

- ☐ Tentative Specification
☐ Preliminary Specification
☒ Approval Specification

MODEL NO.: G150XNE
SUFFIX: L01

Customer: Common

APPROVED BY

SIGNATURE

Name / Title

Note

Please return 1 copy for your confirmation with your signature and comments.

Approved By	Checked By	Prepared By
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- CONTENTS -

REVISION HISTORY	-----	3
1. GENERAL DESCRIPTION	-----	4
1.1 OVERVIEW		
1.2 FEATURES		
1.3 APPLICATION		
1.4 GENERAL SPECIFICATIONS		
1.5 MECHANICAL SPECIFICATIONS		
2. ABSOLUTE MAXIMUM RATINGS	-----	6
2.1 ABSOLUTE RATINGS OF ENVIRONMENT		
2.2 ELECTRICAL ABSOLUTE RATINGS		
2.2.1 TFT LCD MODULE		
2.2.2 BACKLIGHT UNIT		
3. ELECTRICAL CHARACTERISTICS	-----	8
3.1 TFT LCD MODULE		
3.2 BACKLIGHT UNIT		
4. BLOCK DIAGRAM	-----	11
4.1 TFT LCD MODULE		
5. INPUT TERMINAL PIN ASSIGNMENT	-----	12
5.1 TFT LCD MODULE		
5.2 BACKLIGHT UNIT		
5.3 COLOR DATA INPUT ASSIGNMENT		
6. INTERFACE TIMING	-----	15
6.1 INPUT SIGNAL TIMING SPECIFICATIONS		
6.2 POWER ON/OFF SEQUENCE		
6.3 SCANNING DIRECTION		
7. OPTICAL CHARACTERISTICS	-----	19
7.1 TEST CONDITIONS		
7.2 OPTICAL SPECIFICATIONS		
8. RELIABILITY TEST CRITERIA	-----	23
9. PACKAGING	-----	24
9.1 PACKING SPECIFICATIONS		
9.2 PACKING METHOD		
9.3 UNPACKING METHOD		
10. DEFINITION OF LABELS	-----	26
11. PRECAUTIONS	-----	27
11.1 ASSEMBLY AND HANDLING PRECAUTIONS		
11.2 SAFETY PRECAUTIONS		
12. MECHANICAL CHARACTERISTICS	-----	28

REVISION HISTORY

Version	Date	Section	Description
Ver. 3.0	07 Mar 2017	All	Approval Specification was first issued.

1. GENERAL DESCRIPTION

1.1 OVERVIEW

G150XNE-L01 is a 15.0" TFT Liquid Crystal Display IAV module with LED Backlight units and 20 pins LVDS interface. This module supports 1024 x 768 XGA mode and can display 16.7M/262k colors.

The PSWG is to establish a set of displays with standard mechanical dimensions and select electrical interface requirements for an industry standard 15.0" XGA LCD panel and the LED driving device for Backlight is built in PCBA.

1.2 FEATURE

- XGA (1024 x 768 pixels) resolution
- DE (Data Enable) only mode
- LVDS Interface with 1pixel/clock
- PSWG (Panel Standardization Working Group)
- Wide operating temperature.
- RoHS compliance

1.3 APPLICATION

- TFT LCD Monitor
- Factory Application
- Amusement
- Vehicle

1.4 GENERAL SPECIFICATIONS

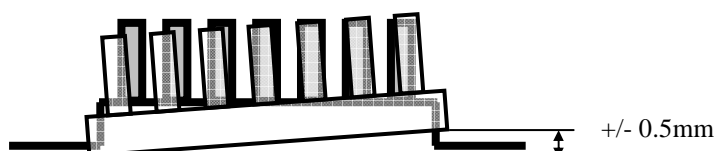
Item	Specification	Unit	Note
Active Area	304.1 (H) x 228.1(V) (15.0" diagonal)	mm	(1)
Bezel Opening Area	307.4(H) x 231.3(V)	mm	
Driver Element	a-Si TFT active matrix	-	-
Pixel Number	1024 x R.G.B x 768	pixel	-
Pixel Pitch	0.297(H) x 0.297(W)	mm	-
Pixel Arrangement	RGB vertical Stripe	-	-
Display Colors	16.7M / 262K	color	-
Display Mode	Normally Black	-	-
Surface Treatment	Hard Coating (3H), Anti-Glare	-	-
Module Power Consumption	12.8	W	Max.

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	326.0	326.5	327.0	mm	(1)
	Vertical(V)	253.0	253.5	254.0	mm	
	Depth(D)	8.6	9.1	9.6	mm	(1)(2)
Bezel Area	Horizontal	307.1	307.4	307.7	mm	-
	Vertical	231.0	231.3	231.6	mm	
Active Area	Horizontal	-	304.1	-	mm	
	Vertical	-	228.1	-	mm	
Weight		-	960	1000	g	

Note (1) Please refer to the attached drawings for more information of front and back outline dimensions.

Note (2) The depth is without connector.



2. ABSOLUTE MAXIMUM RATINGS

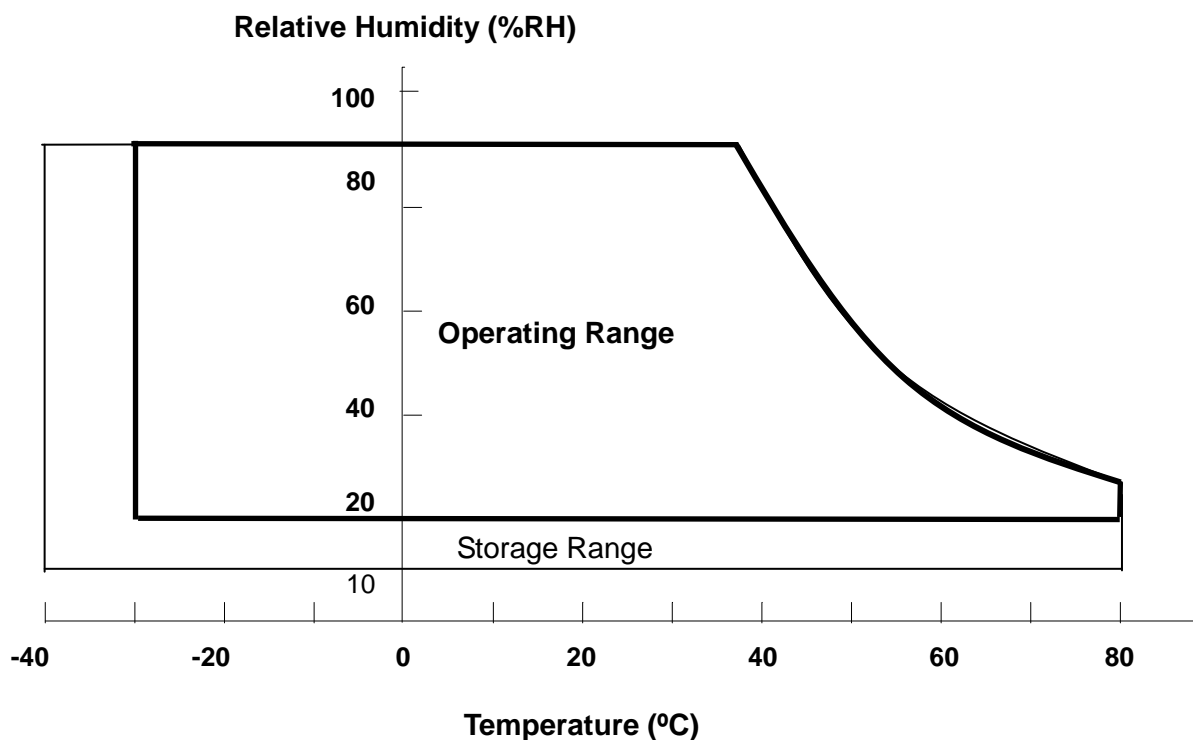
2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Operating Ambient Temperature	T _{OP}	-30	+80	°C	(1)(2)(3)
Storage Temperature	T _{ST}	-40	+80	°C	(1)(2)(3)

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

(2) 90 %RH Max. (Ta < 40°C).

(3) Wet-bulb temperature should be 39°C Max.



2.2 ELECTRICAL ABSOLUTE RATINGS

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCC	-0.3	4	V	(1)

2.2.2 BACKLIGHT UNIT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Voltage	V_i	-0.3	18	V	(1) , (2)
Enable Voltage	EN	---	5.5	V	
Backlight Adjust	Dimming	---	5.5	V	

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 lamp (Refer to 3.2 for further information).

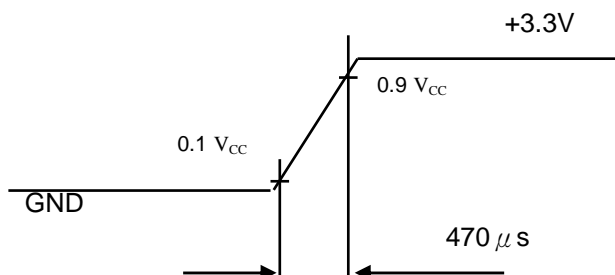
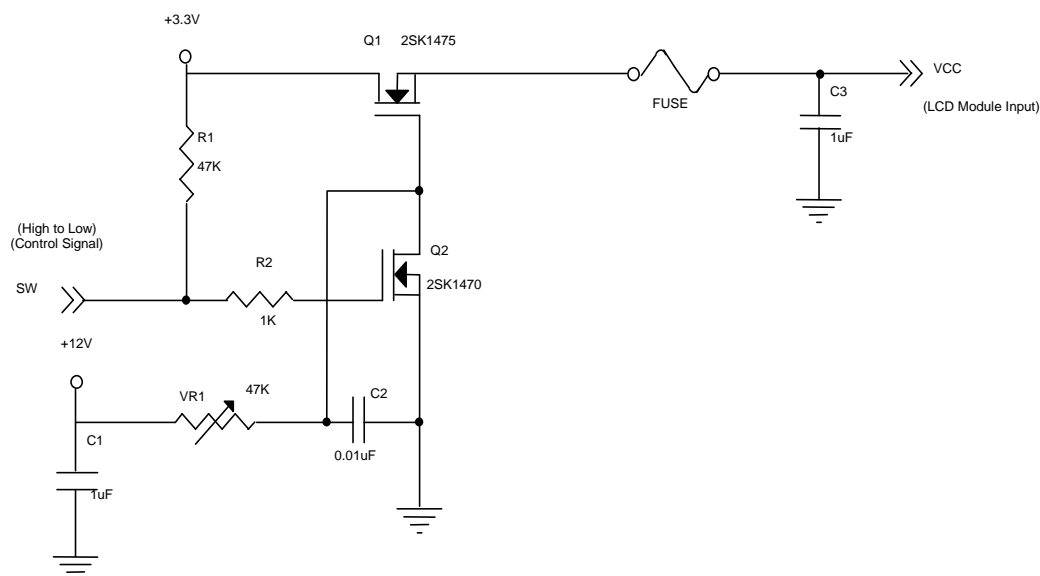
3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD MODULE

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}	-	-	2.0	A	(2)
Power Supply Current	White	-	800	960	mA	(3)a
	Black	-	670	800	mA	(3)b
LVDS differential input voltage	V_{id}	200	-	600	mV	
LVDS common input voltage	V_{ic}	1.0	1.2	1.4	V	
Differential Input Voltage for LVDS Receiver Threshold	"H" Level	-	-	100	mV	-
	"L" Level	-100	-	-	mV	-
Terminating Resistor	R_T	-	100	-	Ohm	-

Note (1) The module should be always operated within above ranges.

Note (2) Measurement Conditions:



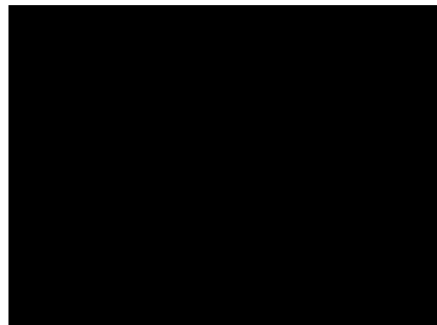
Note (3) The specified power supply current is under the conditions at $V_{DD} = 3.3V$, $T_a = 25 \pm 2^\circ C$, DC Current and $f_v = 60$ Hz, whereas a power dissipation check pattern below is displayed.

a. White Pattern



Active Area

b. Black Pattern



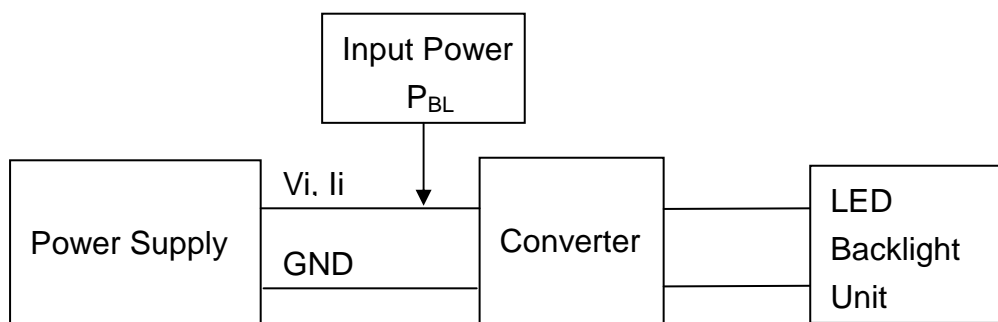
Active Area

3.2 BACKLIGHT UNIT

$T_a = 25 \pm 2^\circ C$

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Power Supply Voltage		V _i	10.8	12.0	13.2	V	
Converter Power Supply Current		I _i	0.5	0.65	0.8	A	@ Vi = 12V (Duty 100%)
Backlight Power Consumption		P _{BL}	-	7.8	9.6	W	@ Vi = 12V (Duty 100%)
EN Control Level	Backlight on	-	2.0	3.3	5.0	V	
	Backlight off		0	---	0.8	V	
PWM Dimming Control Level	PWM High Level	-	2.0	3.3	5.0	V	
	PWM Low Level		0	-	0.15	V	
PWM Dimming Control Duty Ratio		-	1	-	100	%	@200Hz
PWM Dimming Control Frequency		f _{PWM}	190	200	20k	Hz	(2)
LED Life Time		L _L	50,000	70,000	-	Hrs	(3)

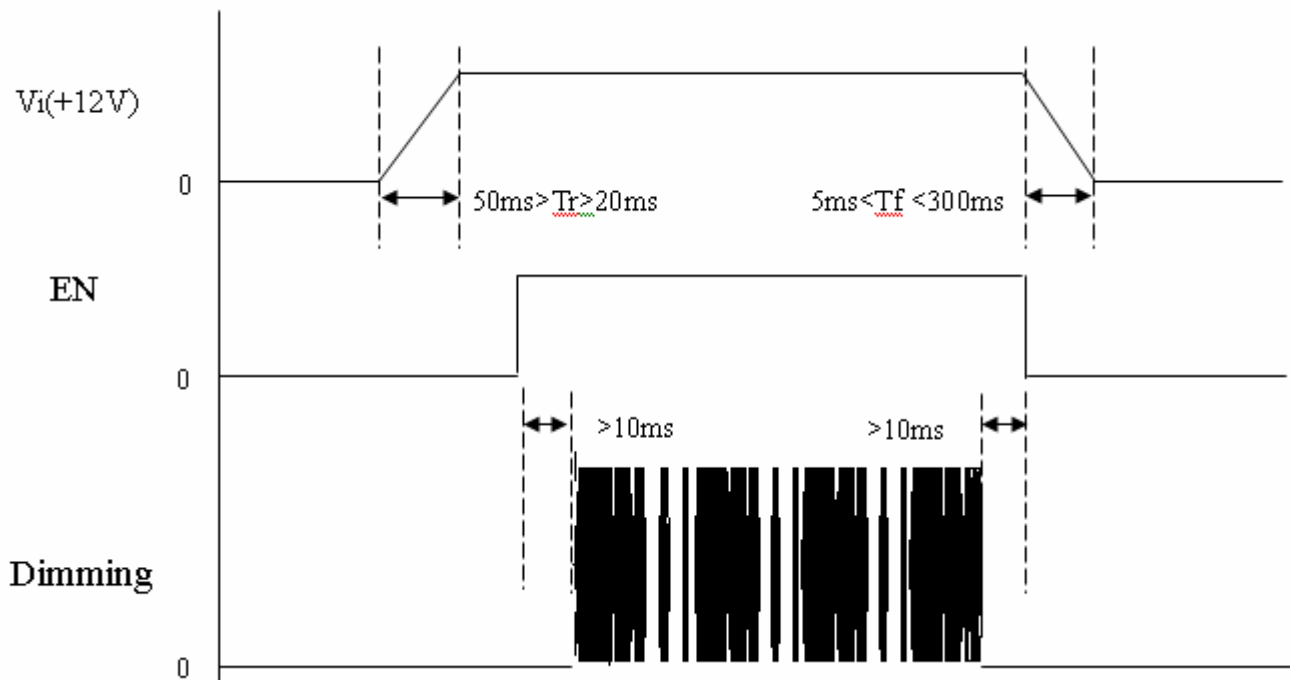
Note (1) LED current is measured by utilizing a high frequency current meter as shown below:



Note (2) At 20k Hz PWM control frequency, duty ratio range is restricted from 20% to 100%.

Note (3) The lifetime of LED is estimated data and defined as the time when it continues to operate under the conditions at $T_a = 25 \pm 2^\circ C$ and Duty 100% until the brightness becomes $\leq 50\%$ of its original value. Operating LED under high temperature environment will reduce life time and lead to color shift.

Power sequence and control signal timing are shown in the following figure

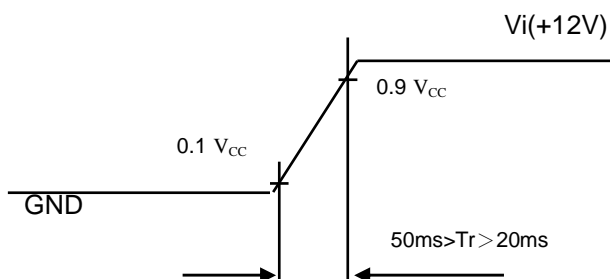


Note : While system is turned ON or OFF, the power sequences must follow as below descriptions

Turn ON sequence: $V_i(+12V) \rightarrow EN \rightarrow \text{Dimming}$

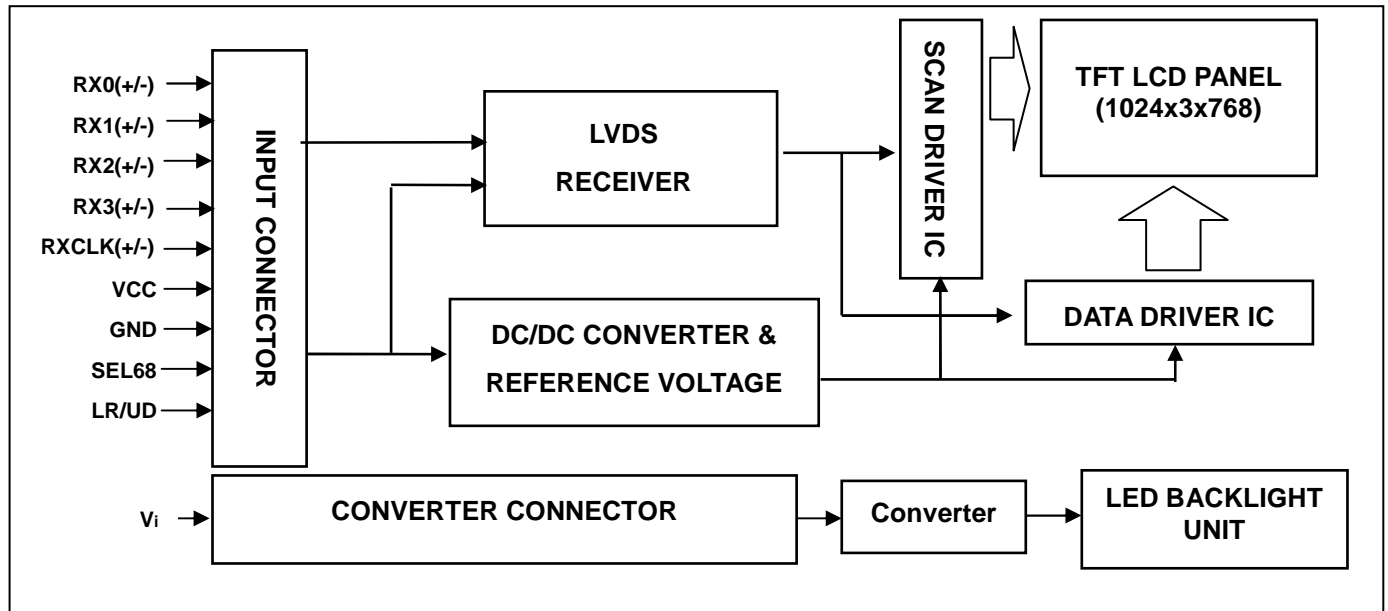
Turn OFF sequence: $\text{Dimming} \rightarrow EN \rightarrow V_i(+12V)$

Note (4)



4. BLOCK DIAGRAM

4.1 TFT LCD MODULE



5. INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT LCD MODULE

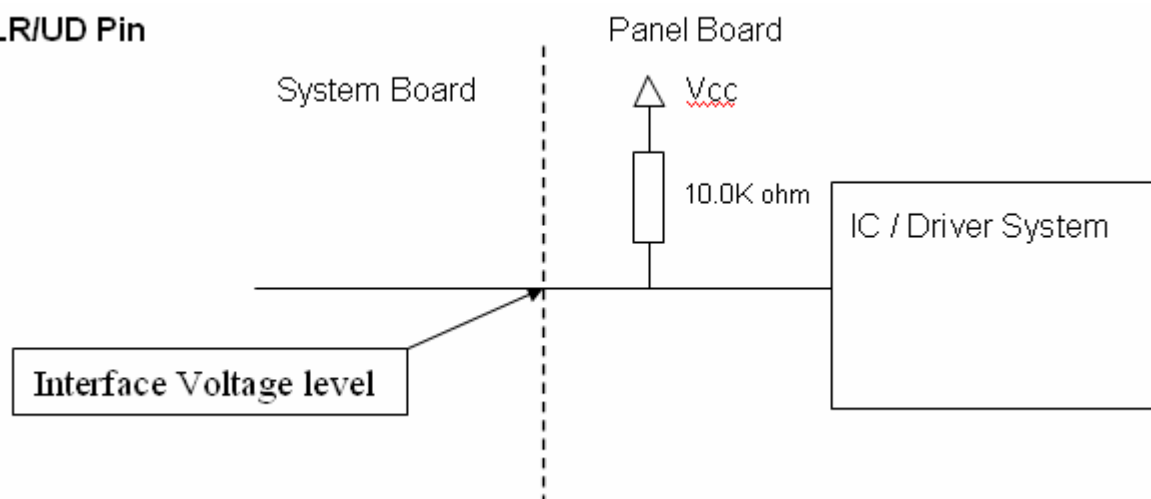
Pin No.	Symbol	Function	Polarity	Note
1	VCC	Power Supply +3.3V(typical)		
2	VCC	Power Supply +3.3V(typical)		
3	NC	No Connction (Reserve for INX test)		
4	LR/UD	Reverse Scan Control H or NC = Normal Mode. L = Horizontal/ Vertical Reverse Scan.		
5	RX0-	LVDS Differential Data Input	Negative	
6	RX0+	LVDS Differential Data Input	Positive	
7	GND	Ground		
8	RX1-	LVDS Differential Data Input	Negative	
9	RX1+	LVDS Differential Data Input	Positive	
10	NC	No Connction (Reserve for INX test)		
11	RX2-	LVDS Differential Data Input	Negative	
12	RX2+	LVDS Differential Data Input	Positive	
13	GND	Ground		
14	RXCLK-	LVDS Differential Data Input	Negative	
15	RXCLK+	LVDS Differential Data Input	Positive	
16	GND	Ground		
17	RX3-	LVDS Differential Data Input	Negative	
18	RX3+	LVDS Differential Data Input	Positive	
19	NC	No Connction (Reserve for INX test)		
20	SEL68	LVDS 6/8 bit select function control, High → 6bit Input Mode Low or NC → 8bit Input Mode		Note (3)

Note (1) Connector Part No.: Cvilux CID520D1HR0-NH or equivalent.

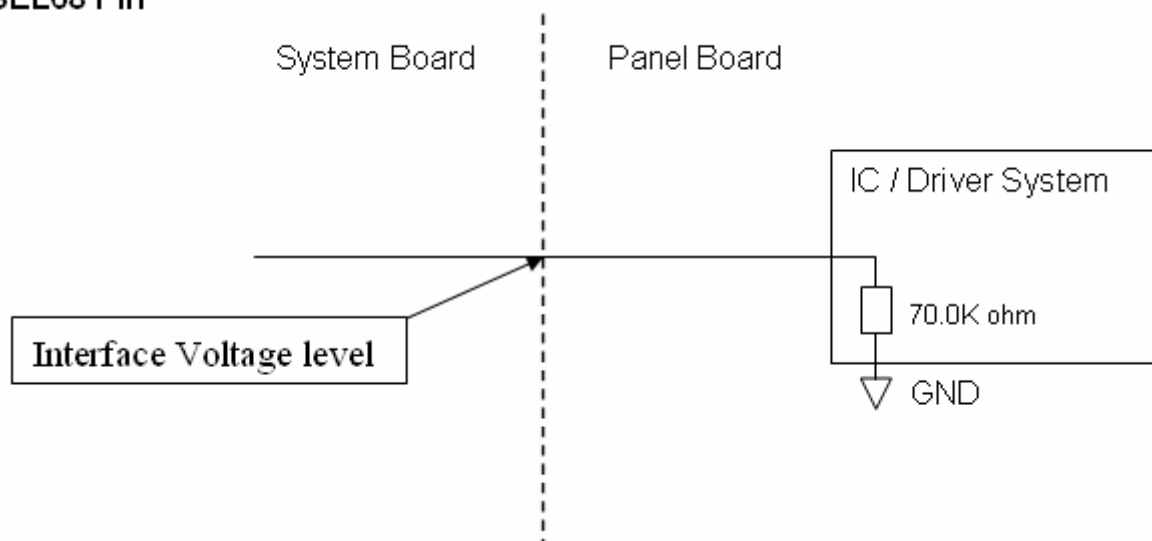
Note (2) User's connector Part No.: Hirose DF14-20S-1.25C or equivalent.

Note (3) "Low" stands for 0V. "High" stands for 3.3V. "NC" stands for "No Connection".

LR/UD Pin



SEL68 Pin



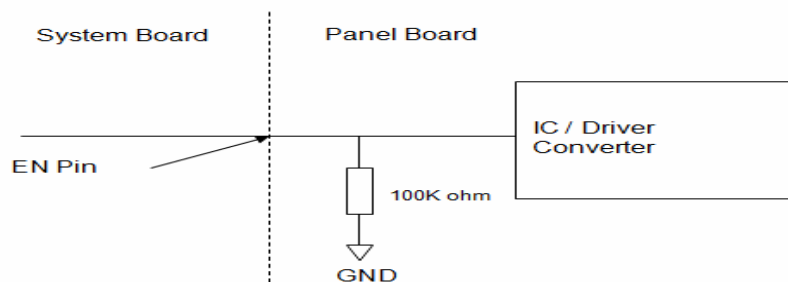
5.2 BACKLIGHT UNIT(Converter connector pin)

Pin	Symbol	Description	Remark
1	V_i	Converter input voltage	12V
2	V_{GND}	Converter ground	Ground
3	EN	Enable pin	3.3V
4	Dimming	Backlight Adjust	PWM Dimming (Hi: 3.3V _{DC} , Lo: 0V _{DC})
5	NC	Not Connect	

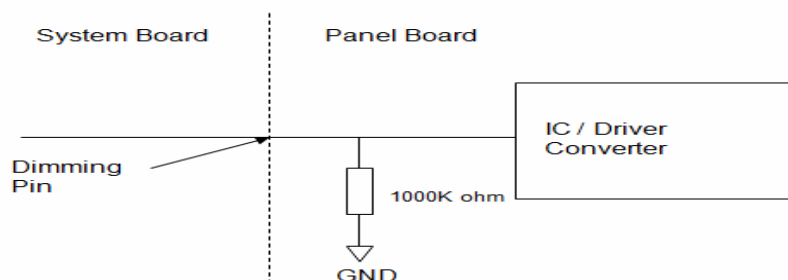
Note (1) Connector Part No.: CI4205M2HRP-NH (Cvilux) or equivalent.

Note (2) User's connector Part No.: MOLEX 51146-0500 or equivalent.

EN Pin



Dimming Pin



5.3 COLOR DATA INPUT ASSIGNMENT

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	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	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	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	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	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	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	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	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	0	0
	Red(1)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(252)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(252)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(252)	1	1	1	1	1	1	1	1	0	0	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	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	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	0	0
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(252)	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(252)	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(252)	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	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	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	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	0	0
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	Blue(252)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	1
	Blue(252)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0
	Blue(252)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1

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

6. INTERFACE TIMING

6.1 INPUT SIGNAL TIMING SPECIFICATIONS

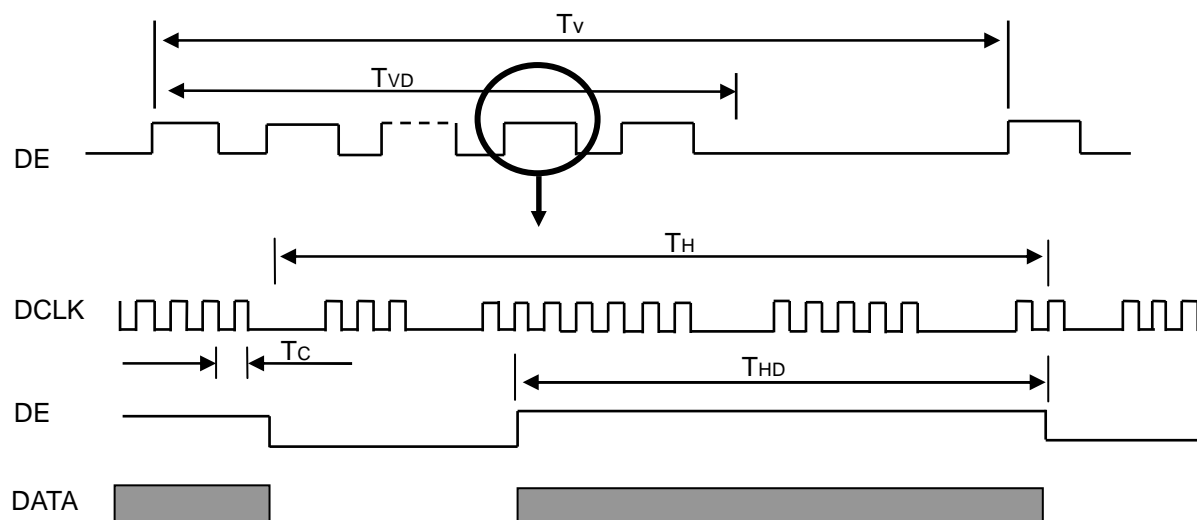
The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Clock	Frequency	F_c	53.35	65	80	MHz	-
	Period	T_c	12.5	15.38	18.75	ns	
	Input cycle to cycle jitter	T_{rcj}	---	---	200	ns	(a)
	Input Clock to data skew	TLVCCS	$-0.02 \cdot T_c$	-	$0.02 \cdot T_c$	ps	(b)
	Spread spectrum modulation range	F_{clk_mod}	-	-	$1.02 \cdot F_c$	MHz	(c)
	Spread spectrum modulation frequency	F_{SSM}	-	-	200	KHz	
Vertical Display Term	Frame Rate	F_r	55	60	70	Hz	$T_v = T_{vd} + T_{vb}$
	Total	T_v	780	806	840	Th	-
	Active Display	T_{vd}	768	768	768	Th	-
	Blank	T_{vb}	$T_v - T_{vd}$	38	$T_v - T_{vd}$	Th	-
Horizontal Display Term	Total	T_h	1240	1344	1360	Tc	$T_h = T_{hd} + T_{hb}$
	Active Display	T_{hd}	1024	1024	1024	Tc	-
	Blank	T_{hb}	$T_h - T_{hd}$	320	$T_h - T_{hd}$	Tc	-

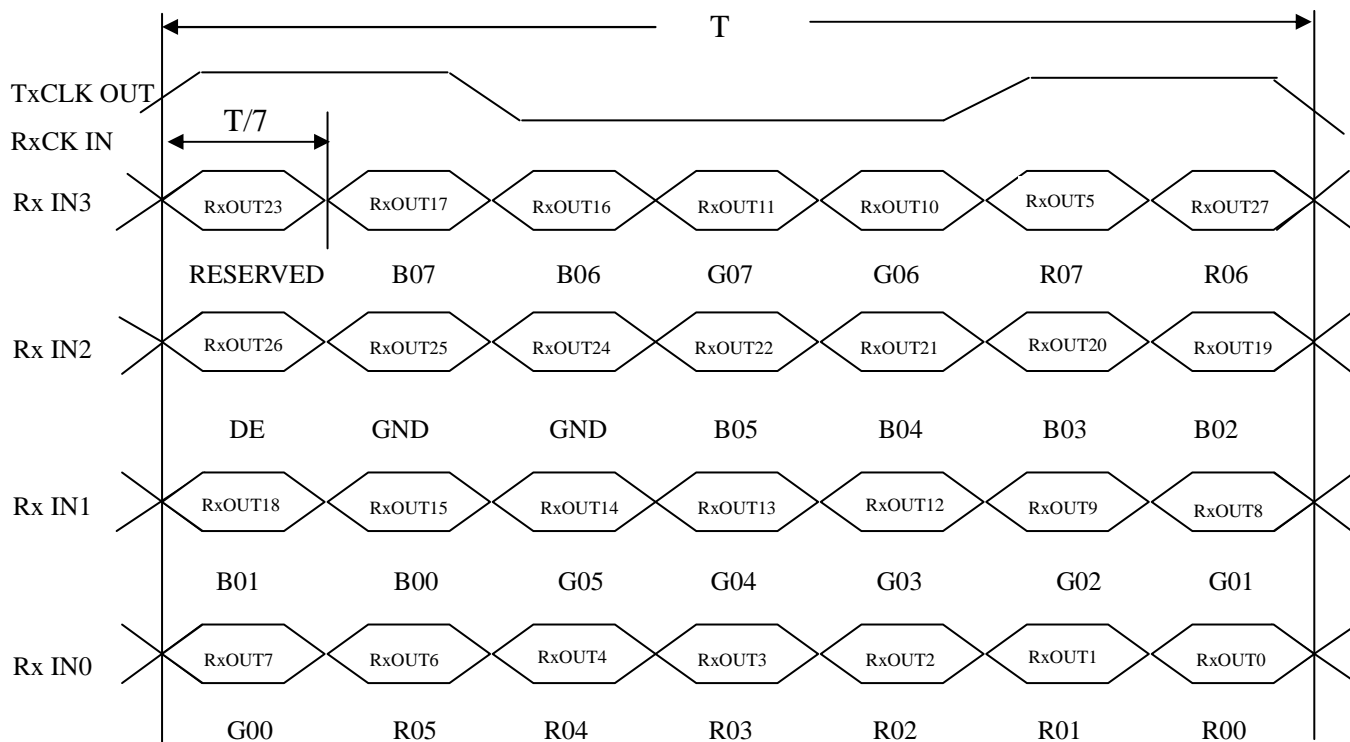
Note (1) Because this module is operated by DE only mode, Hsync and Vsync input signals should be set to low logic level or ground. Otherwise, this module would operate abnormally.

Note (2) The $T_v(T_{vd} + T_{vb})$ must be integer, otherwise, the module would operate abnormally.

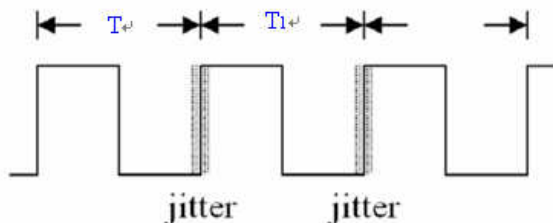
INPUT SIGNAL TIMING DIAGRAM



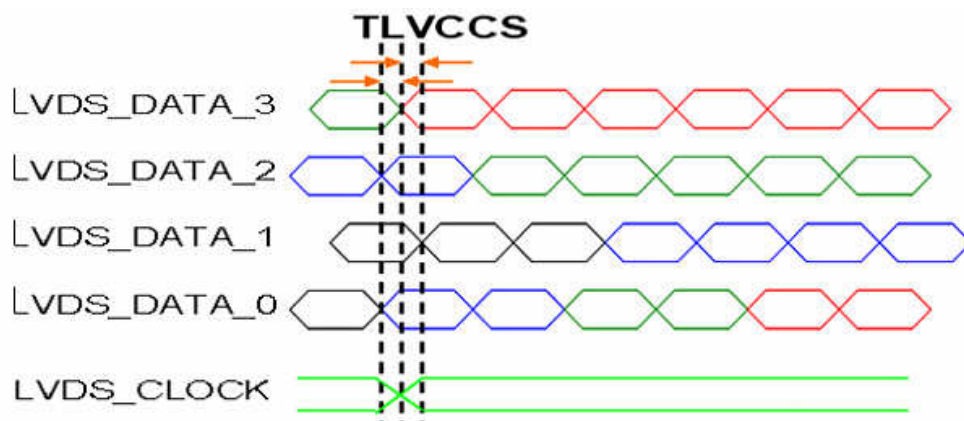
TIMING DIAGRAM of LVDS



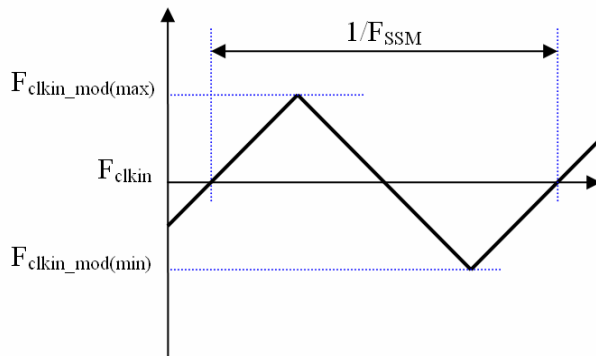
Note (a) The input clock cycle-to-cycle jitter is defined as below figures. $Trcl = |T_1 - T_1|$



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

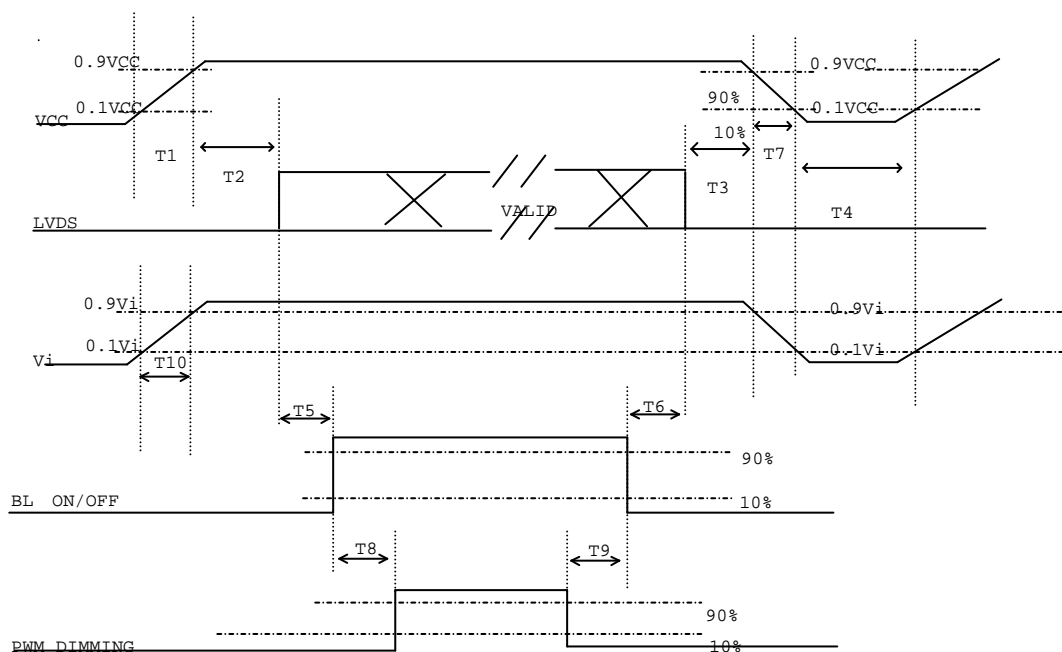


Note (c) The SSCG (Spread spectrum clock generator) is defined as below figures.



6.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD assembly, the power on/off sequence should be as the diagram below.



Power ON/OFF sequence

Note (1) Please avoid floating state of interface signal at invalid period.

Note (2) When the interface signal is invalid, be sure to pull down the power supply of LCD VCC to 0 V.

Note (3) The Backlight converter power must be turned on after the power supply for the logic and the interface signal is valid. The Backlight converter power must be turned off before the power supply for the logic and the interface signal is invalid.

Parameter	Value			Units
	Min	Typ	Max	
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	0	-	50	ms
T4	500	-	-	ms
T5	200	-	-	ms
T6	200	-	-	ms
T7	5	-	300	ms
T8	10	-	-	ms
T9	10	-	-	ms
T10	20		50	ms

6.3 SCANNING DIRECTION

The following figures show the image see from the front view. The arrow indicates the direction of scan.

Fig.1 Normal Scan



Fig. 1 Normal scan (pin 4, LR/UD = High or NC)

Fig.2 Reverse Scan



Fig. 2 Reverse scan (pin 4, LR/UD = Low)

7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

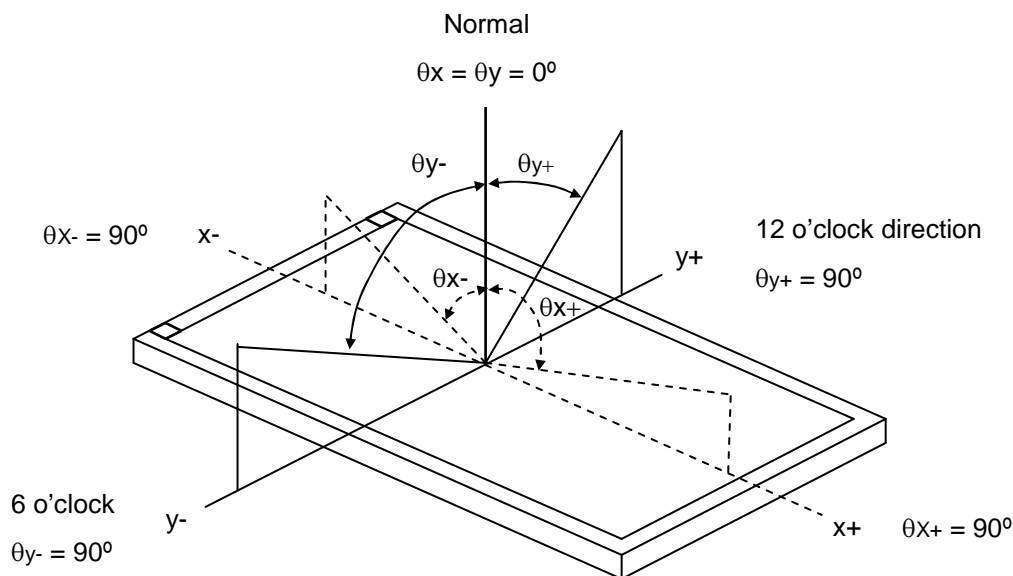
Item	Value	Unit
Ambient Temperature (Ta)	25±2	°C
Ambient Humidity (Ha)	50±10	%RH
Supply Voltage	According to typical value in "ELECTRICAL CHARACTERISTICS"	
Input Signal		
LED Light Bar Input Current Per Input Pin		

7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2 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 7.1 and stable environment shown in Note (5).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity	Red	R _x	$\theta_x=0^\circ, \theta_Y=0^\circ$ CS-1000T	Typ - 0.05	0.647	Typ+ 0.05	-	(1), (5)
		R _y			0.338			
	Green	G _x			0.321			
		G _y			0.606			
	Blue	B _x			0.157			
		B _y			0.039			
	White	W _x			0.313			
		W _y			0.329			
	Center Luminance of White				L _C			
Contrast Ratio		CR	1800	2500		-	(2), (5)	
Response Time		T _R	$\theta_x=0^\circ, \theta_Y=0^\circ$	-	16	21	ms	(3)
		T _F		-	7	14		
White Variation		δW	$\theta_x=0^\circ, \theta_Y=0^\circ$ USB2000	-	1.25	1.33	-	(5), (6)
Viewing Angle	Horizontal	θ _x +	CR ≥ 10 USB2000	80	88	-	Deg.	(1), (5)
		θ _x -		80	88	-		
	Vertical	θ _y +		80	88	-		
		θ _y -		80	88	-		

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.

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

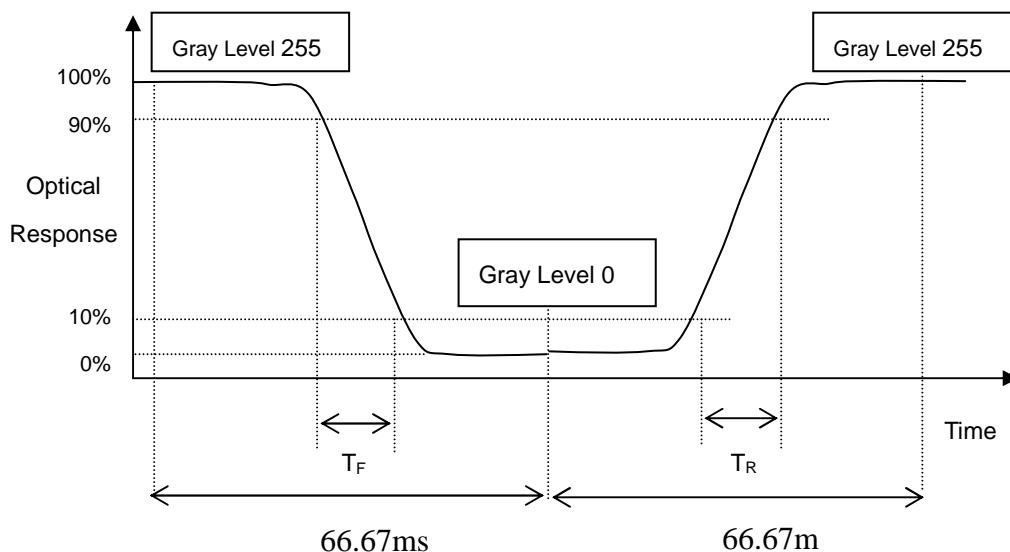
L_{255} : Luminance of gray level 255

L_0 : Luminance of gray level 0

$$CR = CR(5)$$

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):

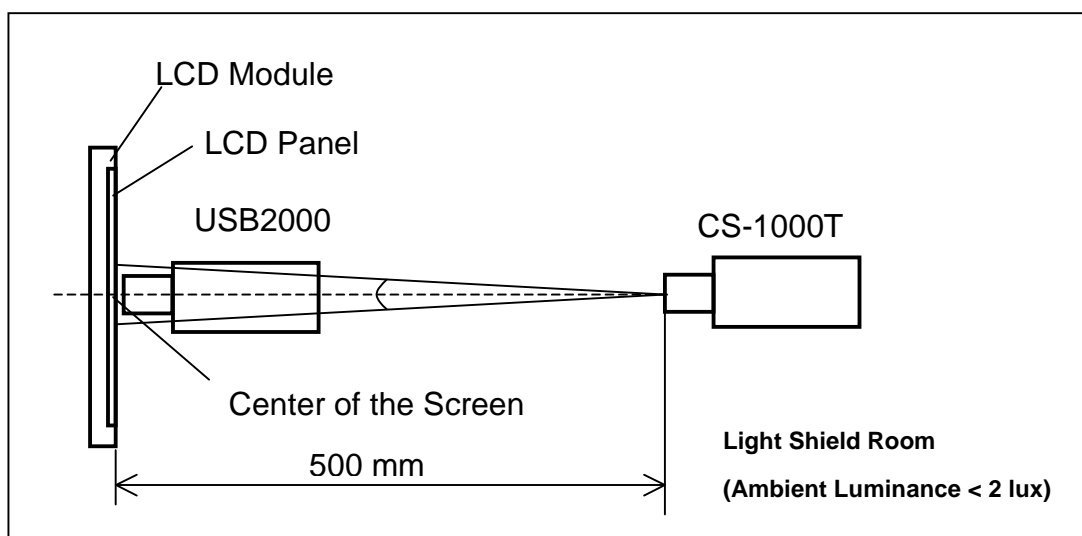
Measure the luminance of gray level 255 at center point

$$L_C = L(5)$$

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

Note (5) Measurement Setup:

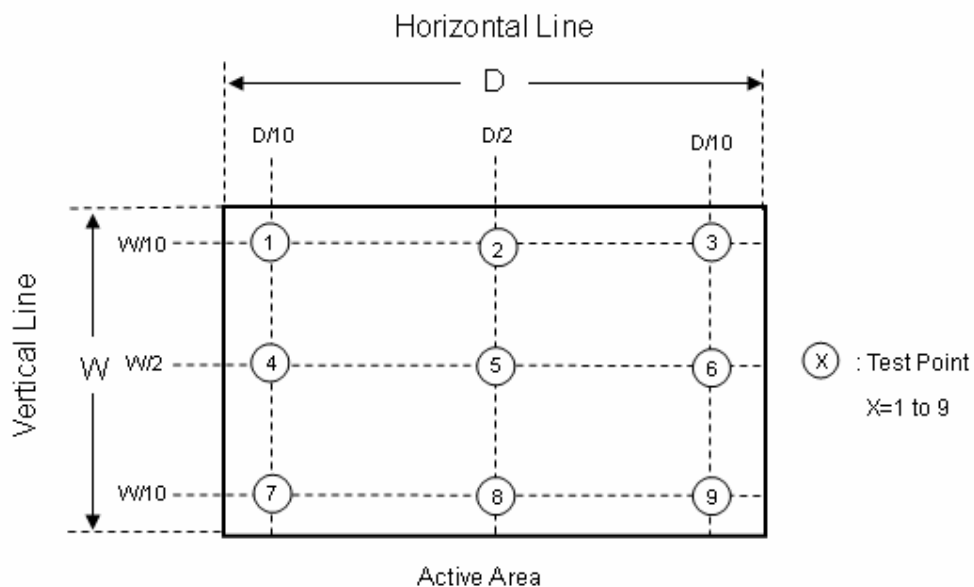
The LCD module should be stabilized at given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



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

Measure the luminance of gray level 63 (255) at 9 points

$$\delta W = \frac{\text{Maximum [L (1), L (2), L (3), L (4), L (5), L (6), L (7), L (8), L (9)]}}{\text{Minimum [L (1), L (2), L (3), L (4), L (5), L (6), L (7), L (8), L (9)]}}$$



8. RELIABILITY TEST CRITERIA

Test Item	Test Condition	Note
High Temperature Storage Test	80°C, 240 hours	(1),(2) (4),(5)
Low Temperature Storage Test	-40°C, 240 hours	
Thermal Shock Storage Test	-30°C, 0.5 hour \longleftrightarrow 70°C, 0.5 hour; 100cycles, 1 hour/cycle)	
High Temperature Operation Test	80°C, 240 hours	
Low Temperature Operation Test	-30°C, 240 hours	
High Temperature & High Humidity Operation Test	60°C, RH 90%, 240 hours	(1),(2) (4),(6)
ESD Test (Operation)	150pF, 330Ω, 1 sec/cycle Condition 1 : panel contact, ± 8 KV Condition 2 : panel non-contact ± 15 KV	(1), (4)
Shock (Non-Operating)	50G, 11ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$ direction	(2), (3)
Vibration (Non-Operating)	1.5G, 10 ~ 300 Hz sine wave, 10 min/cycle, 3 cycles each X, Y, Z direction	(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 90°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.

9. PACKAGING

9.1 PACKING SPECIFICATIONS

- (1) 16pcs LCD modules / 1 Box
- (2) Box dimensions: 511 (L) X 420 (W) X 360 (H) mm
- (3) Weight: approximately 18Kg (16 modules per box)

9.2 PACKING METHOD

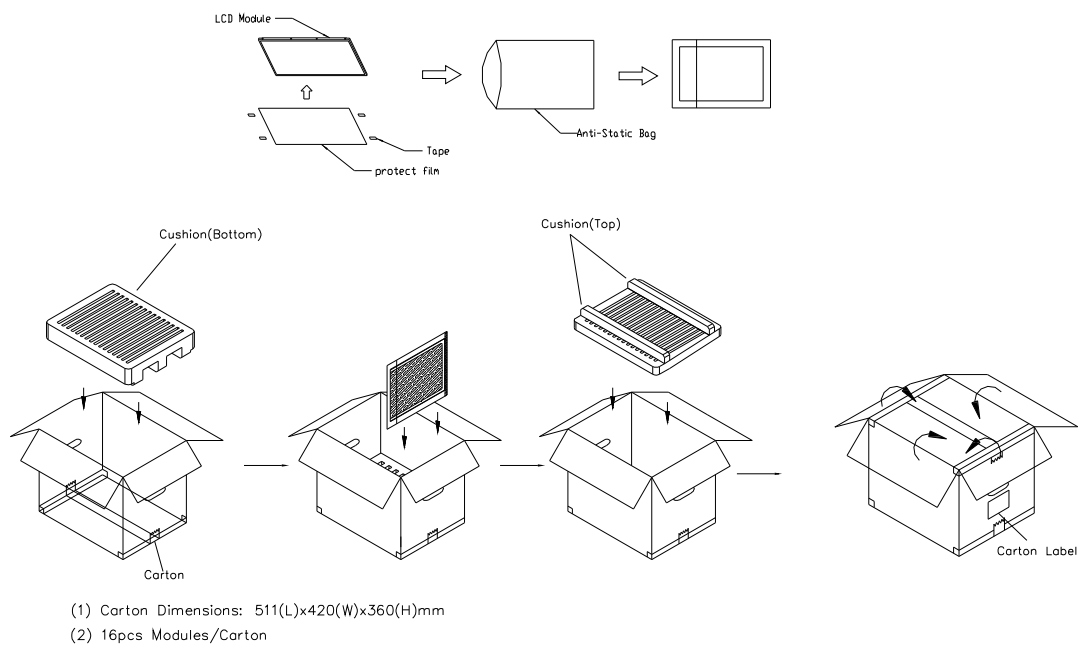


Figure. 9-1 Packing method

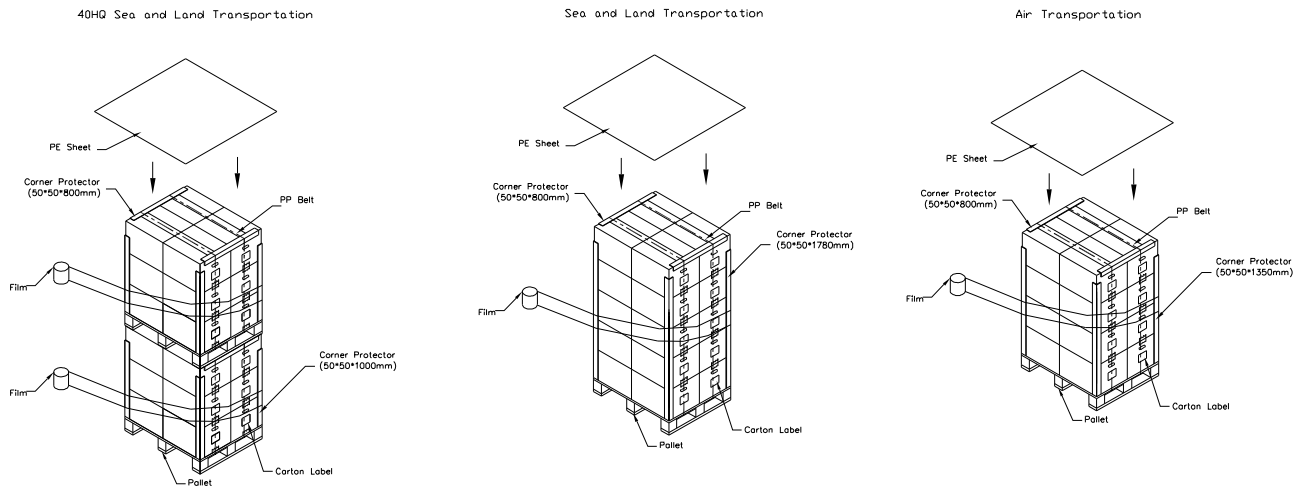


Figure. 9-2 Packing method

9.3 UN-PACKING METHOD

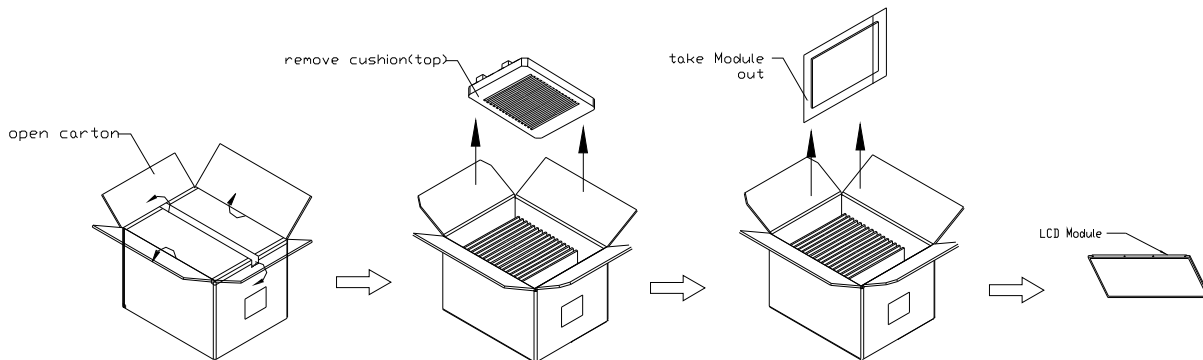
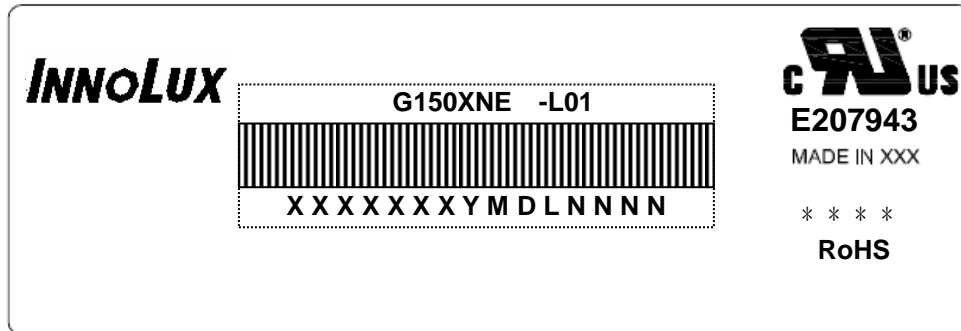


Figure. 9-3 UN-Packing method

10. DEFINITION OF LABELS

10.1 INX MODULE LABEL

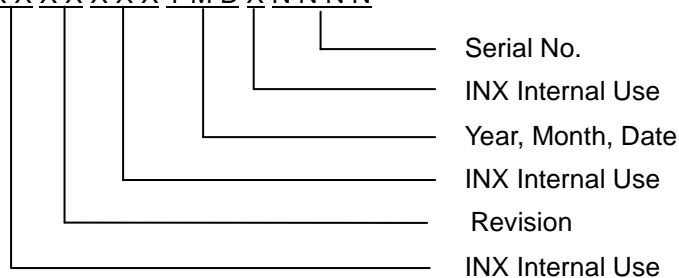
The barcode nameplate is pasted on each module as illustration, and its definitions are as following explanation.



(a) Model Name: G150XNE -L01

(b) * * * * : Factory ID

(c) Serial ID: XXXXXXYMDXNNNN



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

11. PRECAUTIONS

11.1 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.
- (11) Do not keep same pattern in a long period of time. It may cause image sticking on LCD.

11.2 SAFETY PRECAUTIONS

- (1) Do not disassemble the module or insert anything into the Backlight unit.
- (2) 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.
- (3) After the module's end of life, it is not harmful in case of normal operation and storage.

FIG. 1

ACTIVE AREA

SECTION 1-1

SECTION 2-2

SECTION 3-3

SECTION 4-4

SECTION 5-5

SECTION 6-6

SECTION 7-7

SECTION 8-8

SECTION 9-9

SECTION 10-10

SECTION 11-11

SECTION 12-12

SECTION 13-13

SECTION 14-14

SECTION 15-15

SECTION 16-16

SECTION 17-17

SECTION 18-18

SECTION 19-19

SECTION 20-20

SECTION 21-21

SECTION 22-22

SECTION 23-23

SECTION 24-24

SECTION 25-25

SECTION 26-26

SECTION 27-27

SECTION 28-28

SECTION 29-29

SECTION 30-30

SECTION 31-31

SECTION 32-32

SECTION 33-33

SECTION 34-34

SECTION 35-35

SECTION 36-36

SECTION 37-37

SECTION 38-38

SECTION 39-39

SECTION 40-40

SECTION 41-41

SECTION 42-42

SECTION 43-43

SECTION 44-44

SECTION 45-45

SECTION 46-46

SECTION 47-47

SECTION 48-48

SECTION 49-49

SECTION 50-50

SECTION 51-51

SECTION 52-52

SECTION 53-53

SECTION 54-54

SECTION 55-55

SECTION 56-56

SECTION 57-57

SECTION 58-58

SECTION 59-59

SECTION 60-60

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SECTION 62-62

SECTION 63-63

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SECTION 67-67

SECTION 68-68

SECTION 69-69

SECTION 70-70

SECTION 71-71

SECTION 72-72

SECTION 73-73

SECTION 74-74

SECTION 75-75

SECTION 76-76

SECTION 77-77

SECTION 78-78

SECTION 79-79

SECTION 80-80

SECTION 81-81

SECTION 82-82

SECTION 83-83

SECTION 84-84

SECTION 85-85

SECTION 86-86

SECTION 87-87

SECTION 88-88

SECTION 89-89

SECTION 90-90

SECTION 91-91

SECTION 92-92

SECTION 93-93

SECTION 94-94

SECTION 95-95

SECTION 96-96

SECTION 97-97

SECTION 98-98

SECTION 99-99

SECTION 100-100

SECTION 101-101

SECTION 102-102

SECTION 103-103

SECTION 104-104

SECTION 105-105

SECTION 106-106

SECTION 107-107

SECTION 108-108

SECTION 109-109

SECTION 110-110

SECTION 111-111

SECTION 112-112

SECTION 113-113

SECTION 114-114

SECTION 115-115

SECTION 116-116

SECTION 117-117

SECTION 118-118

SECTION 119-119

SECTION 120-120

SECTION 121-121

SECTION 122-122

SECTION 123-123

SECTION 124-124

SECTION 125-125

SECTION 126-126

SECTION 127-127

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SECTION 140-140

SECTION 141-141

SECTION 142-142

SECTION 143-143

SECTION 144-144

SECTION 145-145

SECTION 146-146

SECTION 147-147

SECTION 148-148

SECTION 149-149

SECTION 150-150

SECTION 151-151

SECTION 152-152

SECTION 153-153

SECTION 154-154

SECTION 155-155

SECTION 156-156

SECTION 157-157

SECTION 158-158

SECTION 159-159

SECTION 160-160

SECTION 161-161

SECTION 162-162

SECTION 163-163

SECTION 164-164

SECTION 165-165

SECTION 166-166

SECTION 167-167

SECTION 168-168

SECTION 169-169

SECTION 170-170

SECTION 171-171

SECTION 172-172

SECTION 173-173

SECTION 174-174

SECTION 175-175

SECTION 176-176

SECTION 177-177

SECTION 178-178

SECTION 179-179

SECTION 180-180

SECTION 181-181

SECTION 182-182

SECTION 183-183

SECTION 184-184

SECTION 185-185

SECTION 186-186

SECTION 187-187

SECTION 188-188

SECTION 189-189

SECTION 190-190

SECTION 191-191

SECTION 192-192

SECTION 193-193

SECTION 194-194

SECTION 195-195

SECTION 196-196

SECTION 197-197

SECTION 198-198

SECTION 199-199

SECTION 200-200

SECTION 201-201

SECTION 202-202

SECTION 203-203

SECTION 204-204

SECTION 205-205

SECTION 206-206

SECTION 207-207

SECTION 208-208

SECTION 209-209

SECTION 210-210

SECTION 211-211

SECTION 212-212

SECTION 213-213

SECTION 214-214

SECTION 215-215

SECTION 216-216

SECTION 217-217

SECTION 218-218

SECTION 219-219

SECTION 220-220

SECTION 221-221

SECTION 222-222

SECTION

