

- ☐ Tentative Specification
☐ Preliminary Specification
☒ Approval Specification

MODEL NO.: G170J1
SUFFIX: LE1

Customer:

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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REVISION HISTORY

Version	Date	Section	Description
2.0	2012.3.22	All	Approval spec was first issued
2.1	2013.3.19	3.2	Add Converter Inrush current item and Note(3)
			Add Vi rising time scheme
		6.2	Update POWER ON/OFF SEQUENCE

1. GENERAL DESCRIPTION

1.1 OVERVIEW

G170J1- LE1 is a 17" TFT Liquid Crystal Display module with LED backlight unit and 30-pin-and-1ch LVDS interface. This product supports 1920 x 1200 WUXGA format and can display true 16.7M colors.

The converter for LED backlight is built-in.

1.2 FEATURES

- Excellent brightness (600 nits)
- High color saturation NTSC 70%
- WUXGA (1920 x 1200 pixels) resolution
- DE (Data Enable) only mode
- LVDS (Low Voltage Differential Signaling) interface
- Ultra wide viewing angle: 176(H)/ 176(V) (CR>10)
- Wide operation and storage temperature range

1.3 APPLICATION

- TFT LCD monitor for Industrial application

1.4 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	365.76 (H) x 228.6 (V)	mm	(1)
Bezel Opening Area	369 (H) x 231.8 (V)	mm	
Driver Element	a-si TFT active matrix	-	-
Pixel Number	1920 x R.G.B. x 1200	pixel	-
Pixel Pitch	0.1905 (H) x 0.1905 (V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	16.7 M	color	-
Display Operation Mode	Transmissive mode / Normally black	-	-
Surface Treatment	Glare	-	-
Total power consumption(typ)	25.45	W	typ

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

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal (H)	386.2	386.8	387.4	mm	(1)
	Vertical (V)	250.2	250.8	251.4	mm	
	Depth (D)	18.25	18.6	18.95	mm	-
Weight		-	1675	1745	g	-

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

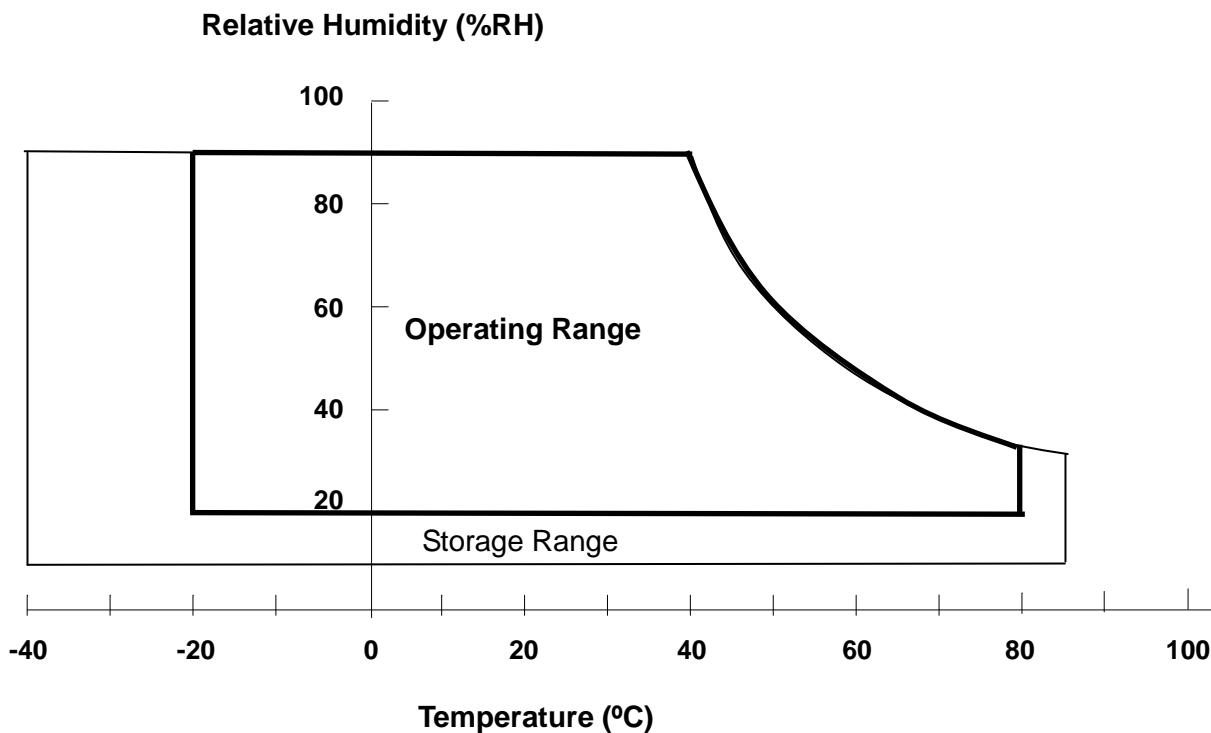
2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Operating Ambient Temperature	T _{OP}	-20	+80	°C	
Storage Temperature	T _{ST}	-40	+85	°C	

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

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



2.2 ELECTRICAL ABSOLUTE RATINGS

2.2.1 TFT LCD MODULE

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Power Supply Voltage	VCC	-0.3	7	V	(1)

2.2.2 LED CONVERTER

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Converter Voltage	V_i	-0.3	24	V	(1), (2)
Enable Voltage	EN	---	5.5	V	
Backlight Adjust	ADJ	---	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 LED light bar (Refer to 3.2 for further information).

3. ELECTRICAL CHARACTERISTICS

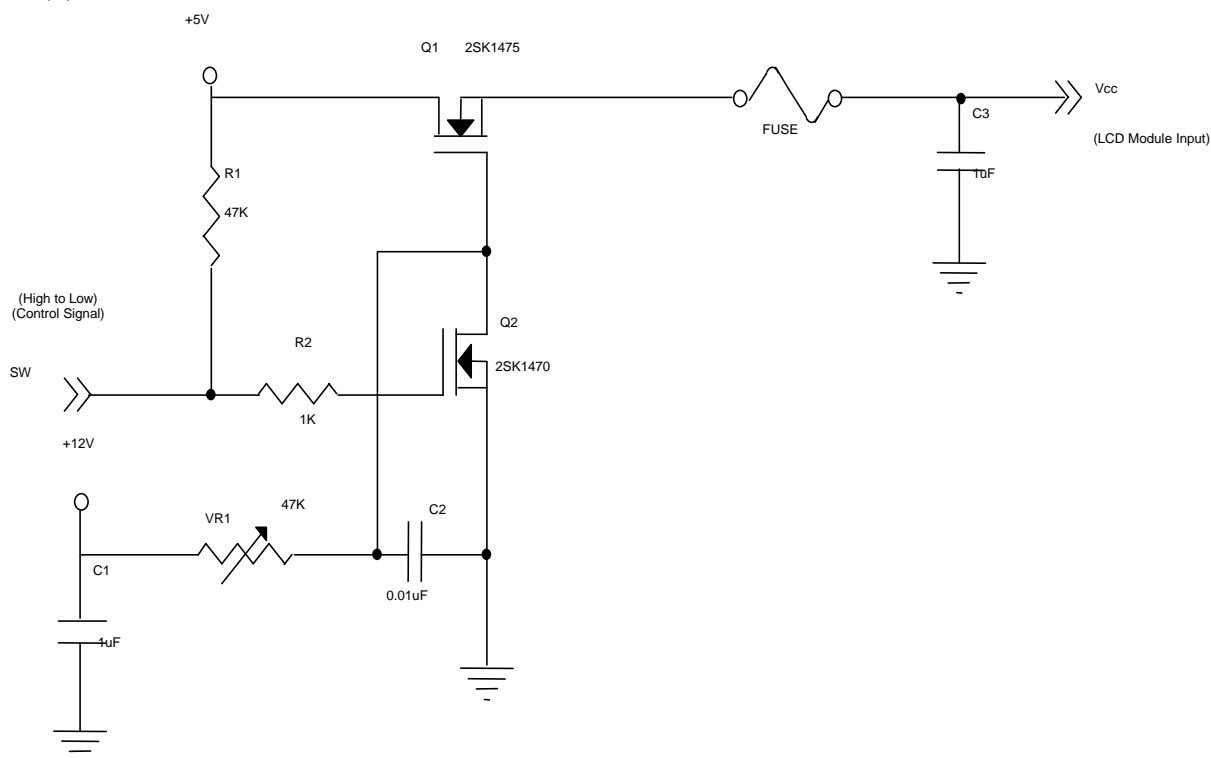
3.1 TFT LCD MODULE

$T_a = 25 \pm 2 \text{ }^{\circ}\text{C}$

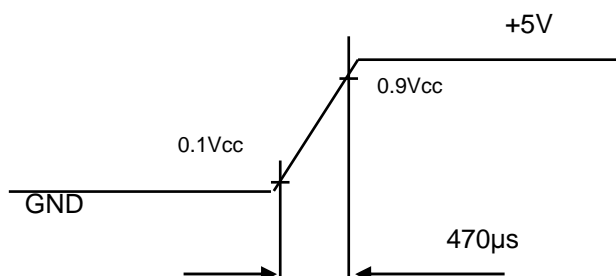
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V_{CC}	4.5	5	5.5	V	(1)
Rush Current	I_{RUSH}	-	-	3.0	A	(2)
Power Supply Current	White	950	1050	1150	mA	(3)
	Black	450	550	650	mA	
Power Consumption	P_L	---	5.25	---	W	
LVDS differential input voltage	$ VID $	100	-	600	mV	-
LVDS common input voltage	V_{ICM}	0.7	-	1.6	V	-

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

Note (2) Measurement Conditions:

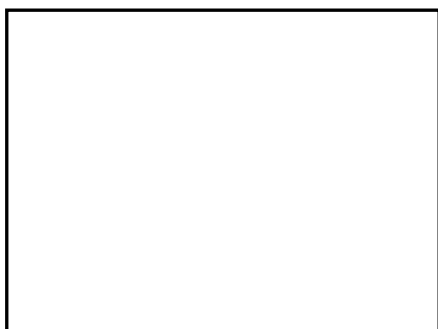


VCC rising time is 470us



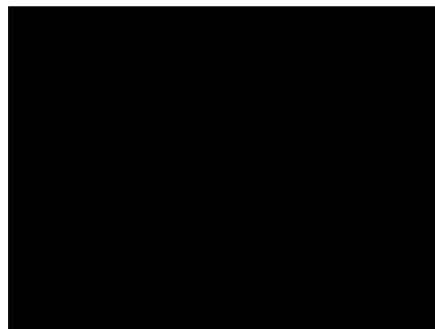
Note (3) The specified power supply current is under the conditions at $V_{CC} = 5 \text{ V}$, $T_a = 25 \pm 2 \text{ }^{\circ}\text{C}$, $f_v = 60 \text{ Hz}$, whereas a power dissipation check pattern below is displayed.

a. White Pattern



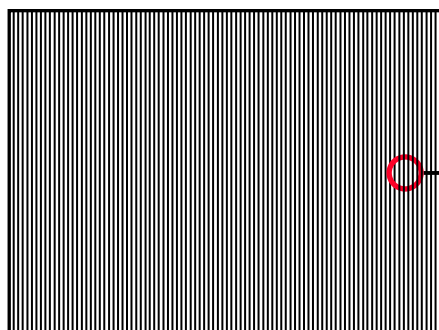
Active Area

b. Black Pattern

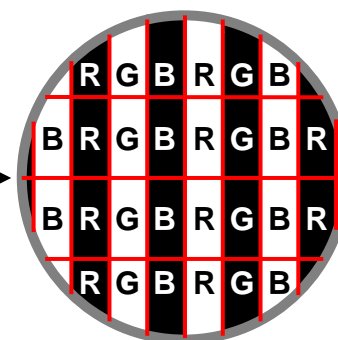


Active Area

c. Vertical Stripe Pattern



Active Area



3.2 LED CONVERTER

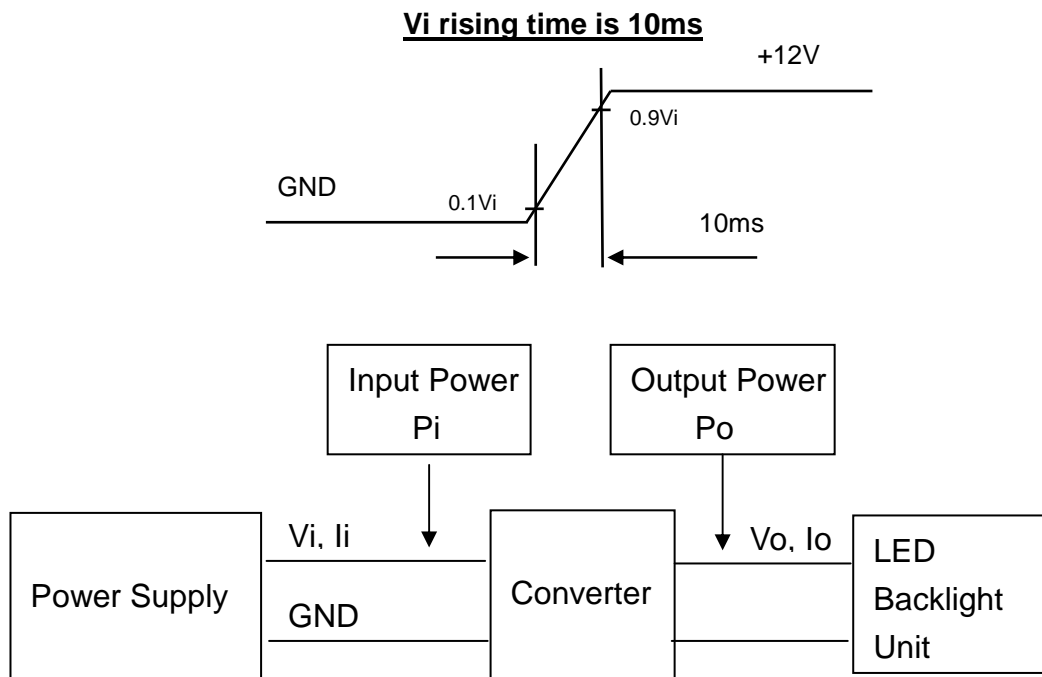
Ta = 25 ± 2 °C

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Power Supply Voltage		V _i	9	12.0	16	V	(Duty 100%)
Converter Power Supply Current		I _i	1.58	1.68	1.78	A	@ V _i = 12V (Duty 100%)
Converter Inrush Current		I _{iRush}	-	-	3.8	A	(3)
LED Power Consumption		P _{LED}	---	20.2	---	W	@ V _i = 12V (Duty 100%)
EN Control Level	Backlight on		2.0	---	5	V	
	Backlight off		0	---	0.8	V	
PWM Control Level	PWM High Level		2.0	---	5	V	
	PWM Low Level		0	---	0.15	V	
PWM Control Duty Ratio			5		100	%	
PWM Control Frequency		f _{PWM}	190	200	210	Hz	
LED Life Time		L _L	30,000			Hrs	(2)

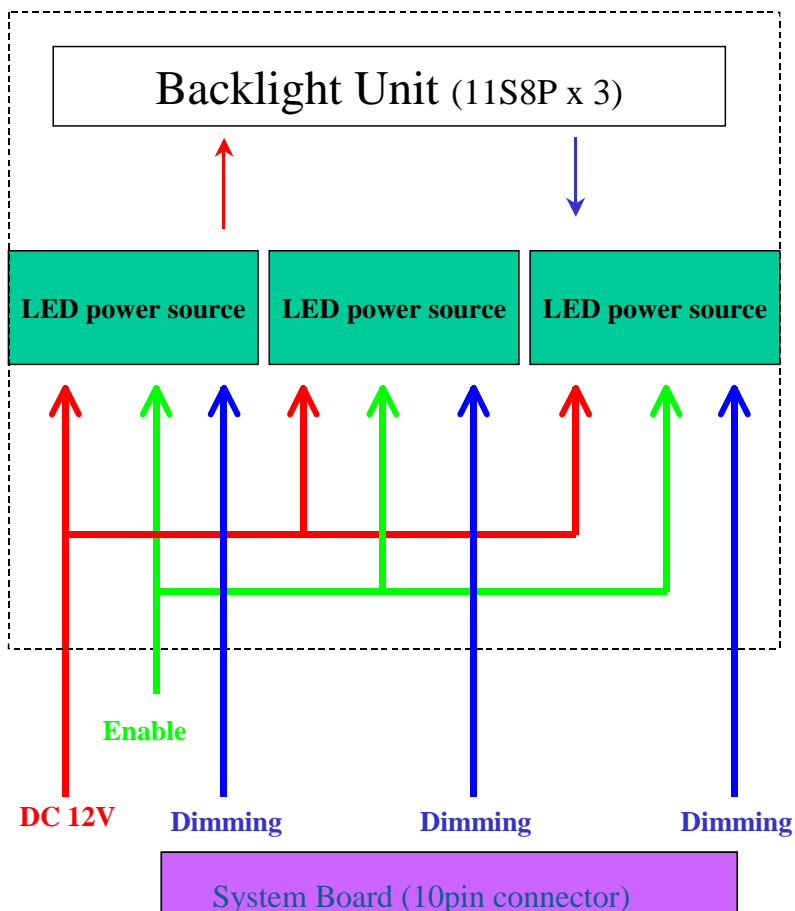
Note (1) LED current is measured by utilizing a high frequency current meter as shown below:

Note (2) The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta = 25 ± 2 °C and I_{LED} = 20mA_{DC}(LED forward current) until the brightness becomes ≤ 50% of its original value.

Note (3) Converter Power Supply Voltage rising time is 10ms from 0.1Vi to 0.9Vi

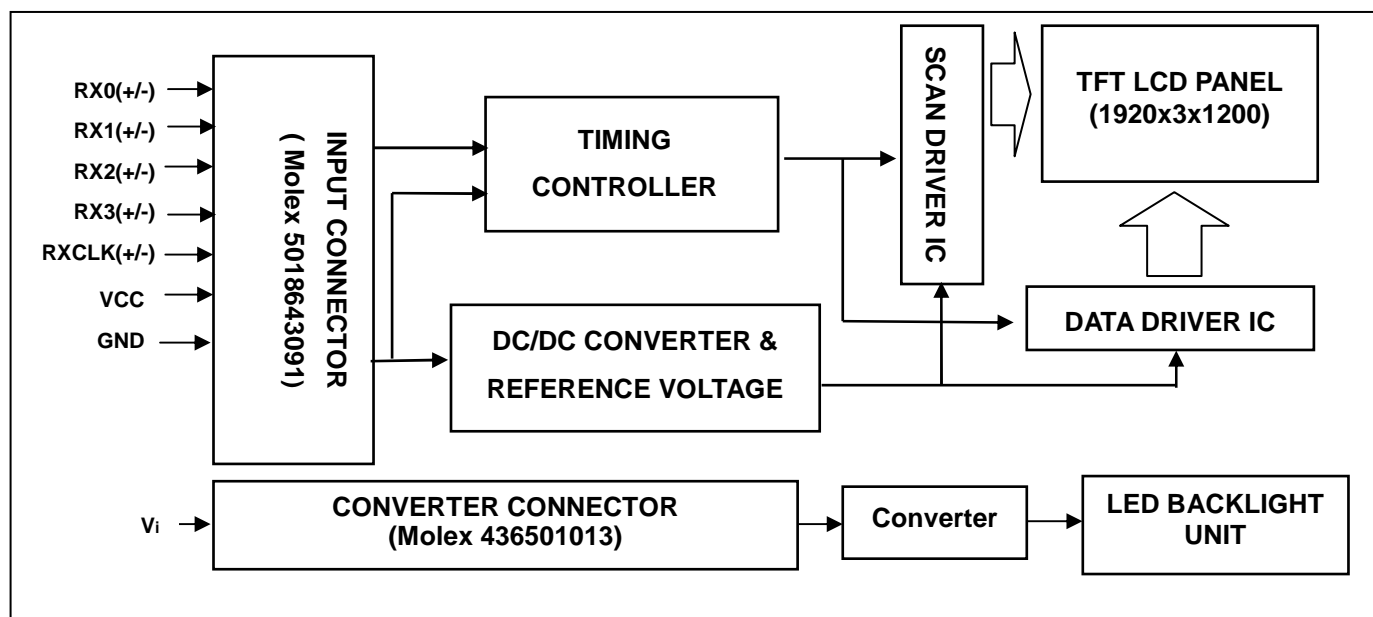


LED BL Block Diagram



4. BLOCK DIAGRAM

4.1 TFT LCD MODULE



5. INTERFACE PIN ASSIGNMENT

5.1 TFT LCD MODULE

Pin No.	Symbol	Description	Note
1	RXO0-	-LVDS differential data input, Chan 0-Odd	-
2	RXO0+	+LVDS differential data input, Chan 0-Odd	-
3	RXO1-	-LVDS differential data input, Chan 1-Odd	-
4	RXO1+	+LVDS differential data input, Chan 1-Odd	-
5	RXO2-	-LVDS differential data input, Chan 2-Odd	-
6	RXO2+	+LVDS differential data input, Chan 2-Odd	-
7	VSS	Ground	
8	RXOC-	-LVDS differential Clock input (Odd)	
9	RXOC+	+LVDS differential Clock input (Odd)	
10	RXO3-	-LVDS differential data input, Chan 3-Odd	
11	RXO3+	+LVDS differential data input, Chan 3-Odd	
12	RXE0-	-LVDS differential data input, Chan 0-Even	-
13	RXE0+	+LVDS differential data input, Chan 0-Even	-
14	VSS	Ground	-
15	RXE1-	-LVDS differential data input, Chan 1-Even	-
16	RXE1+	+LVDS differential data input, Chan 1-Even	-
17	VSS	Ground	-
18	RXE2-	-LVDS differential data input, Chan 2-Even	-
19	RXE2+	+LVDS differential data input, Chan 2-Even	-
20	RXEC-	-LVDS differential Clock input (Even)	-
21	RXEC+	+LVDS differential Clock input (Even)	-
22	RXE3-	-LVDS differential data input, Chan 3-Even	-
23	RXE3+	+LVDS differential data input, Chan 3-Even	-
24	VSS	Ground	-
25	VSS	Ground	-
26	NC	No Connection	-
27	AGMODE	Aging mode selection [Default connection GND]	-
28	Vcc	+5.0V power supply	-
29	Vcc	+5.0V power supply	-
30	Vcc	+5.0V power supply	

Note (1) Connector Part No.: MOLEX (5018643091)

5.2 BACKLIGHT UNIT (Converter connector pin)

Pin	Symbol	Description	Remark
1	ADJ3	Area3 adjust	PWM Dimming
2	ADJ2	Area2 adjust	PWM Dimming
3	ADJ1	Area1 adjust	PWM Dimming
4	EN	Enable pin	3.3V
5	V _{GND}	Converter ground	Ground
6	V _{GND}	Converter ground	Ground
7	V _{GND}	Converter ground	Ground
8	V _i	Converter input voltage	12V
9	V _i	Converter input voltage	12V
10	V _i	Converter input voltage	12V

Note (1) Connector Part No.: MOLEX (436501013)

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	
	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	0	0	0	0	0	0	0	0	
	Blue	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	
	Magenta	1	1	1	1	1	1	1	1	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	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	
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	
	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	
	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	
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	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	
	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	
	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	
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	
	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	
	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	
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	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	
	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	
	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	
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	
	Blue(1)	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	
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	Blue(253)	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	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	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

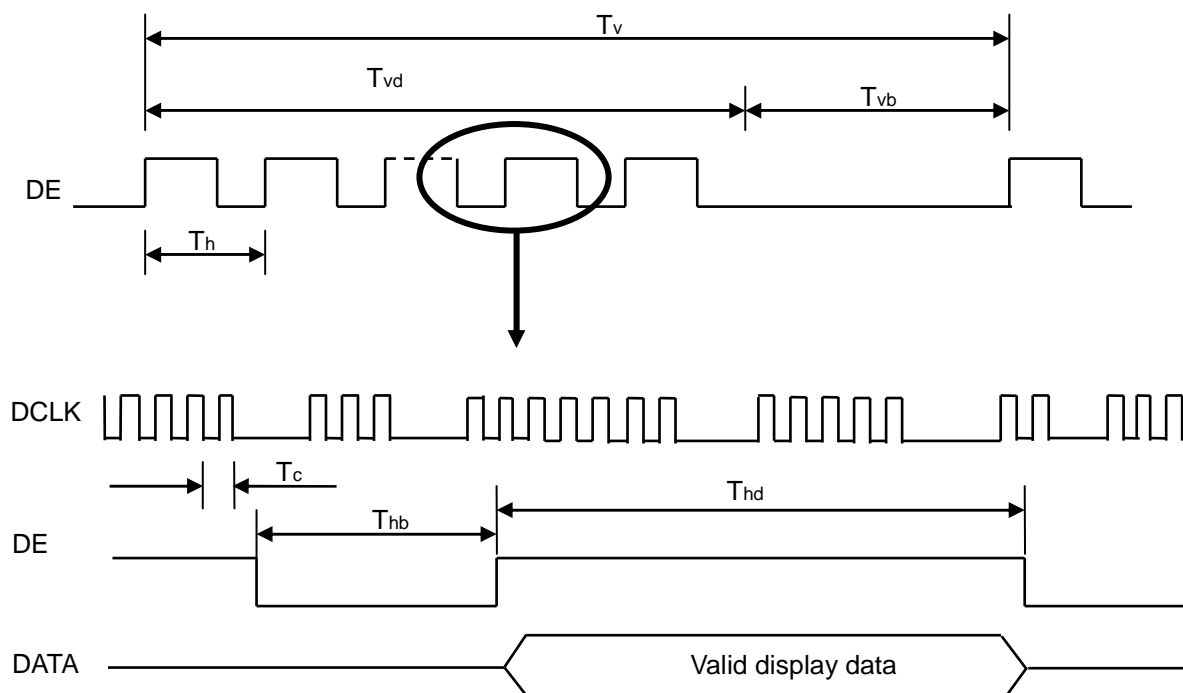
The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
DCLK	Frequency	Fc	-	154.13	159.26	MHz	
	Input clock to data skew	TLVCCS	-0.25	-	0.25	ns	(3)
Vertical Active Display Term	Total	Tv	1202	1235	1235	Th	Tv=Tvd+Tvb
	Display	Tvd	1200	1200	1200	Th	-
	Blank	Tvb	2	35	35	Th	-
Horizontal Active Display Term	Total	Th	2000	2080	2080	Tc	Th=Thd+Thb
	Display	Thd	1920	1920	1920	Tc	-
	Blank	Thb	80	160	160	Tc	-

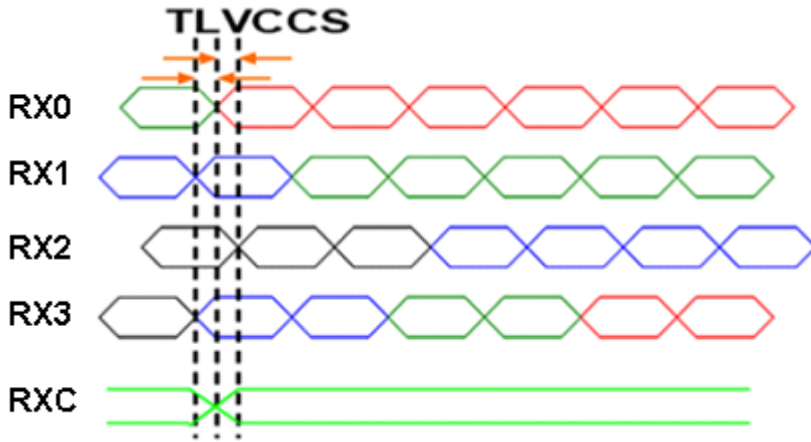
Note (1) Since this assembly is operated in DE only mode, Hsync and Vsync input signals should be set to low logic level. Otherwise, this assembly would operate abnormally.

(2) Frame rate is 60Hz

INPUT SIGNAL TIMING DIAGRAM

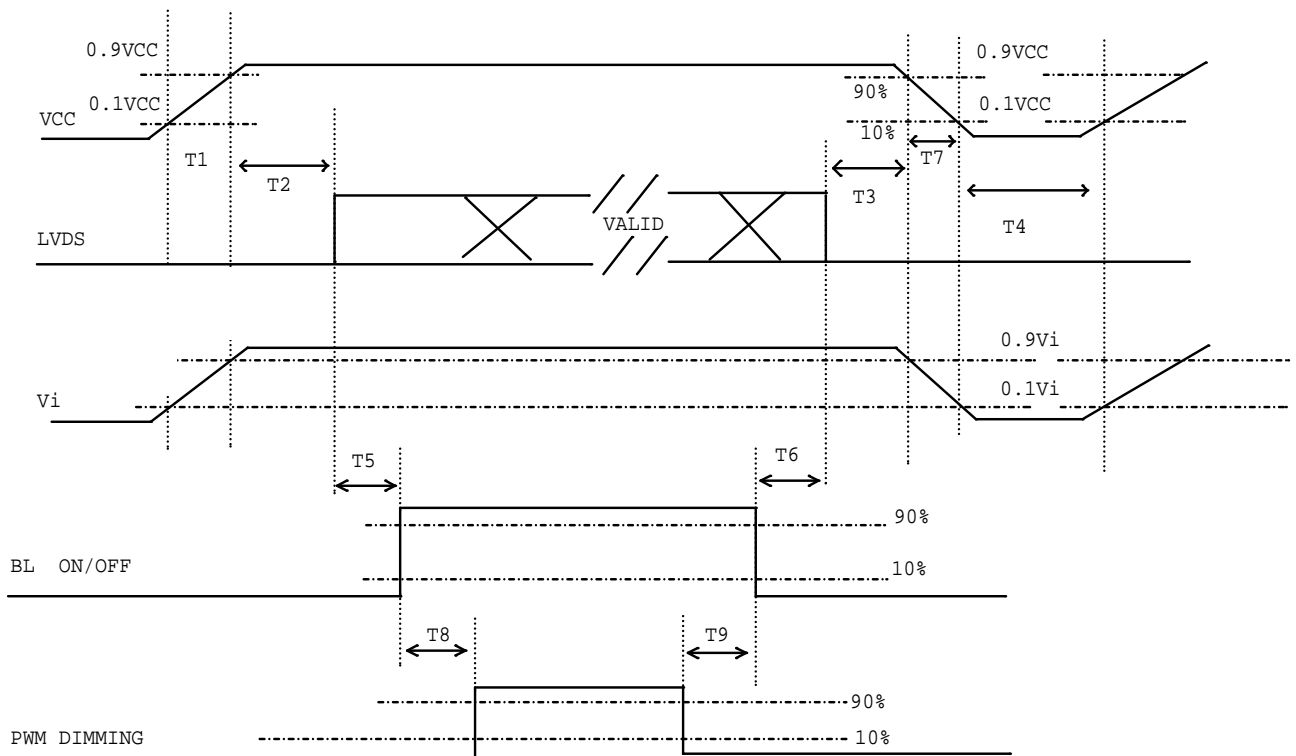


Note (3) Input Clock to data skew is defined as below figures.



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.

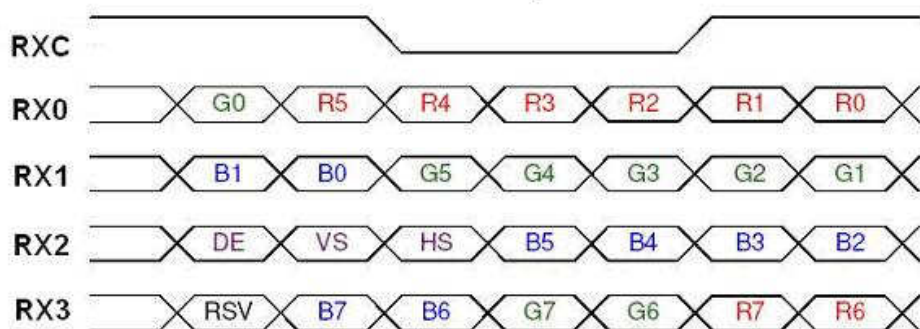
Note (2) When the interface signal is invalid, be sure to pull down the power supply of LCD VCC to 0 V.

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	-	100	ms
T8	10	-	-	ms
T9	10	-	-	Ms

6.3 The Input Data Format



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

Note (2) Please follow PSWG

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

Note (3) Output signals from any system shall be low or Hi-Z state when VCC is off

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	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Converter Current	I _L	20±1mA	mA

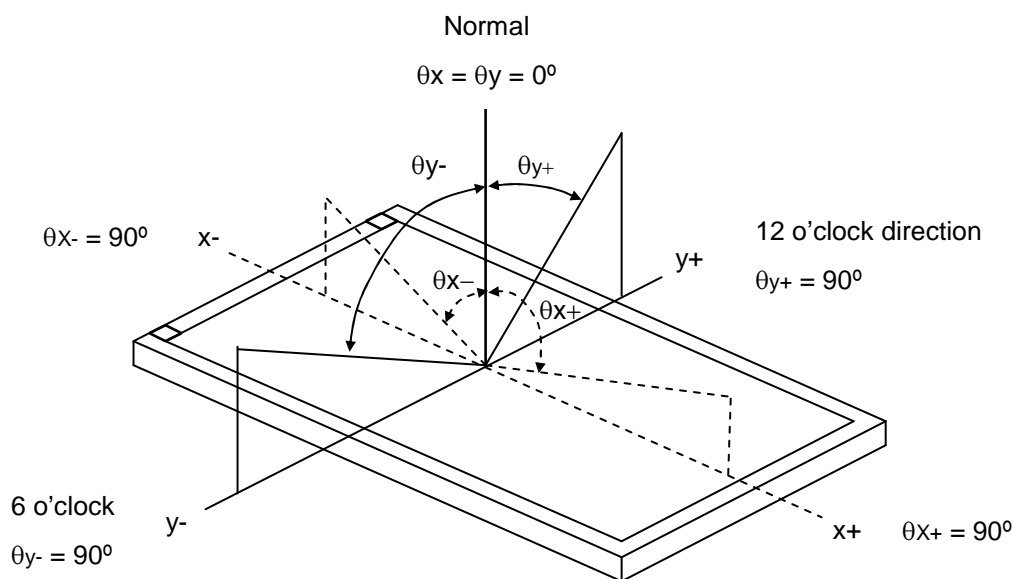
7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (6).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta_x=0^\circ, \theta_y=0^\circ$ Viewing angle at normal direction	1500	2000		-	(2)
Response Time		T _R		-	20	25	ms	(3)
		T _F		-	9	15	ms	
Center Luminance of White		L _C		500	600	-	cd/m ²	(4)
White Variation		δW		-	1.2	1.4	-	(6)
Chromaticity	Red	R _x		Typ. -0.05	0.629	Typ. +0.05	-	(5)
		R _y			0.341		-	
	Green	G _x			0.3160		-	
		G _y			0.622		-	
	Blue	B _x			0.148		-	
		B _y			0.070		-	
	White	W _x			0.313		-	
		W _y			0.329		-	
Viewing Angle	Horizontal	θ _{x+}	CR≥10	80	88	-	Deg.	(1)
		θ _{x-}		80	88	-		
	Vertical	θ _{y+}		80	88	-		
		θ _{y-}		80	88	-		

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

Viewing angles are measured by BM5A



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

The contrast ratio can be calculated by the following expression.

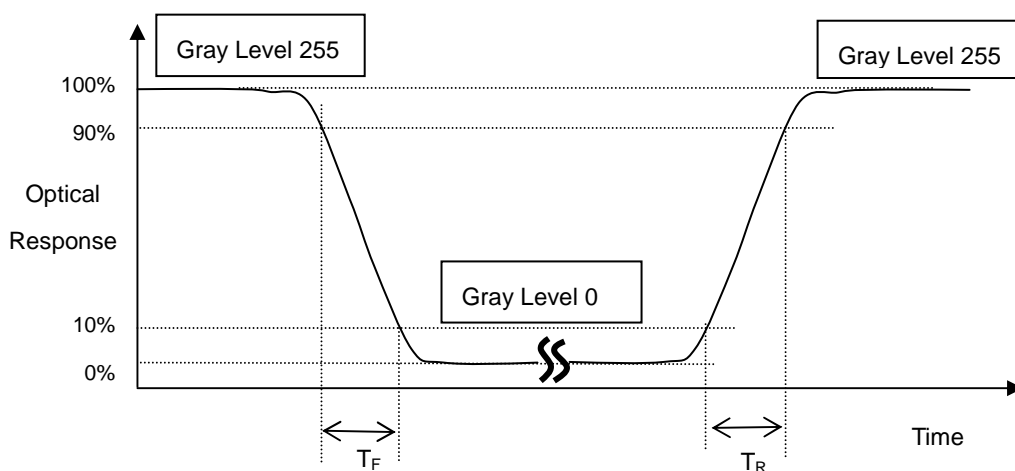
$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

L_{255} : Luminance of gray level 255

L_0 : Luminance of gray level 0

$CR = CR(5)$, where $CR(X)$ is corresponding to the Contrast Ratio of the point X at the figure in Note (7).

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



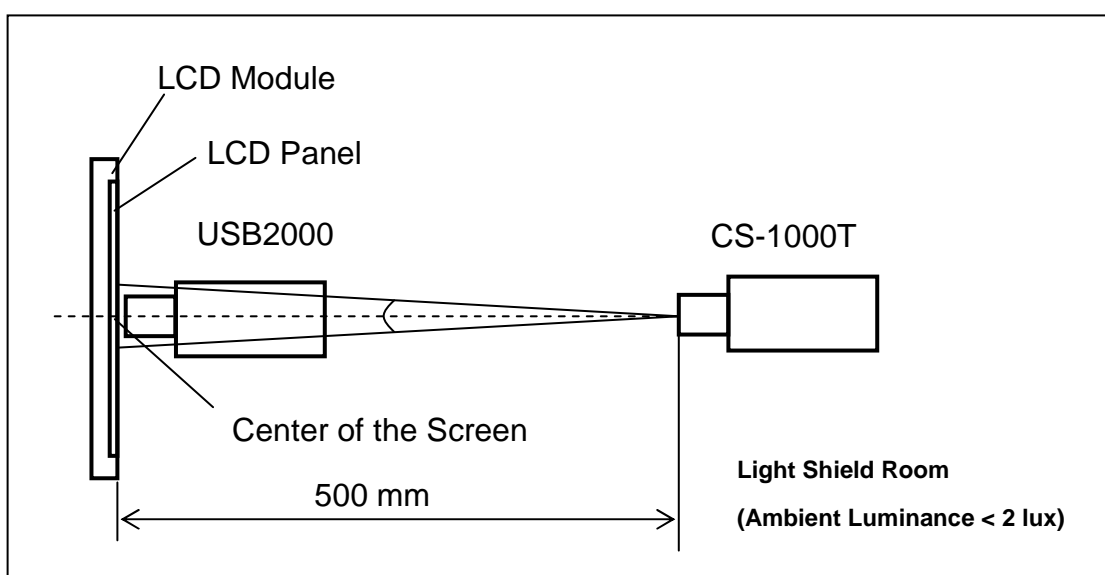
Note (4) Definition of Luminance of White (L_C):

Measure the luminance of gray level 255 at center point and 5 points

$L_C = L(5)$, where $L(X)$ is corresponding to the luminance of the point X at the figure in Note (7).

Note (5) Measurement Setup:

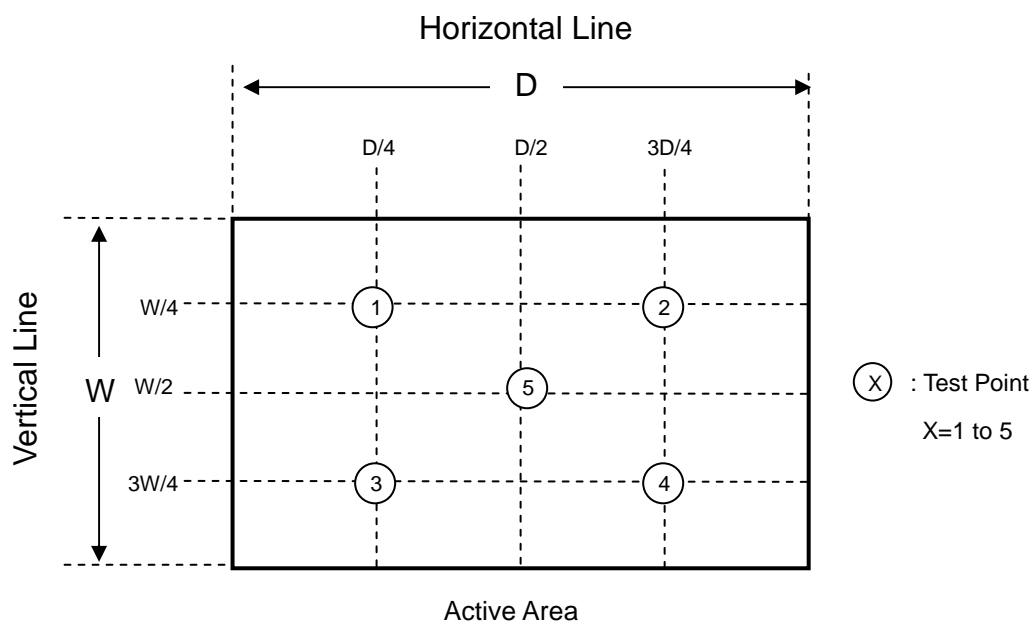
The LCD assembly should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a windless room.



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

Measure the luminance of gray level 255 at 5 points

$$\delta W = \text{Maximum} [L(1), L(2), L(3), L(4), L(5)] / \text{Minimum} [L(1), L(2), L(3), L(4), L(5)]$$



8. RELIABILITY TEST CRITERIA

Test Item	Test Condition	Note
High Temperature Storage Test	85°C, 240 hours	(1) (2)
Low Temperature Storage Test	-30°C, 240 hours	
Thermal Shock Storage Test	-30°C, 30min \longleftrightarrow 85°C, 30min; 100cycles,	
High Temperature Operation Test	80°C, 240 hours	
Low Temperature Operation Test	-20°C, 240 hours	
High Temperature & High Humidity Operation Test	60°C, 90%RH, 240 hours	
Shock (Non-Operating)	50G, 11ms, half sine wave, 3 time for $\pm X$, $\pm Y$, $\pm Z$.	(3)
Vibration (Non-Operating)	1.5Grms, 10 ~ 300 Hz, 0.5 hour/cycle, 3 cycles each X, Y, Z	(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 80 °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 the reliability test.

9. PACKAGING

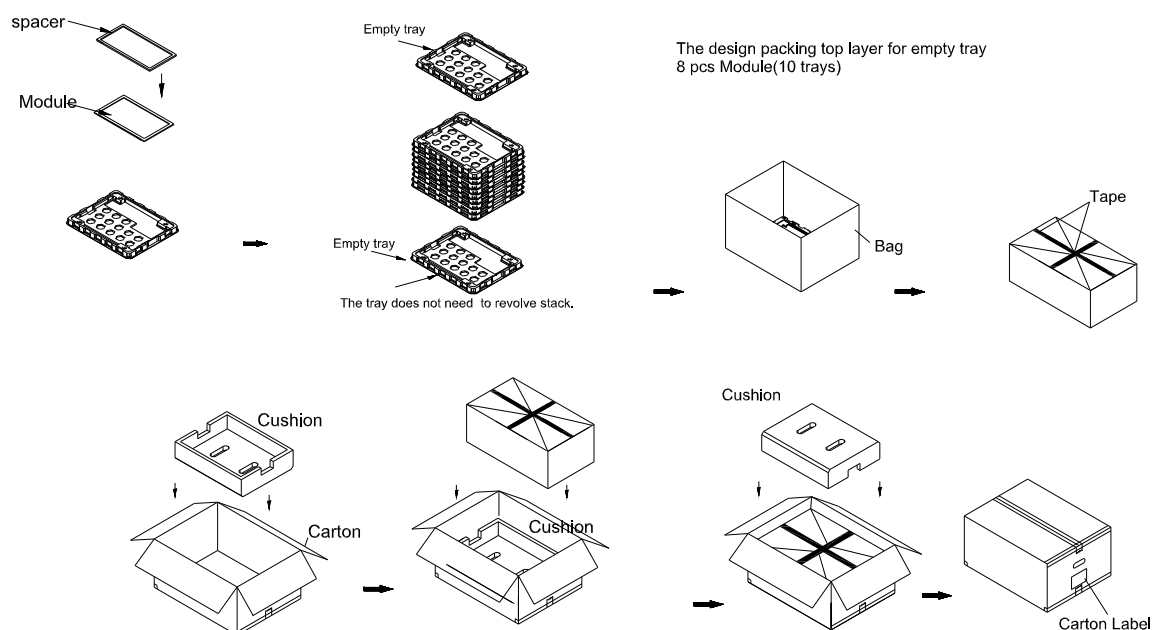
9.1 PACKING SPECIFICATIONS

- (1) 8pcs LCD modules / 1 Box
- (2) Box dimensions: 615 (L) X 515 (W) X 320 (H) mm
- (3) Weight: approximately 21.1Kg (8 modules per box)

9.2 PACKING METHOD

- (1) Carton Packing should have no failure in the following reliability test items.

Test Item	Test Conditions	Note
Vibration	ISTA STANDARD Random, Frequency Range: 2 – 200 Hz Top & Bottom: 30 minutes (+Z), 10 min (-Z), Right & Left: 10 minutes (X) Back & Forth 10 minutes (Y)	Non Operation
Dropping Test	1 Angle, 3 Edge, 6 Face, 46 cm	Non Operation



- (1) Carton dimensions : 615(L)x515(W)x320(H)mm
- (2) 8 modules/Carton

Figure. 9-1 Packing method

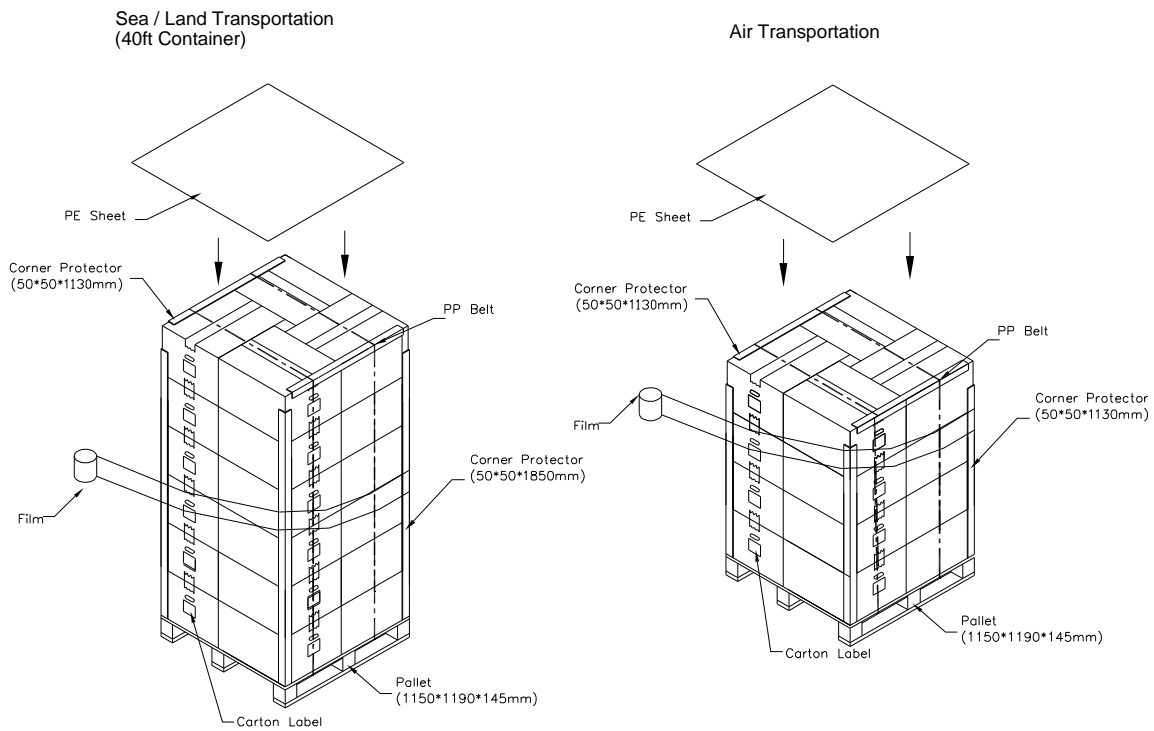
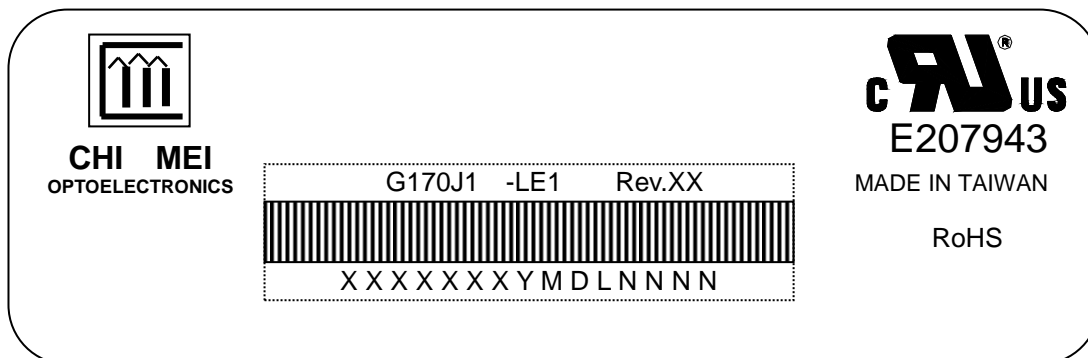


Figure. 9-2 Packing method

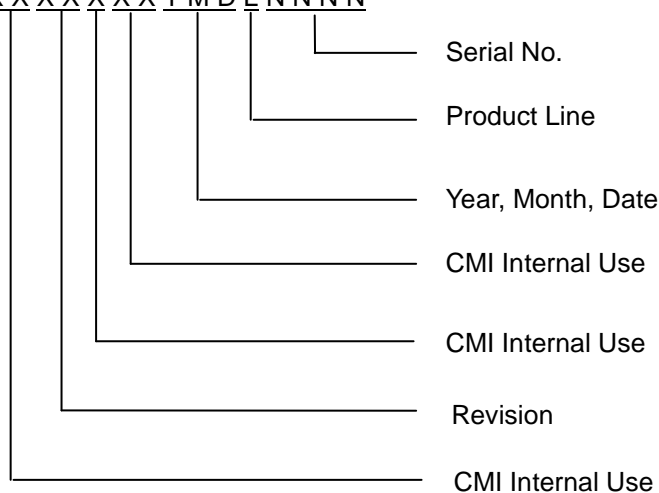
10. DEFINITION OF LABELS

10.1 CMI MODULE LABEL

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



- (a) Model Name: G170J1-LE1
- (b) Revision: Rev. XX, for example: A0, A1... B1, B2... or C1, C2...etc.
- (c) Serial ID: X X X X X X Y M D L N N N N



Serial ID includes the information as below:

- (a) Manufactured Date: Year: 0~9, for 2010~2019
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
- (d) Product Line: 1 -> Line1, 2 -> Line 2, ...etc.

11. PRECAUTIONS

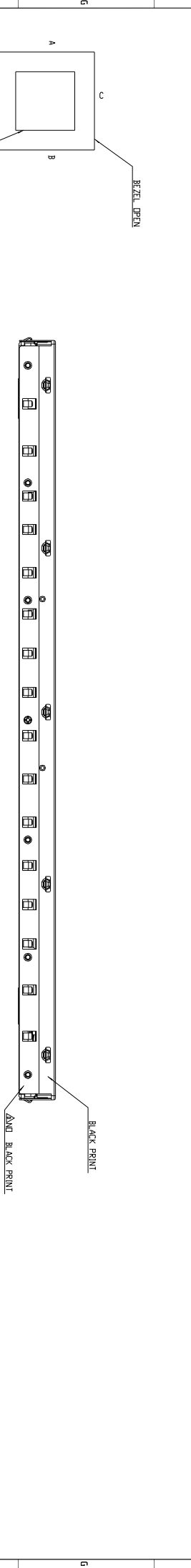
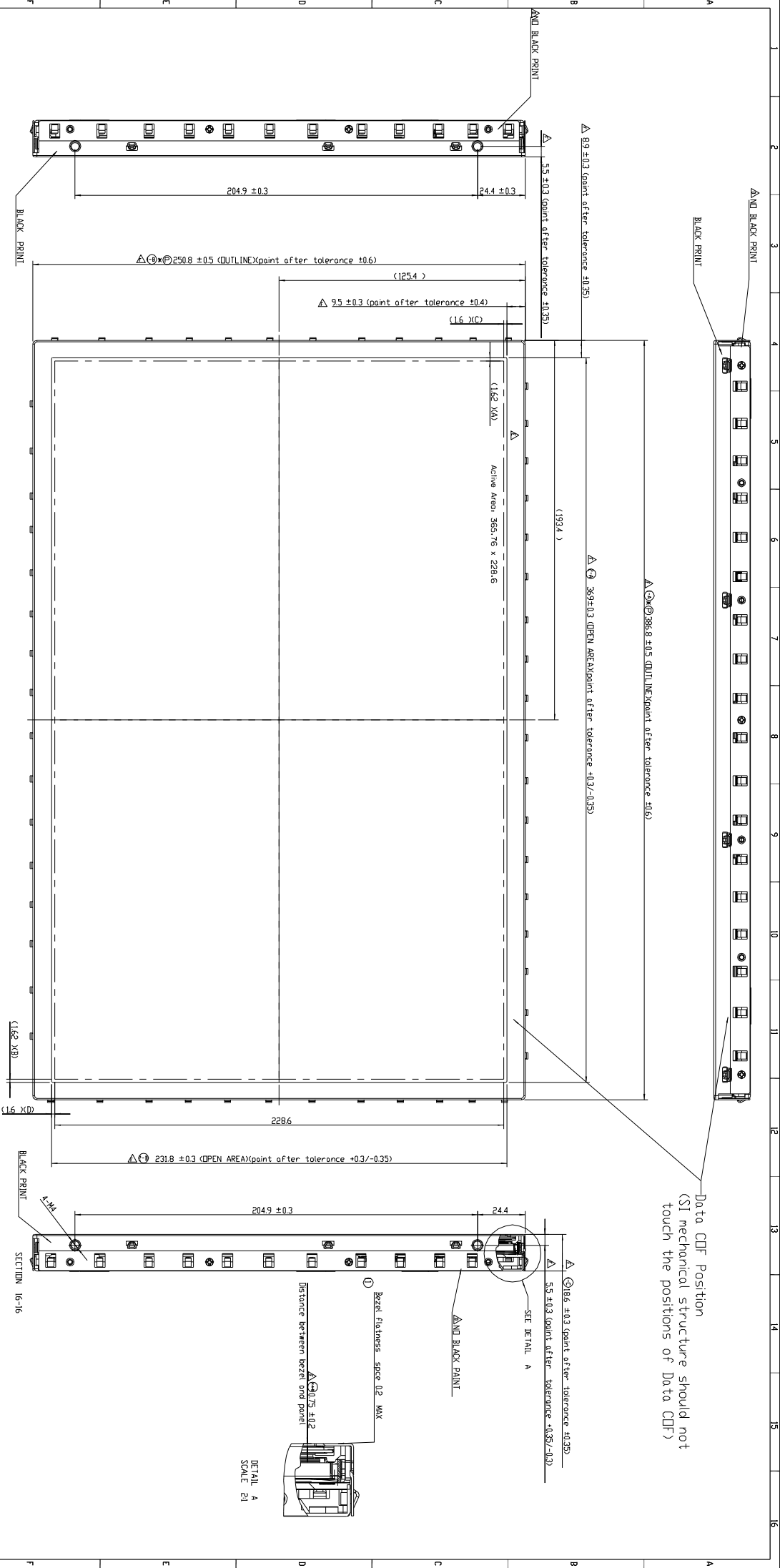
11.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) It is recommended to assemble or to install a module into the user's system in clean working areas.
The dust and oil may cause electrical short or worsen the polarizer.
- (3) Do not apply pressure or impulse to the module to prevent the damage of LCD panel and Backlight.
- (4) Always follow the correct power-on sequence when the LCD module is turned on. This can prevent the damage and latch-up of the CMOS LSI chips.
- (5) Do not plug in or pull out the I/F connector while the module is in operation.
- (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) Moisture can easily penetrate into LCD module and may cause the damage during operation.
- (9) High temperature or humidity may deteriorate the performance of LCD module. Please store LCD modules in the specified storage conditions.
- (10) When ambient temperature is lower than 10°C, the display quality might be reduced. For example, the response time will become slow, and the starting voltage of backlight will be higher than that of room temperature.
- (11) Do not keep same pattern in a long period of time. It may cause image sticking on LCD.

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

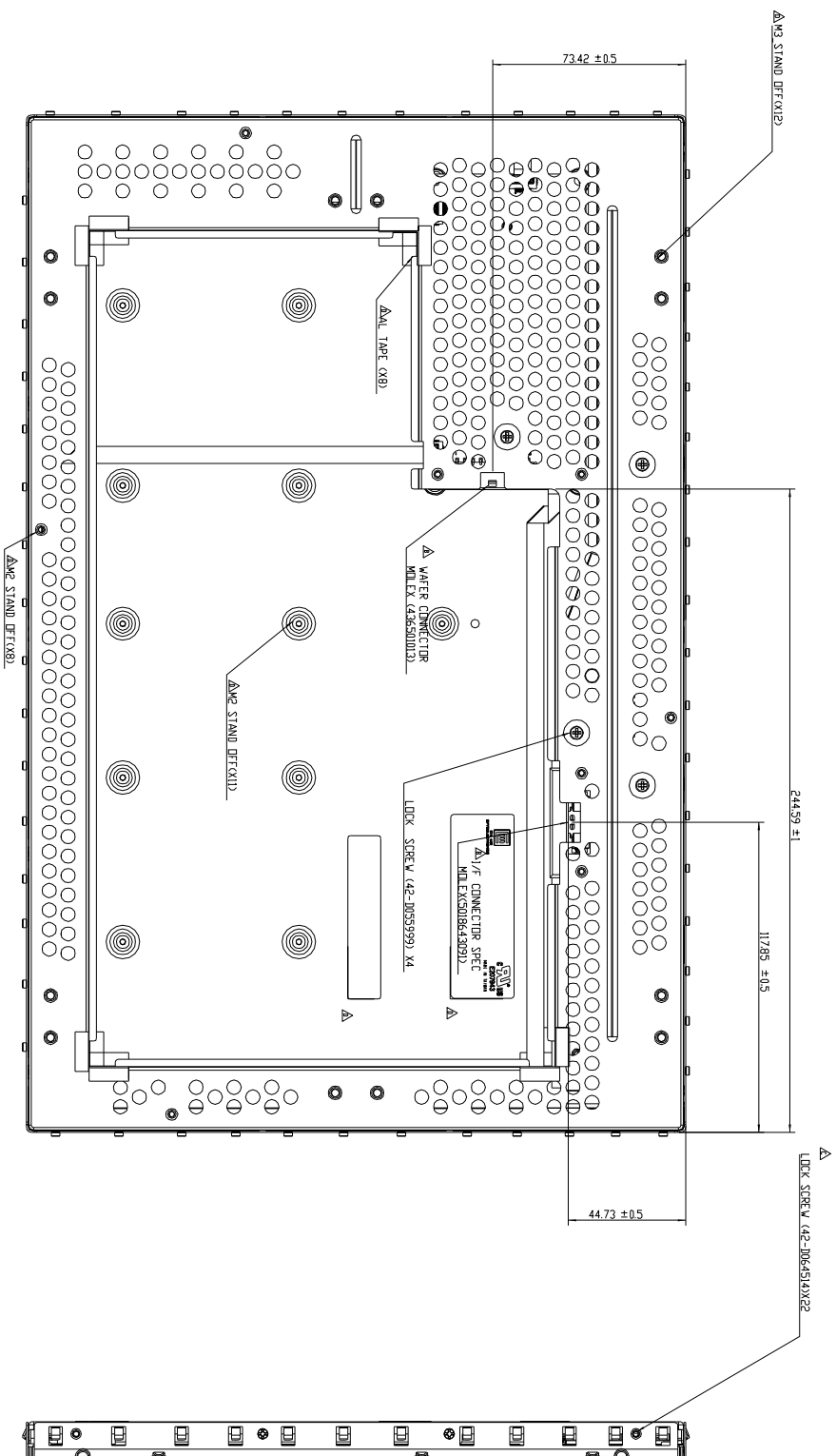
12. MECHANICAL CHARACTERISTICS



Revision History		Notes	
Rev	Description	Date	By
1	Initial Release	05-JAN-2012	CCDA
2	Design Change	05-SEP-2011	CCDA
3	Design Change	22-APR-2011	CCDA
4	Design Change	21-OCT-2010	CCDA

Title		Rev	
ASSY MODULE CDF, L1			
Approved	ST	Drawn No.	0204187
Checked	ST	Part No.	100
Designed	CCDA	Material	100
Inspected	CCDA	Date	05-JAN-2012
		Scale	1:1
		Section	1:1

General Tolerance Unless Specified	
0-6	±0.1
6-30	±0.15
30-100	±0.2
100-300	±0.3
300-1000	±0.5
1000-3000	±0.7
3000-10000	±1.0
10000-30000	±1.5
30000-100000	±2.0
100000-300000	±3.0
300000-1000000	±4.0
1000000-3000000	±5.0
3000000-10000000	±6.0
10000000-30000000	±7.0
30000000-100000000	±8.0
100000000-300000000	±9.0
300000000-1000000000	±10.0
1000000000-3000000000	±11.0
3000000000-10000000000	±12.0
10000000000-30000000000	±13.0
30000000000-100000000000	±14.0
100000000000-300000000000	±15.0
300000000000-1000000000000	±16.0
1000000000000-3000000000000	±17.0
3000000000000-10000000000000	±18.0
10000000000000-30000000000000	±19.0
30000000000000-100000000000000	±20.0



Work	Description	Charged By	Approved By	ECN No.	Remark
1	2	3	4	5	6
Δ	SHAW ELEVATOR 1 ON ROADSIDE LIFTING	COCHUA	SY		
Δ	FRANK FRONT HOIST	06-JAN-2012	COCHUA	SY	
Δ	MONTY DOW LINE	09-SEP-2011	COCHUA	SY	
Δ	MONTY DOW LINE	22-APR-2011	COCHUA	SY	
Δ	SHAW CONNECTOR TYPE	21-JUL-2010	COCHUA	SY	

NOTES:
1. UNSPECIFIED TOLERANCE $\pm 0.5^{\text{mm}}$
A 2.1/F CONNECTOR SPEC. MOLEX(50)B8643091/CMI ND25-D057319
A 3. WAFER CONNECTOR MEX446501013/CMI ND25-D057608
4. SIDE MOUNT MOLE TROQUE : 5kgf-cm (MAX).
5. SREW TROQUE : 2kgf-cm

[illegible]