CHI MEI
OPTOELECTRONICS CORP.

Approval

TFT LCD Approval Specification

MODEL NO.:V315B3-P04

Customer: _____

Approved by: _____

Note:

Approved By	TVHD	
	LY Chen	

Reviewed By	QRA Dept.	Product Development Div.
	Kc Ko	WT Lin

Prepared By	LCD TV Marketing and Product Management Div.	
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REVISION HISTORY

Version	Date	Page (New)	Section	Description
Ver 2.0	Dec.23, 2008	All	All	Approval Specification was first issued.

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1. GENERAL DESCRIPTION

1.1 OVERVIEW

V315B3- P04 is a 31.5" TFT Liquid Crystal Display module. This module supports 1366 x 768 WXGA format and can display true 16.7M colors (8-bit colors).

1.2 CHARACTERISTICS

CHARACTERISTICS ITEMS	SPECIFICATIONS
Screen Diagonal [in]	31.51
Pixels [lines]	1366×768
Active Area [mm]	697.6845 (H) x 392.256 (V) (31.51" diagonal)
Sub -Pixel Pitch [mm]	0.17025 (H) x 0.51075 (V)
Pixel Arrangement	RGB vertical stripe
Weight [g]	TYP. 1200
Physical Size [mm]	716(W) x 410.8(H) x 2(D) Typ.
Display Mode	Transmissive mode / Normally black
Contrast Ratio	2500:1 Typ. (Typical value measured at CMO's module)
Glass thickness (Array/CF) [mm]	0.7 / 0.7
Viewing Angle (CR>20)	+88/-88(H),+88/-88(V) Typ. (Typical value measured at CMO's module)
Color Chromaticity	R=(0.641, 0.331) G=(0.273, 0.599) B=(0.146, 0.068) W=(0.280, 0.290) (Typical value measured at CMO's module)
Cell Transparency [%]	4.4%Typ. (Typical value measured at CMO's module)
Polarizer (CF side)	Super Wide View Anti-glare coating, 710.8(H) x 406.6(w).. Hardness: 3H
Polarizer (TFT side)	Super Wide View, 710.8(H) x 406.6(w).

1.3 MECHANICAL SPECIFICATIONS

Item	Min.	Typ.	Max.	Unit	Note
Weight	1100	1200	1300	g	-
I/F connector mounting position	The mounting inclination of the connector makes the screen center within ±0.5mm as the horizontal.				(2)

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

(2) Connector mounting position

+/- 0.5mm

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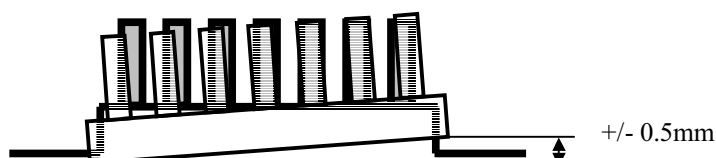
2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT (BASED ON CMO MODULE V315B1-L01)

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T_{ST}	-20	+60	ºC	(1), (3)
Operating Ambient Temperature	T_{OP}	0	50	ºC	(1), (2), (3)
Altitude Operating	A_{OP}	0	5000	M	(3)
Altitude Storage	A_{ST}	0	12000	M	(3)

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

(a) 90 %RH Max. (Ta $\leqq$ 40 ºC).

(b) Wet-bulb temperature should be 39 ºC Max. (Ta > 40 ºC).

(c) No condensation..

Relative Humidity (%RH)
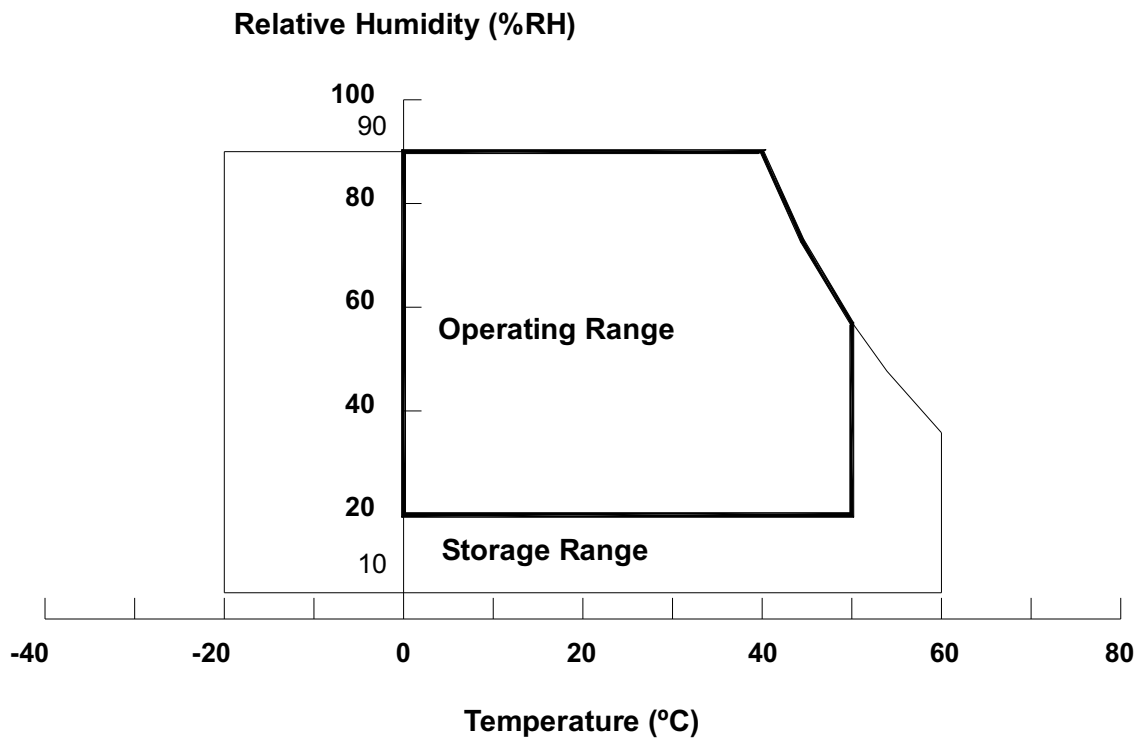
Temperature (ºC)

Note (2) The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 65 ºC with LCD module alone in a temperature controlled chamber. Thermal management should be considered in your product design to prevent the surface temperature of display area from being over 65 ºC. The range of operating temperature may degrade in case of improper thermal management in your product design.

Note (3) The rating of environment is base on LCD module. Leave LCD cell alone, this environment condition can't be guaranteed. Except LCD cell, the customer has to consider the ability of other parts of LCD module and LCD module process.

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2.2 ABSOLUTE RATINGS OF ENVIRONMENT (OPEN CELL)

Storage Condition : With shipping package.

Storage temperature range : 25±5 ℃

Storage humidity range : 50±10%RH

Shelf life : a month

2.3 ELECTRICAL ABSOLUTE RATINGS (OPEN CELL)

Item	Symbol	Value		Unit	Note
		Min	Max		
Power Supply Voltage	VAA	-0.5	+14.0	V	(1)
Power Supply Voltage	VGH	-0.3	+30.0	V	
Power Supply Voltage	VGL	-10.0	-0.3	V	
Logic Input Voltage	V_{IN}	-0.3	+4.1	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.

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3. ELECTRICAL CHARACTERISTICS

3.1 TFT LCD MODULE

Ta = 25 ± 2 ℃

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		VGH	22	23	24	V	
		VGL	-6.0	-5.5	-5.0	V	
		VAA	13.20	13.50	13.80	V	
		V25V	2.4	2.5	2.6	V	
		VREF	12.65	12.8	12.95	V	
Power Supply Current		IGH	-	10	-	mA	
		IGL	-	3	-	mA	
		IAA	-	260	-	mA	
		I2.5V	-	225	-	mA	
CMOS interface	Input High Threshold Voltage	V_{IH}	2.7	-	3.3	V	
	Input Low Threshold Voltage	V_{IL}	0	-	0.7	V	

3.2 RSDS CHARACTERISTICS

Ta = -10~+85 ℃

Item	Symbol	Condition	Value			Unit
			Min	Typ	Max	
RSDS high input Voltage	$V_{DIFFRSDS}$	V_{CMRSDS} = +1.2 V (1)	100	200	-	mV
RSDS low input Voltage	$V_{DIFFRSDS}$	V_{CMRSDS} = +1.2 V (1)	-	-200	-100	mV
RSDS common mode input voltage range	V_{CMRSDS}	$V_{DIFFRSDS}$ = 200 mV (2)	VSSD+0.1	Note(3)	VDDD-1.2	V
RSDS Input leakage current	I_{DL}	$D_{xx}P$, $D_{xx}N$,CLKO ,CLPN	-10	-	10	μA

Note (1) V_{CMRSDS} = (VCLKP + VCLKN)/2 or V_{CMRSDS} = ($VD_{XX}P$ + $VD_{XX}N$)/2

Note (2) $V_{DIFFRSDS}$ = VCLKP - VCLKN or $V_{DIFFRSDS}$ = $VD_{XX}P$ - $VD_{XX}N$

Note (3) V_{CMRSDS} = 1.2V(VDDD = 3.3V)

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4. BLOCK DIAGRAM

4.1 TFT LCD OPEN CELL

<div>

TFT LCD PANEL

(1366x3x768)

| X(R) BOARD | X(L) BOARD |

↑

RSDS SIGNAL INPUT

Connector Part No.: STARCONN 106D61-000100-A2-R or equal.

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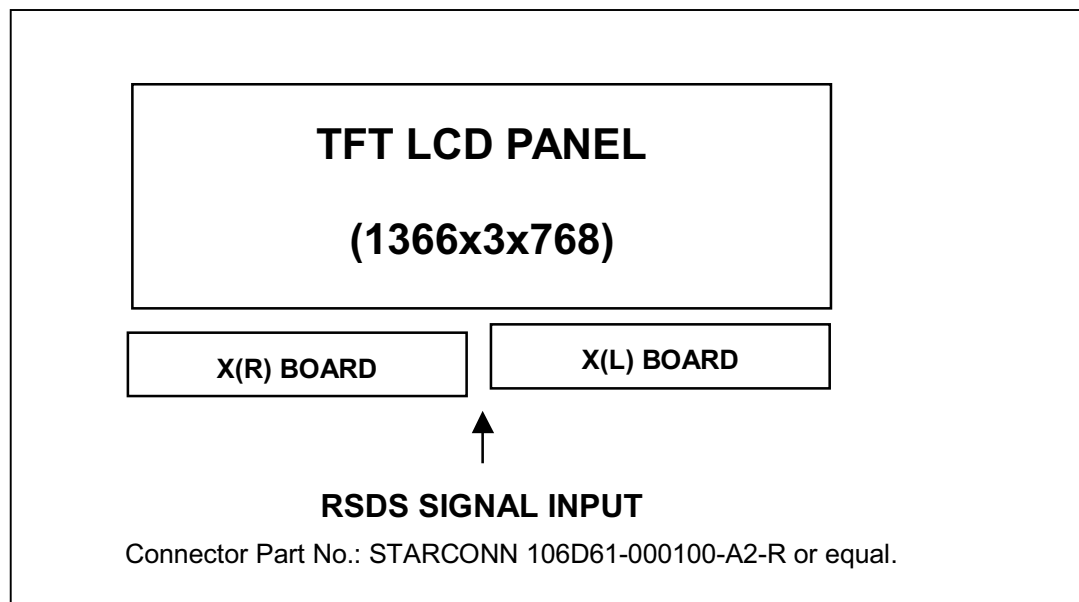
5. INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT LCD MODULE

Pin assignment

CN1(XL) Connector Pin Assignment

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	TR2	trace2	32	B1P	RSDS data signal (Blue 1)
2	TR1	trace1	33	B1N	RSDS data signal (Blue 1)
3	GND	Ground	34	B0P	RSDS data signal (Blue 0)
4	GM14	Gamma Power supply	35	B0N	RSDS data signal (Blue 0)
5	GM13	Gamma Power supply	36	CLKP	Data driver clock
6	GM12	Gamma Power supply	37	CLKN	Data driver clock
7	GM11	Gamma Power supply	38	G3P	RSDS data signal (Green 3)
8	GM10	Gamma Power supply	39	G3N	RSDS data signal (Green 3)
9	GM9	Gamma Power supply	40	G2P	RSDS data signal (Green 2)
10	GM8	Gamma Power supply	41	G2N	RSDS data signal (Green 2)
11	GM7	Gamma Power supply	42	G1P	RSDS data signal (Green 1)
12	GM6	Gamma Power supply	43	G1N	RSDS data signal (Green 1)
13	GM5	Gamma Power supply	44	G0P	RSDS data signal (Green 0)
14	GM4	Gamma Power supply	45	G0N	RSDS data signal (Green 0)
15	GM3	Gamma Power supply	46	R3P	RSDS data signal (Red 3)
16	GM2	Gamma Power supply	47	R3N	RSDS data signal (Red 3)
17	GM1	Gamma Power supply	48	R2P	RSDS data signal (Red 2)
18	VCM	VCM Power supply	49	R2N	RSDS data signal (Red 2)
19	VDA	Driver Power supply	50	R1P	RSDS data signal (Red 1)
20	VDA	Driver Power supply	51	R1N	RSDS data signal (Red 1)
21	DRL	Control the direction of start pulse	52	R0P	RSDS data signal (Red 0)
22	VDD	Logic Power supply	53	R0N	RSDS data signal (Red 0)
23	EIO4	source driver start pulse (4)	54	GND	Ground
24	STH	source driver start pulse	55	STV_R	Scan driver start pulse 2
25	TP1	RSDS data latch	56	STV	Scan driver start pulse 1
26	POL	polarity invert	57	CKV	Scan driver clock
27	GND	Ground	58	OE	Scan driver output enable
28	B3P	RSDS data signal (Blue 3)	59	VGL	Driver Power supply
29	B3N	RSDS data signal (Blue 3)	60	VGH	Driver Power supply
30	B2P	RSDS data signal (Blue 2)	61	GND	Ground
31	B2N	RSDS data signal (Blue 2)			

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CN2(XR) Connector Pin Assignment

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	TR2	trace2	32	B1P	RSDS data signal (Blue 1)
2	TR1	trace1	33	B1N	RSDS data signal (Blue 1)
3	GND	Ground	34	B0P	RSDS data signal (Blue 0)
4	GM14	Gamma Power supply	35	B0N	RSDS data signal (Blue 0)
5	GM13	Gamma Power supply	36	CLKP	Data driver clock
6	GM12	Gamma Power supply	37	CLKN	Data driver clock
7	GM11	Gamma Power supply	38	G3P	RSDS data signal (Green 3)
8	GM10	Gamma Power supply	39	G3N	RSDS data signal (Green 3)
9	GM9	Gamma Power supply	40	G2P	RSDS data signal (Green 2)
10	GM8	Gamma Power supply	41	G2N	RSDS data signal (Green 2)
11	GM7	Gamma Power supply	42	G1P	RSDS data signal (Green 1)
12	GM6	Gamma Power supply	43	G1N	RSDS data signal (Green 1)
13	GM5	Gamma Power supply	44	G0P	RSDS data signal (Green 0)
14	GM4	Gamma Power supply	45	G0N	RSDS data signal (Green 0)
15	GM3	Gamma Power supply	46	R3P	RSDS data signal (Red 3)
16	GM2	Gamma Power supply	47	R3N	RSDS data signal (Red 3)
17	GM1	Gamma Power supply	48	R2P	RSDS data signal (Red 2)
18	VCM	VCM Power supply	49	R2N	RSDS data signal (Red 2)
19	VDA	Driver Power supply	50	R1P	RSDS data signal (Red 1)
20	VDA	Driver Power supply	51	R1N	RSDS data signal (Red 1)
21	DRL	Control the direction of start pulse	52	R0P	RSDS data signal (Red 0)
22	VDD	Logic Power supply	53	R0N	RSDS data signal (Red 0)
23	EIO4	source driver start pulse (4)	54	GND	Ground
24	STH	source driver start pulse	55	STV_R	Scan driver start pulse 2
25	TP1	RSDS data latch	56	STV	Scan driver start pulse 1
26	POL	polarity invert	57	CKV	Scan driver clock
27	GND	Ground	58	OE	Scan driver output enable
28	B3P	RSDS data signal (Blue 3)	59	VGL	Driver Power supply
29	B3N	RSDS data signal (Blue 3)	60	VGH	Driver Power supply
30	B2P	RSDS data signal (Blue 2)	61	GND	Ground
31	B2N	RSDS data signal (Blue 2)			

Note (1) CN1、CN2 Connector Part No.: STARCONN 106D61-000100-A2-R or equal.
Note (2) The TR1 must be connected to the TR4.
Note (3) The TR2 must be connected to the TR3.

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5.2 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	0	1	0	0	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	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	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	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	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	0	1	0	0	0	0	0	0	0	0
	Green(2)	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(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	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	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	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	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

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

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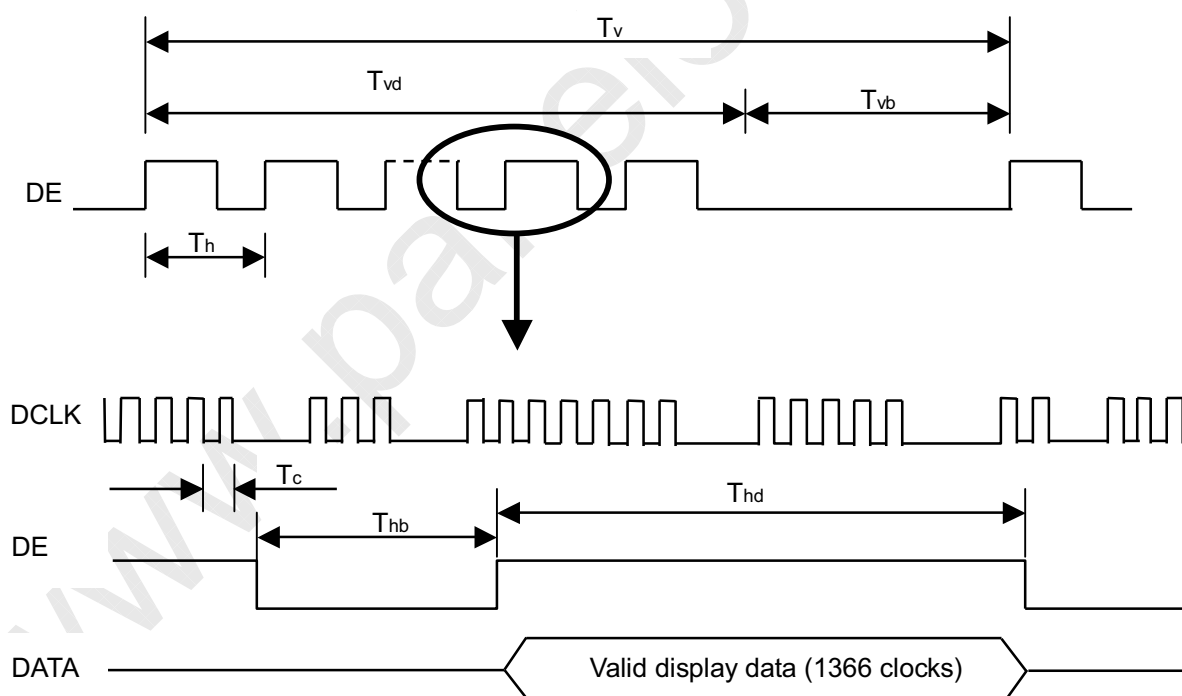Model No.: V315B3-P04

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6. INTERFACE TIMING

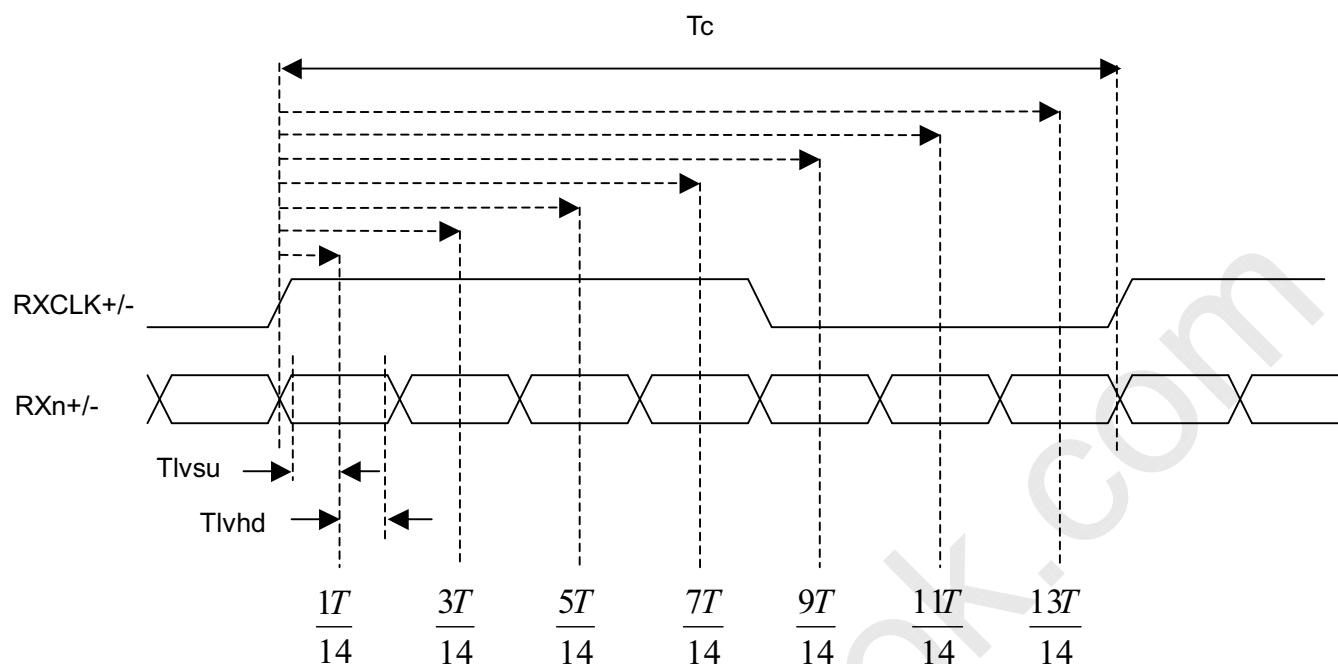## 6.1 INPUT SIGNAL TIMING SPECIFICATIONS

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

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
Vertical Active Display Term	Frame Rate	Fr5	47	50	53	Hz	
		Fr6	57	60	63	Hz	
	Total	Tv	778	806	888	Th	Tv=Tvd+Tvb
	Display	Tvd	768	768	768	Th	-
	Blank	Tvb	10	38	120	Th	-
Horizontal Active Display Term	Total	Th	1442	1560	1936	Tc	Th=Thd+Thb
	Display	Thd	1366	1366	1366	Tc	-
	Blank	Thb	76	194	570	Tc	-

Note: Since this module is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level or ground. Otherwise, this module would operate abnormally.

INPUT SIGNAL TIMING DIAGRAM

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LVDS RECEIVER INTERFACE TIMING DIAGRAM

$$\frac{1T}{14} \quad \frac{3T}{14} \quad \frac{5T}{14} \quad \frac{7T}{14} \quad \frac{9T}{14} \quad \frac{11T}{14} \quad \frac{13T}{14}$$

6.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should follow the conditions shown in the following diagram.

Power Supply
Vcc

0.5ms≤T$_1$≤10ms
0≤T$_2$≤50ms
0≤T$_3$≤50ms
500ms≤T$_4$

Signals

Backlight (Recommended)
500ms≤T$_5$
100ms≤T$_6$

Power ON/OFF Sequence

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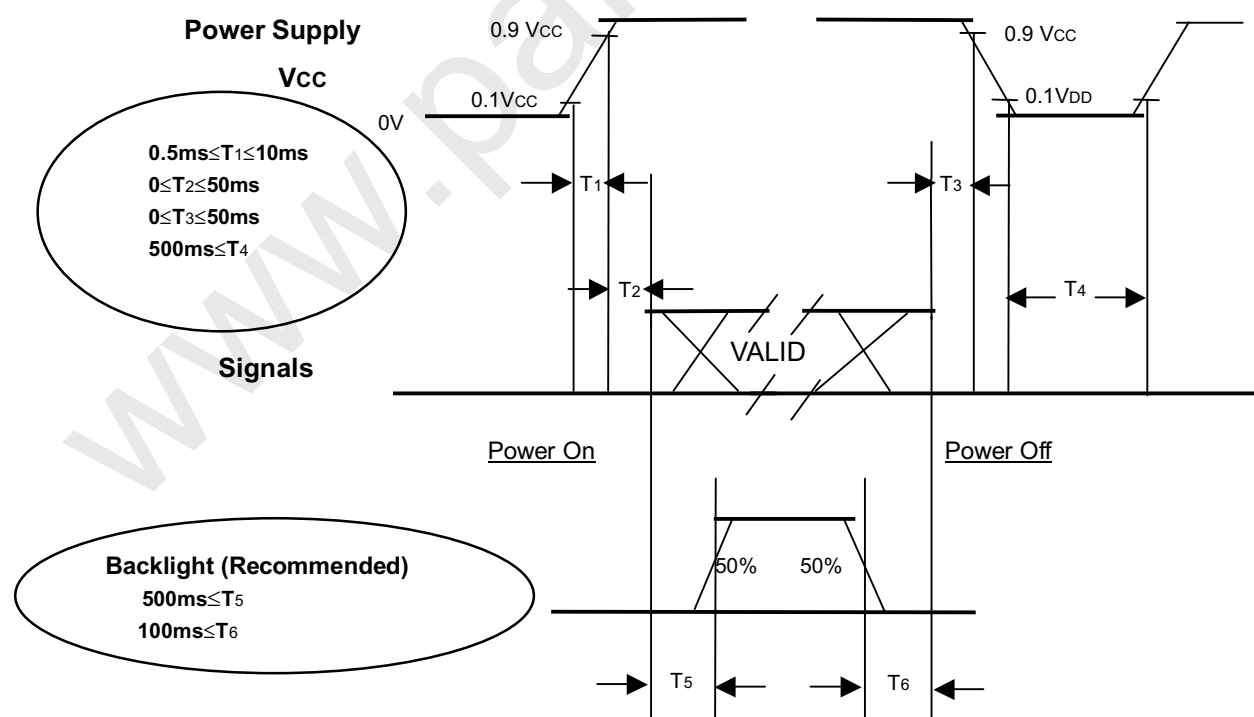
Note (1) The supply voltage of the external system for the module input should be the same as the definition of Vcc.

Note (2) Please apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation of the LCD turns off, the display may, instantly, function abnormally.

Note (3) In case of VCC = off level, please keep the level of input signals on the low or keep a high impedance.

Note (4) T4 should be measured after the module has been fully discharged between power on/off periods.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V_{CC}	5.0	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Inverter Current	I_L	5.2±0.5	mA
Inverter Driving Frequency	F_L	58±3	KHz

7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown as below. 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	Rx	$\theta_x=0°, \theta_Y=0°$ Viewing angle at normal direction With CMO module	Typ.-0.03	(0.641)	Typ+0.03	-	(1),(5)
		Ry			(0.331)		-	
	Green	Gx			(0.273)		-	
		Gy			(0.599)		-	
	Blue	Bx			(0.146)		-	
		By			(0.068)		-	
	White	Wx			(0.28)		-	
		Wy			(0.29)		-	
Center Transmittance		T%	$\theta_x=0°, \theta_Y=0°$ With CMO Module	-	4.4	-	%	(1), (7)
Contrast Ratio		CR		1500	2500		-	(1), (3)
Response Time		Gray to gray average	$\theta_x=0°, \theta_Y=0°$ With CMO Module@60Hz	-	6.5	12	ms	(4)
White Variation		δW	$\theta_x=0°, \theta_Y=0°$ With CMO Module			1.3	-	(1), (6)
Viewing Angle	Horizontal	θ_x+	CR≥20 With CMO Module	80	88	-	Deg.	(1), (2)
		θ_x-		80	88	-		
	Vertical	θ_Y+		80	88	-		
		θ_Y-		80	88	-		

Note (1) Light source is CMO's BLU and driving voltages are based on suitable gamma voltages.

Note (2) Definition of Viewing Angle (θx, θy):
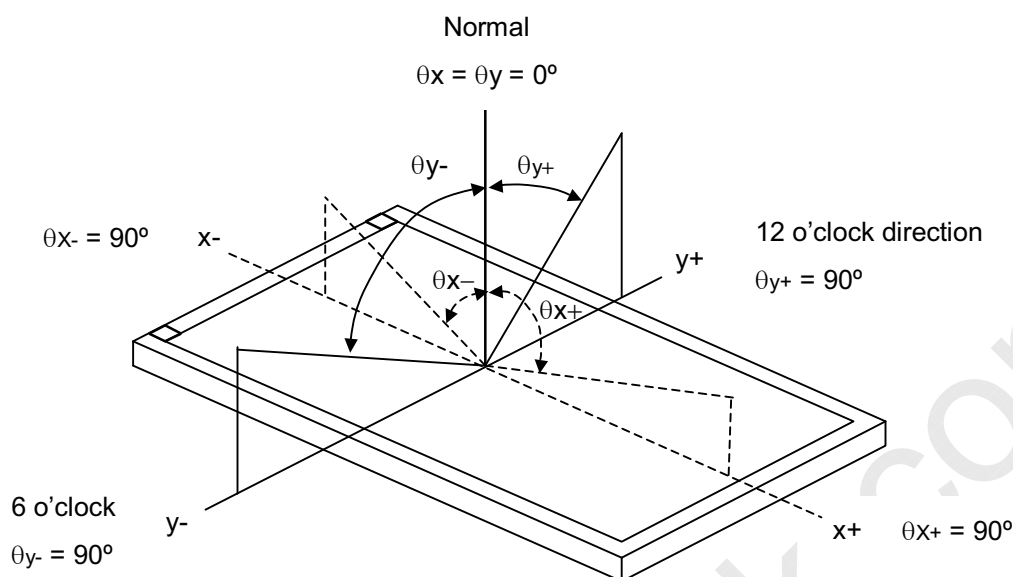
Viewing angles are measured by EZ-Contrast 160R (Eldim)

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Normal

$\theta x = \theta y = 0°$

$\theta y-$ $\theta y+$

$\theta x- = 90°$ x-

y+

12 o'clock direction

$\theta y+ = 90°$

$\theta x-$

$\theta x+$

6 o'clock   y-

$\theta y- = 90°$

x+ $\theta x+ = 90°$

Note (3) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L255 / L0

L255: Luminance of gray level 255

L 0: Luminance of gray level 0

CR = CR (5) ,where CR (X) is corresponding to the Contrast Ratio of the point X at the figure in Note (6).

Note (4) Definition of Gray-to-Gray Switching Time:

100%
90%

Optical

Response

10%
0%

Gray to gray
Switching time

Gray to gray
Switching time
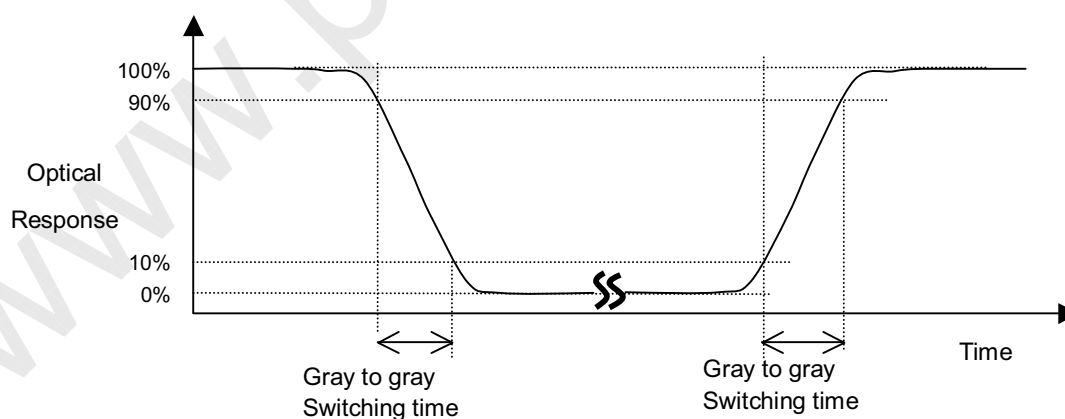
Time

The driving signal means the signal of luminance 0%, 20%, 40%, 60%, 80%, 100%.

Gray to gray average time means the average switching time of luminance 0%,20%,

40%, 60%, 80%, 100% to each other.

Note (5) Measurement Setup:

The LCD module should be stabilized at given temperature for 60 minutes to avoid abrupt temperature

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change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 60 minutes in a windless room.
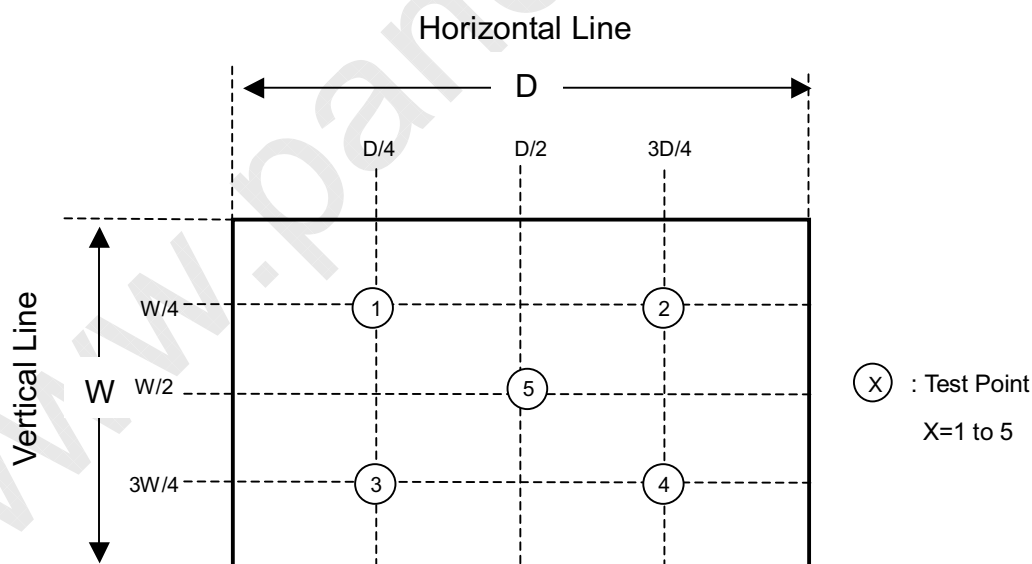
LCD Module

LCD Panel

Center of the Screen

Display Color Analyzer

(Minolta CA210)

Light Shield Room

(Ambient Luminance < 2 lux)
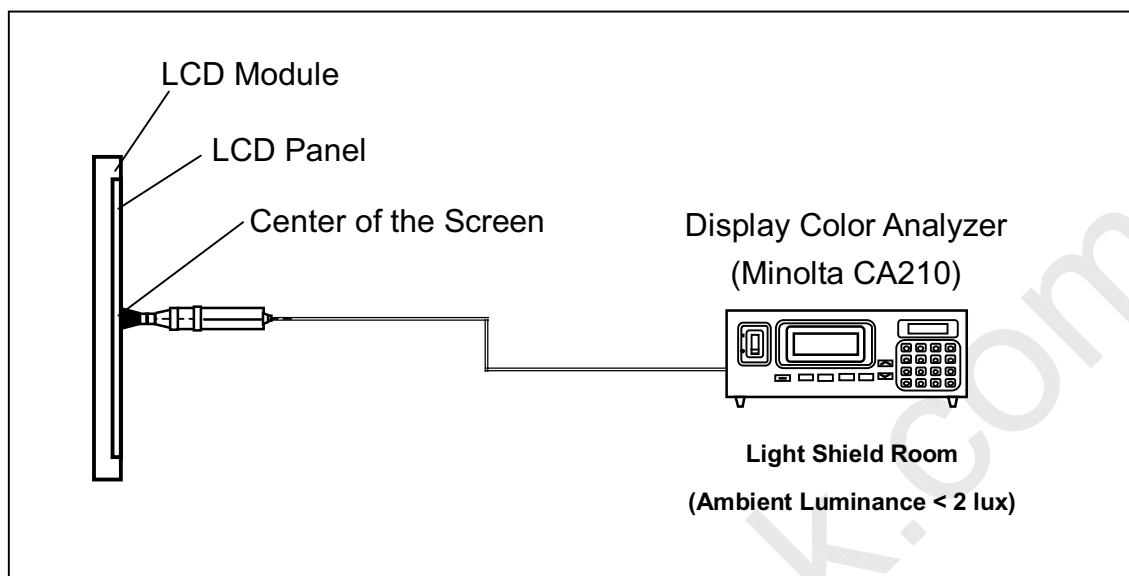
Note (6) Definition of White Variation (δW):

Measure the luminance of gray level 255 at 5 points

δW = Maximum [L (1), L (2), L (3), L (4), L (5)] / Minimum [L (1), L (2), L (3), L (4), L (5)]

where L (X) is corresponding to the luminance of the point X at the figure below.

Horizontal Line

D

D/4   D/2   3D/4

Vertical Line

W

W/4   ①   ②

W/2   ⑤

3W/4   ③   ④

Active Area

$\boxed{X}$: Test Point

X=1 to 5

Note (7) Definition of Transmittance(T%):

Module is without signal input.

$$\text{Transmittance} = \frac{\text{Luminance of LCD module}}{\text{Luminance of backlight}} * 100\%$$

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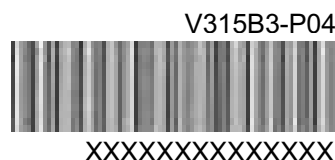
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8. DEFINITION OF LABELS

8.1 OPEN CELL LABEL

The barcode nameplate is pasted on each open cell as illustration for CMO internal control.

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XXXXXXXXXXXXXX

8.2 CARTON LABEL

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

P.O. NO._____

Parts ID._____

Carton ID._____ Quantities __12__
XXXXXXXXXXXXXX

Made in Taiwan

 (a) Model Name: V315B3– P04

 (b) Carton ID: CMO internal control

 (c) Quantities: 12

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9. PACKAGING

9.1 PACKING SPECIFICATIONS

(1) 12 LCD TV Panels / 1 Box

(2) Box dimensions : 970 (L) X 640 (W) X 319 (H)

Weight : approximately 28Kg (12 panels per box)

9.2 PACKING METHOD

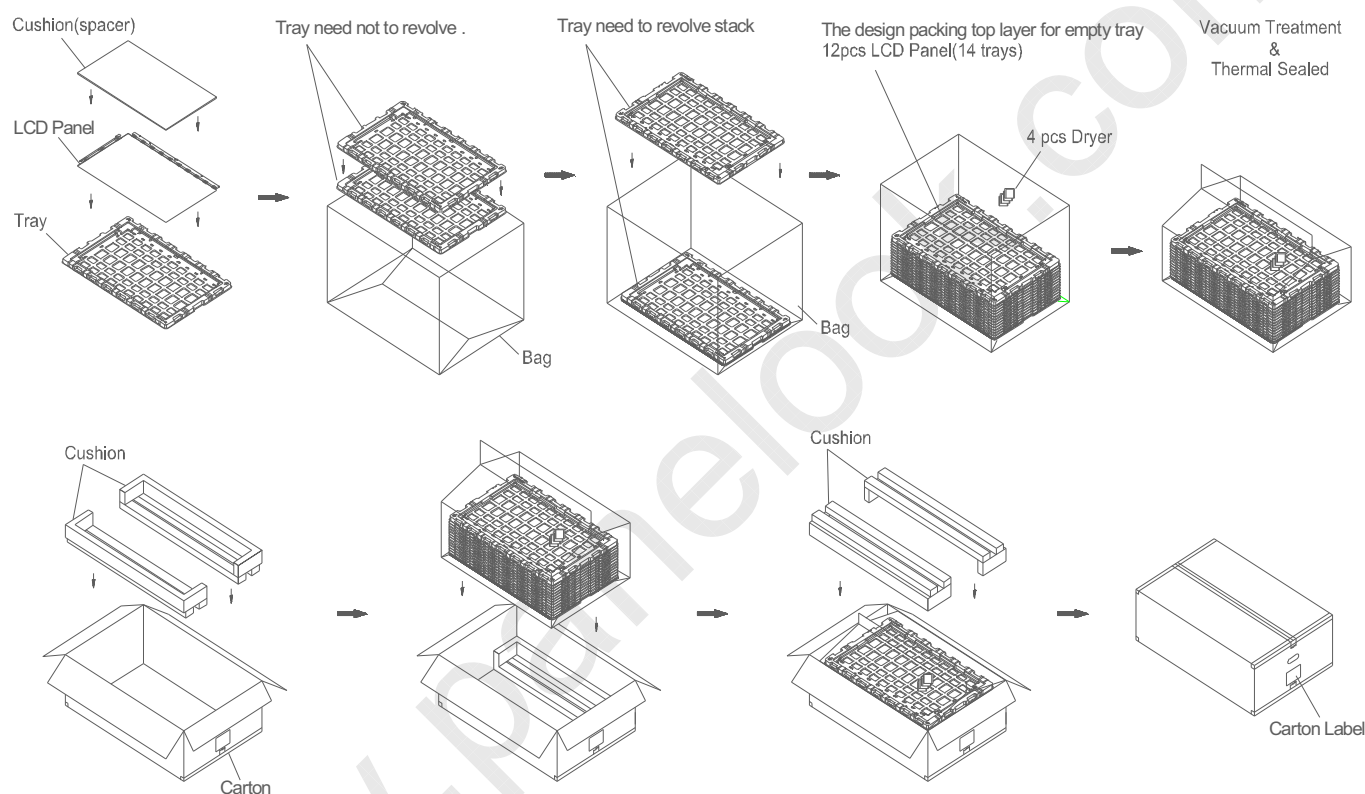Figures 9-1 and 9-2 are the packing method

Figure.9-1 packing method

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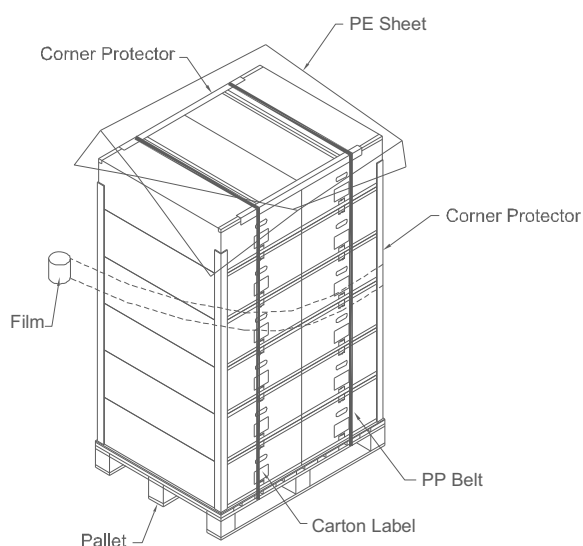
Sea Transportation

Corner Protector:L1850*50*50mm
　　　　　　　　L1130*50*50mm
Pallet:L1300*W1000*H140mm
Pallet Stack:L1300*W1000*H2054mm
Gross: 352kg

Air Transportation

Corner Protector:L1250*50*50mm
　　　　　　　　L1130*50*50mm
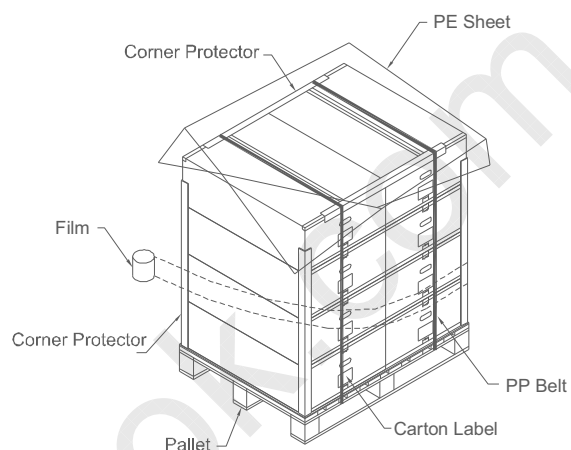Pallet:L1300*W1000*H140mm
Pallet Stack:L1300*W1000*H1416mm
Gross:240kg

Figure.9-2 packing method

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10. PRECAUTIONS

10.1 ASSEMBLY AND HANDLING PRECAUTIONS

(1) Do not apply rough force such as bending or twisting to the product during assembly.

(2) To assemble backlight 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 will be damaged.

(4) Always follow the correct power sequence when the product 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) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.

(7) It is dangerous that moisture come into or contacted the product, because moisture may damage the product when it is operating.

(8) High temperature or humidity may reduce the performance of module. Please store this product within the specified storage conditions.

(9) When ambient temperature is lower than 10ºC may reduce the display quality. For example, the response time will become slowly.

10.2 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 product's end of life, it is not harmful in case of normal operation and storage.

10.3 SAFETY STANDARDS

Regulatory	Item	Standard
Information Technology equipment	UL	UL 60950-1:2006
	cUL	CAN/CSA C22.2 No.60950-1-03: 2006
	CB	IEC 60950 -1:2005
Audio/Video Apparatus	UL	UL 60065:2006
	cUL	CAN/CSA C22.2 No.60065-03: 2006
	CB	IEC 60065:2006

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11. Mechanical Drawing

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