsync and Vsync input signals are ignored.

Note (2) The Tv(Tvd+Tvb) must be integer, otherwise, this module would operate abnormally.

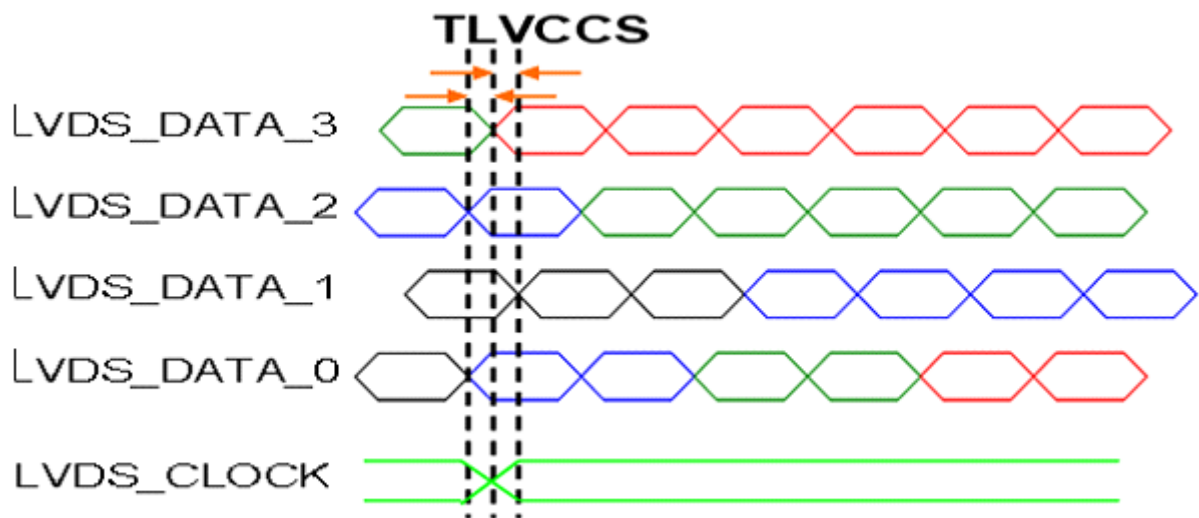
INPUT SIGNAL TIMING DIAGRAM



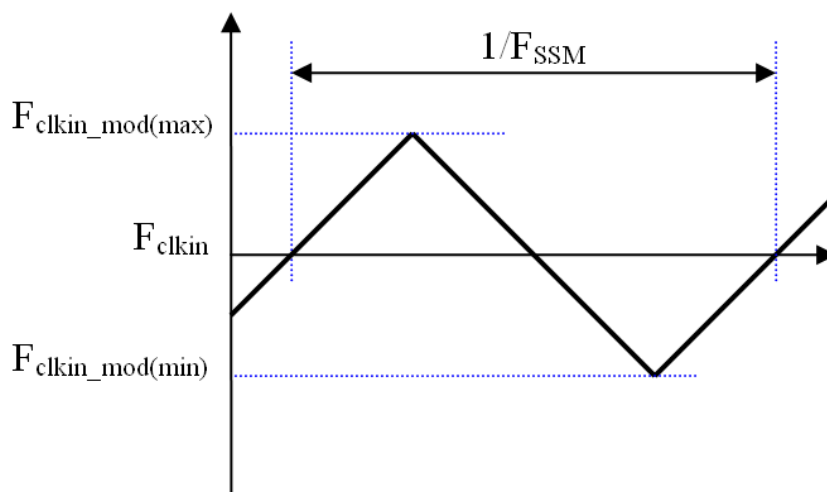
Note (3) The input clock cycle-to-cycle jitter is defined as below figures. $Trcl = |T_1 - T_1|$



Note (4) Input Clock to data skew is defined as below figures.

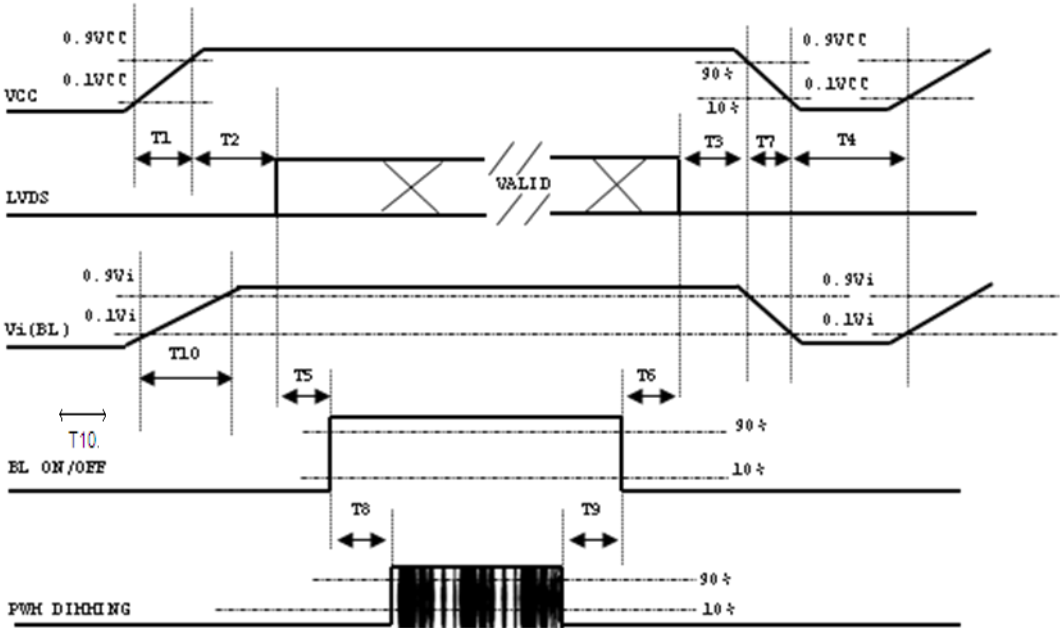


Note (5) The SSCG (Spread spectrum clock generator) is defined as below figures.



4.6 POWER ON/OFF SEQUENCE

The power sequence specifications are shown as the following table and diagram.



Timing Specifications:

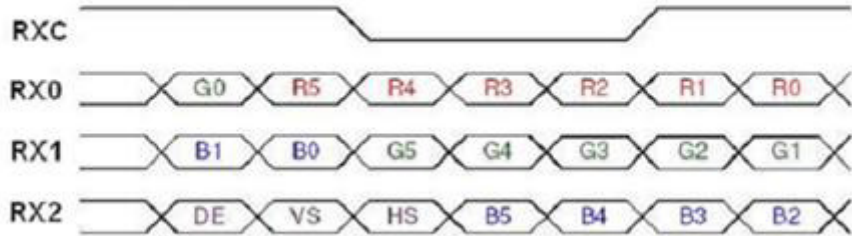
Parameter	Value			Units
	Min	Typ	Max	
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	0	-	50	ms
T4	500	-	-	ms
T5	450	-	-	ms
T6	200	-	-	ms
T7	10	-	100	ms
T8	10	-	-	ms
T9	10	-	-	ms
T10	20	-	50	ms

- (1)The supply voltage of the external system for the module input should be the same as the definition of Vcc.
- (2)When the backlight turns on before the LCD operation of the LCD turns off, the display may momentarily become abnormal screen.
- (3)In case of VCC = off level, please keep the level of input signals on the low or keep a high impedance.
- (4)T4 should be measured after the module has been fully discharged between power off and on period.

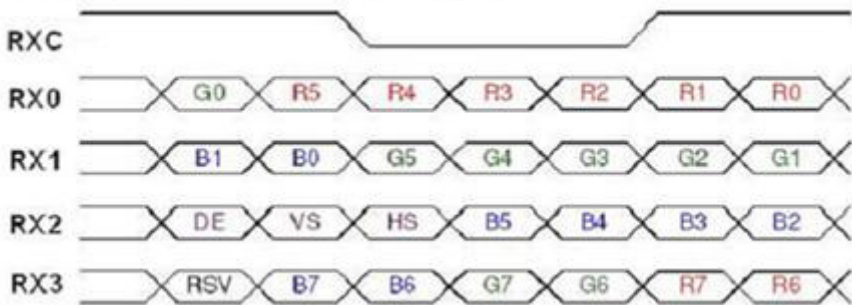
- (5)Interface signal shall not be kept at high impedance when the power is on.
- (6)INX won't take any responsibility for the products which are damaged by the customers not following the Power Sequence.
- (7)There might be slight electronic noise when LCD is turned off (even backlight unit is also off). To avoid this symptom, we suggest "Vcc falling timing" to follow "T7 spec"

4.7 THE INPUT DATA FORMAT

SEL 6/8="Low" for 6 Bits LVDS



SEL 6/8="High" for 8 Bits LVDS



Note (1) R/G/B data 7: MSB, R/G/B data 0: LSB

Note (2) Please follow PSWG

Signal Name	Description	Remark
R7	Red Data 7 (MSB)	Red-pixel Data Each red pixel's brightness data consists of these 8 bits pixel data.
R6	Red Data 6	
R5	Red Data 5	
R4	Red Data 4	
R3	Red Data 3	
R2	Red Data 2	
R1	Red Data 1	
R0	Red Data 0 (LSB)	
G7	Green Data 7 (MSB)	Green-pixel Data Each green pixel's brightness data consists of these 8 bits pixel data.
G6	GreenData 6	
G5	GreenData 5	
G4	GreenData 4	
G3	GreenData 3	
G2	GreenData 2	
G1	GreenData 1	
G0	GreenData 0 (LSB)	
B7	Blue Data 7 (MSB)	Blue-pixel Data Each blue pixel's brightness data consists of these 8 bits pixel data.
B6	Blue Data 6	
B5	Blue Data 5	
B4	Blue Data 4	
B3	Blue Data 3	
B2	Blue Data 2	
B1	Blue Data 1	
B0	Blue Data 0 (LSB)	
RXCLKIN+ RXCLKIN-	LVDS Clock Input	
DE	Display Enable	
VS	Vertical Sync	
HS	Horizontal Sync	

5. OPTICAL CHARACTERISTICS

5.1 TEST CONDITIONS

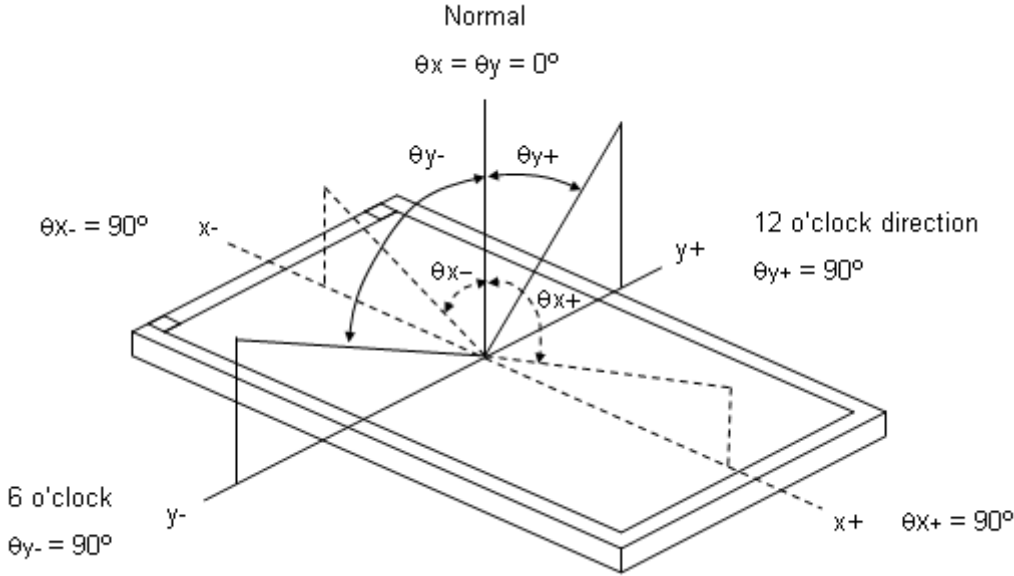
Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	According to typical value in "ELECTRICAL CHARACTERISTICS"		
Input Signal			
LED Light Bar Input Current Per Input Pin			

5.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 5.2 and all items are measured at the center point of screen except white variation. The following items should be measured under the test conditions described in 5.1 and stable environment shown in Note (5).

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
Color Chromaticity (CIE 1931)	Red	Rx	$\theta_x=0^\circ, \theta_y=0^\circ$ CS-2000 R=G=B=255 Gray scale	Typ - 0.05	0.625	Typ + 0.05	-	(1), (5)
		Ry			0.303			
	Green	Gx			0.307			
		Gy			0.630			
	Blue	Bx			0.150			
		By			0.050			
	White	Wx			0.313			
		Wy			0.315			
Center Luminance of White	L _C		400	500	-	cd/m ²	(4), (5)	
Contrast Ratio	CR		600	800	-	-	(2), (5)	
Response Time	T _R	$\theta_x=0^\circ, \theta_y=0^\circ$	-	13	-	ms	(3)	
	T _F		-	12	-			
White Variation	W	$\theta_x=0^\circ, \theta_y=0^\circ$	70	-	-	%	(5), (6)	
Viewing Angle	Horizontal	θ_{x+}	CR ≥ 10	80	89	---	Deg.	(1), (5)
		θ_{x-}		80	89			
	Vertical	θ_{y+}		80	89			
		θ_{y-}		80	89	---		

Note (1) Definition of Viewing Angle (θ_x, θ_y):



Note (2) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

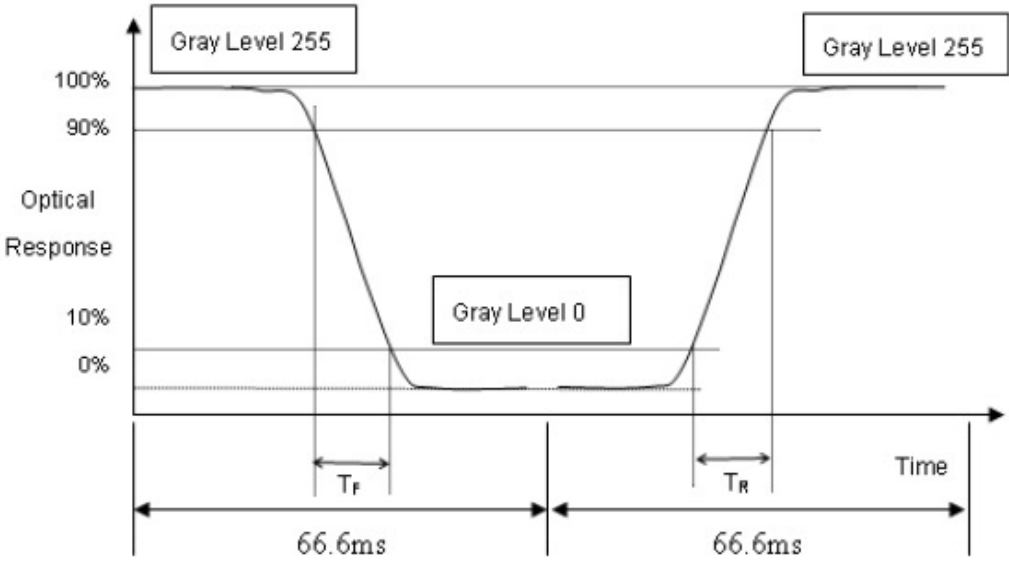
L255: Luminance of gray level 255

L 0: Luminance of gray level 0

$$\text{CR} = \text{CR (5)}$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (6).

Note (3) Definition of Response Time (T_R, T_F):



Note (4) Definition of Luminance of White (L_c):

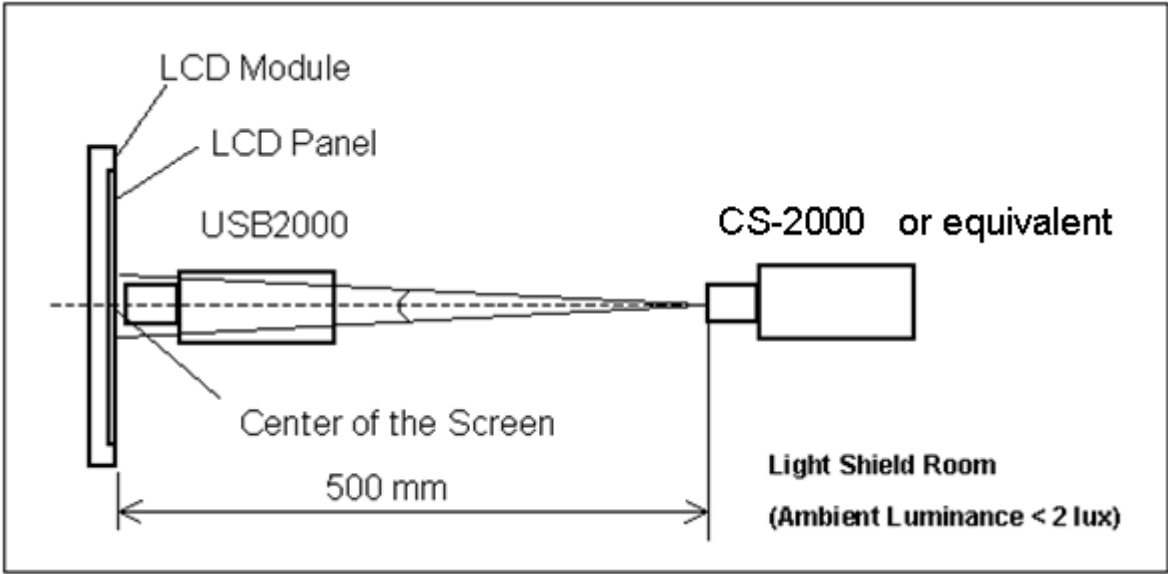
Measure the luminance of gray level 255 at center point

$$L_c = L(5)$$

$L(x)$ is corresponding to the luminance of the point X at Figure in Note (6).

Note (5) Measurement Setup:

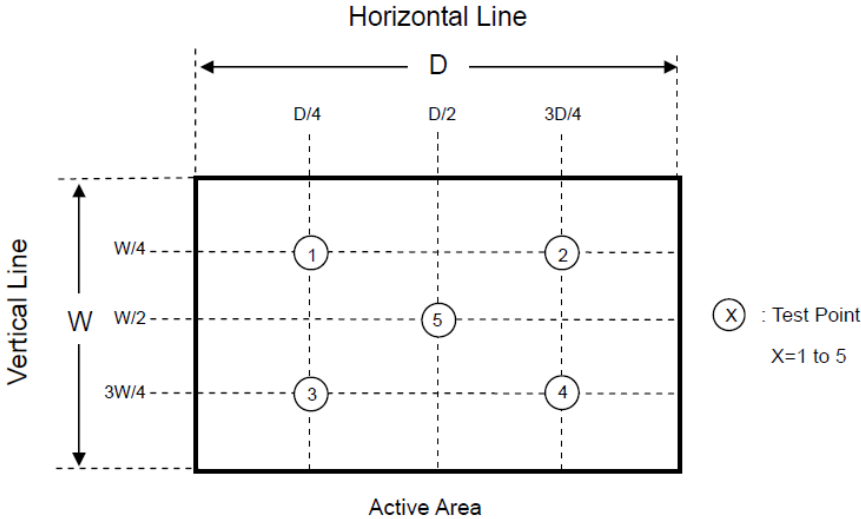
The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.



Note (6) Definition of White Variation (δW):

Measure the luminance of gray level 255 at 5 points

$$\delta W = (\text{Minimum } [L(1) \sim L(5)] / \text{Maximum } [L(1) \sim L(5)]) * 100\%$$



6. RELIABILITY TEST ITEM

Test Item	Test Condition	Note
High Temperature Storage Test	90°C, 240 hours	(1)(2) (4)(5)
Low Temperature Storage Test	-40°C, 240 hours	
Thermal Shock Storage Test	-30°C, 0.5hour \longleftrightarrow 80°C, 0.5hour; 1hour/cycle,100cycles	
High Temperature Operation Test	85°C, 240 hours	
Low Temperature Operation Test	-30°C, 240 hours	
High Temperature & High Humidity Operation Test	60°C, 90%RH, 240hours	(1)(2) (4)(6)
Shock (Non-Operating)	50G, 11ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$.	(2)(3)
Vibration (Non-Operating)	1.5G, 10 ~ 300 Hz, 10min/cycle, 3 cycles each X, Y, Z	(2)(3)

Note (1) There should be no condensation on the surface of panel during test.

Note (2) Temperature of panel display surface area should be 85 °C Max.

Note (3) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture.

Note (4) In the standard conditions, there is no function failure issue occurred. All the cosmetic specification is judged before reliability test.

Note (5) Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

Note (6) Before cosmetic and function test, the product must have enough recovery time, at least 24 hours at room temperature.

7. PACKING

7.1 PACKING SPECIFICATIONS

- (1) 38 pcs LCD modules / 1 Box
- (2) Box dimensions: 445 (L) X 370 (W) X 275 (H) mm
- (3) Weight: approximately 8.3Kg (38modules per box)

7.2 PACKING METHOD

LCD Module

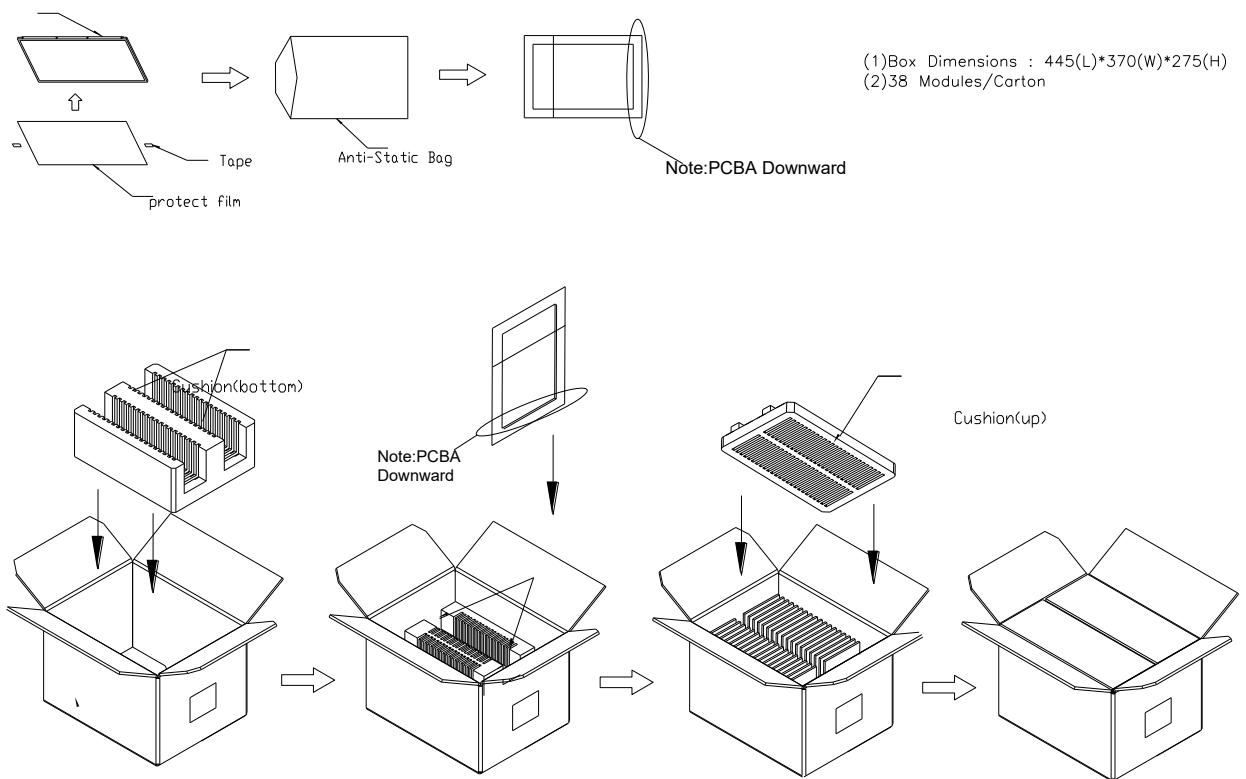
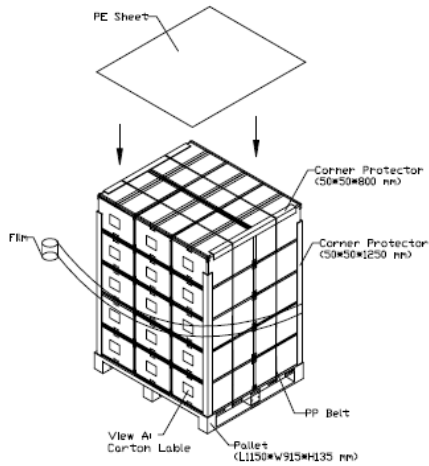
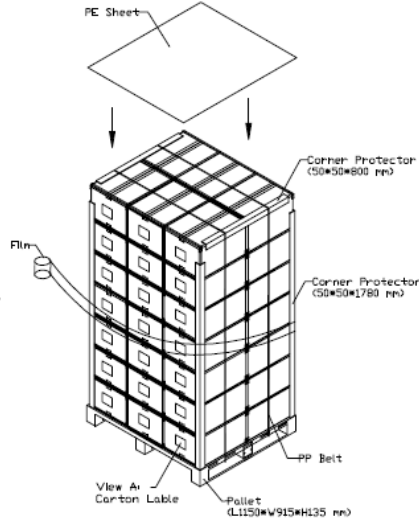


Figure. 7-1 Packing method

Air Transportation



Sea & Land Transportation (for Normal)



Sea & Land Transportation (for HQ)

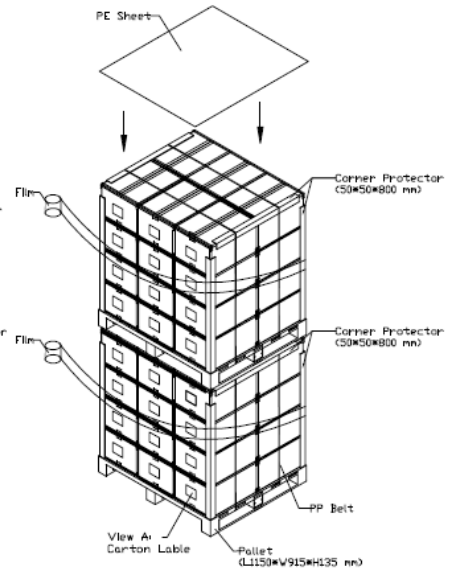


Figure. 7-2 Packing method

7.3 UN-PACKING METHOD

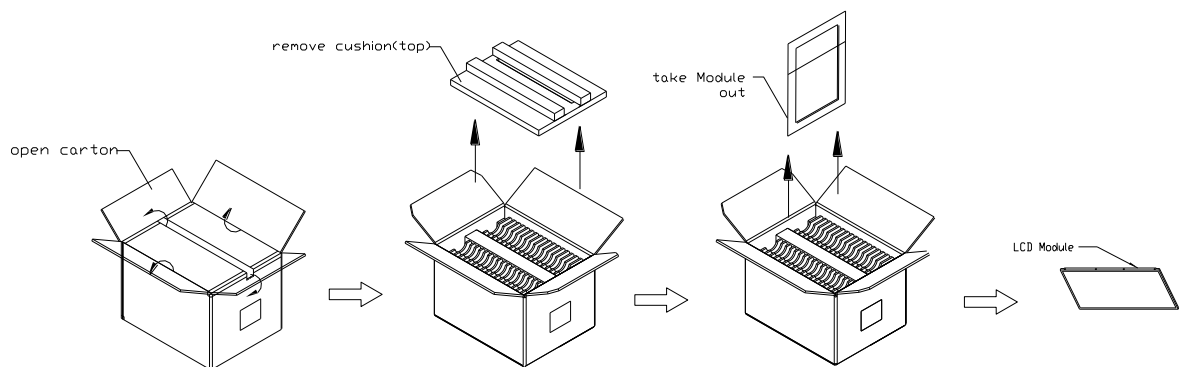
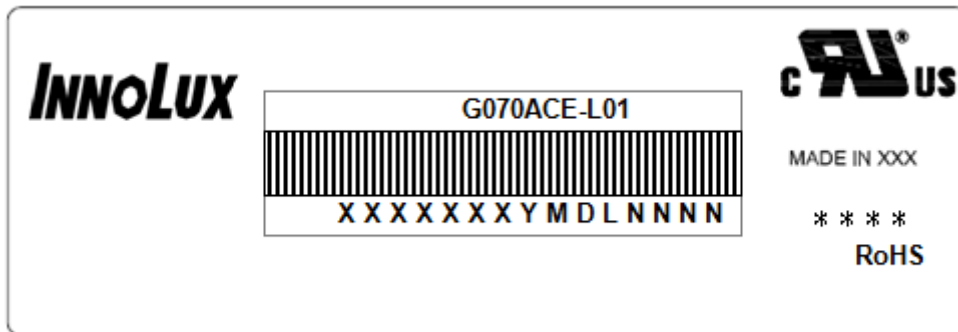


Figure. 7-3 UN-Packing method

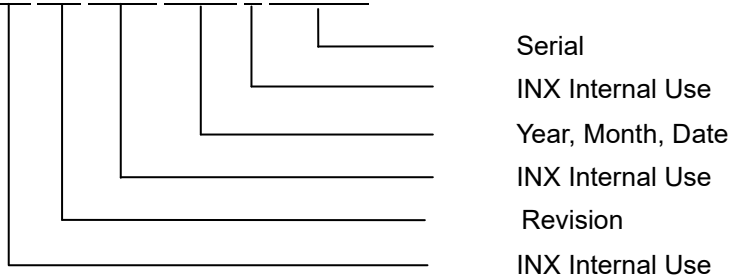
8. MODULE LABEL

8.1 INX MODULE LABEL

The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



- (a) Model Name: G070ACE-L01
- (b) Revision: Rev. XX, for example: A1, B1, C1, C2 ...etc.
- (c) * * * * : Factory ID
- (d) Serial ID: XXXXXXXYMDXNNNN



Serial ID includes the information as below:

- (a) Manufactured Date: Year: 1~9, for 2011~2019
 Month: 1~9, A~C, for Jan. ~ Dec.
 Day: 1~9, A~Y, for 1st to 31st, exclude I, O and U
- (b) Revision Code: cover all the change
- (c) Serial No.: Manufacturing sequence of product

9. PRECAUTIONS

9.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) To assemble or install module into user's system can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
- (3) It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.
- (4) Always follow the correct power sequence when LCD module is connecting and operating. This can prevent damage to the CMOS LSI chips during latch-up.
- (5) Do not pull the I/F connector in or out while the module is operating.
- (6) Do not disassemble the module.
- (7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (8) It is dangerous that moisture come into or contacted the LCD module, because moisture may damage LCD module when it is operating.
- (9) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
- (10) When ambient temperature is lower than 10°C may reduce the display quality. For example, the response time will become slowly.

9.2 STORAGE PRECAUTIONS

- (1) Do not leave the module in high temperature, and high humidity for a long time. It is highly recommended to store the module with temperature from 0°C to 35°C and relative humidity of less than 70%
- (2) Do not store the TFT – LCD module in direct sunlight
- (3) The module should be stored in dark place. It is prohibited to apply sunlight or fluorescent light in storing

9.3 OPERATION PRECAUTIONS

- (1) The LCD product should be operated under normal condition.
Normal condition is defined as below :
Temperature : 20±15°C
Humidity: 65±20%
Display pattern : continually changing pattern(Not stationary)
- (2) If the product will be used in extreme conditions such as high temperature, high humidity, high altitude ,display pattern or operation time etc...It is strongly recommended to contact CMI for application engineering advice . Otherwise , Its reliability and function may not be guaranteed.

9.4 SAFETY PRECAUTIONS

- (1) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (2) After the module's end of life, it is not harmful in case of normal operation and storage.

9.5 SAFETY STANDARDS

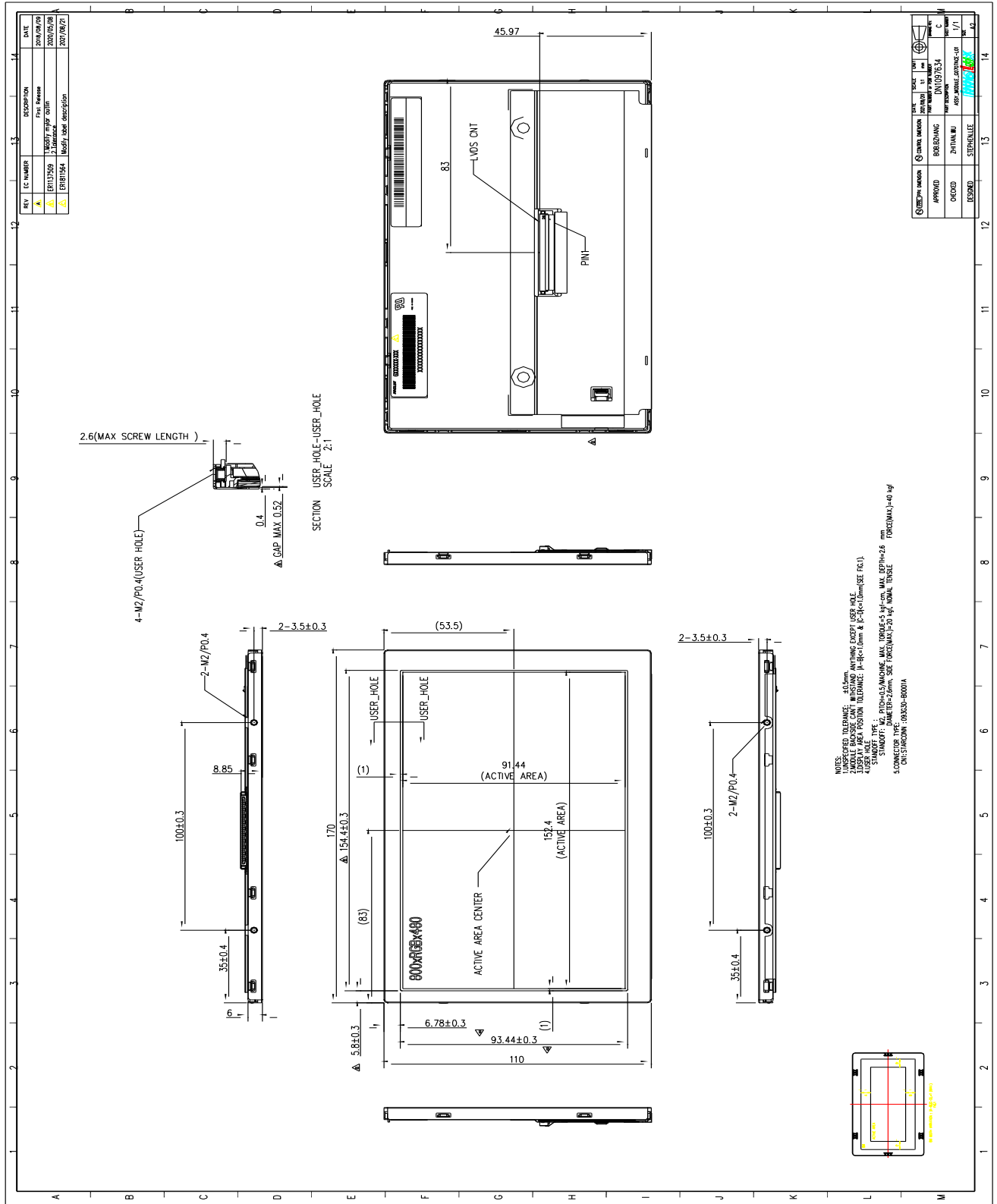
The LCD module should be certified with safety regulations as follows:

- (1) UL60950-1 or updated standard.
- (2) IEC60950-1 or updated standard.

9.6 OTHER

When fixed patterns are displayed for a long time, remnant image is likely to occur

Appendix. OUTLINE DRAWING



DATA MODUL



ALL TECHNOLOGIES. ALL COMPETENCIES. ONE SPECIALIST.



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