

Production Specification

客戶 Customer :	
品名 Product No. :	J104SVG01
編號 Version number :	
發出日期 Deliver date:	2021.03.02

Dep.	Approved	Date
Quality Dep.		
Technical Dep.		
Marketing Dep.		

Customer	Confirmation	Date

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REVISION HISTORY

Version	Date	Section	Description
0.0	2021.03.02	All	J104SVG01 Tentative Spec. was first issued

1. GENERAL DESCRIPTION

1.1 OVERVIEW

The J104SVG01 model is a 10.4" TFT-LCD module with a white LED Backlight Unit and a 20-pin 1ch-LVDS interface. This module supports 800 x 600 SVGA mode and displays 262k/16.2M colors.

1.2 FEATURES

- Wide viewing angle
- High contrast ratio
- Fast response time
- SVGA (800 x 600 pixels) resolution
- Wide operating temperature
- DE (Data Enable) mode
- LVDS (Low Voltage Differential Signaling) interface
- Reversible scan direction
- RoHS Compliance

1.3 APPLICATION

- TFT LCD Monitor
- Industrial Application
- Amusement

1.4 GENERAL SPECIFICATIONS

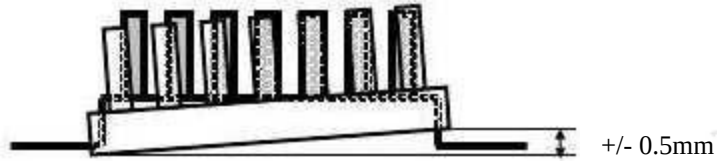
Item	Specification	Unit	Note
Diagonal Size	10.4	inch	(1)
Active Area	211.2(H) x 158.4(V)	mm	
Bezel Opening Area	214.8 x 162.7	mm	
Driver Element	a-si TFT active matrix	-	-
Pixel Number	800 x R.G.B. x 600	pixel	-
Pixel Pitch	0.264(H) x 0.264(V)	mm	-
Pixel Arrangement	RGB vertical stripe	-	-
Display Colors	262k/16.2M	color	-
Transmissive Mode	Normally white	-	-
Surface Treatment	Hard coating (3H), AG	-	-
Module Power Consumption	6.54 (Black pattern)	W	Typ.

1.5 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal (H)	242.7	243	243.3	mm	(1)
	Vertical (V)	183.7	184	184.3	mm	
	Depth (D)	6.5	6.7	7.5	mm	
Weight			400		g	-
I/F connector mounting position		The mounting inclination of the connector makes the screen center within $\pm 0.5\text{mm}$ 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



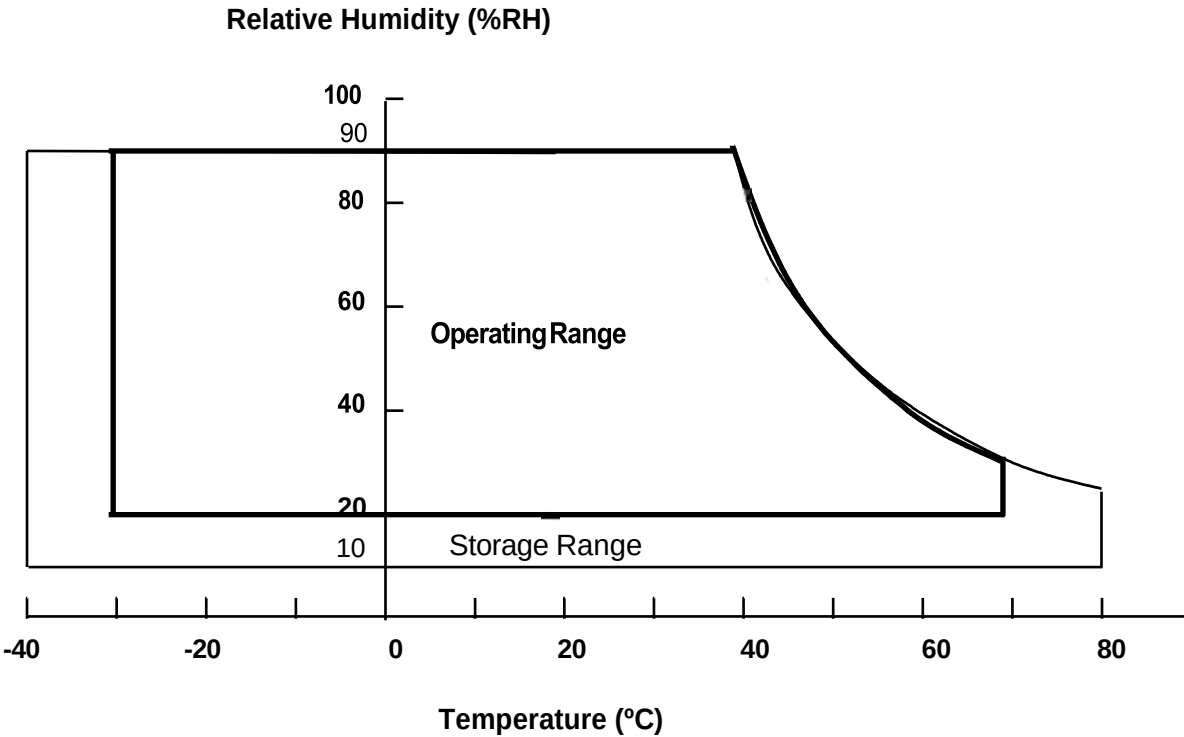
2. ABSOLUTE MAXIMUM RATINGS

2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Operating Ambient Temperature	T _{OP}	-30	+70	°C	
Storage Temperature	T _{ST}	-40	+80	°C	

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

- (2) 90 %RH Max. (Ta ≤ 40 °C).
- (2) Wet-bulb temperature should be 39 °C Max. (Ta > 40 °C).
- (3) 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)

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.

3. ELECTRICAL CHARACTERISTICS

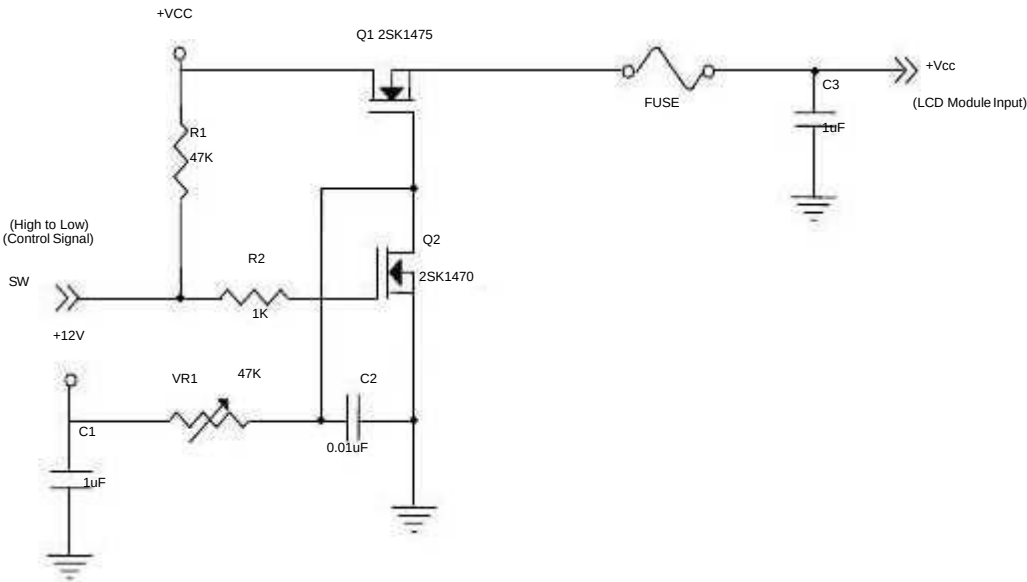
3.1 TFT LCD MODULE

Ta= 25 ± 2°C

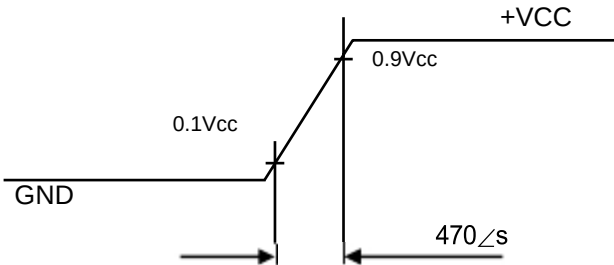
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V _{CC}	3.0	3.3	3.6	V	(1) at V _{cc} =3.3V
Rush Current	I _{RUSH}	-	-	4	A	(2)
Power Supply Current	White	-	410	490	mA	(3)a, at V _{cc} =3.3V
	Black	-	540	650	mA	(3)b, at V _{cc} =3.3V
Power Consumption	P _L	-	2.0	-	W	
LVDS differential 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 470∟s



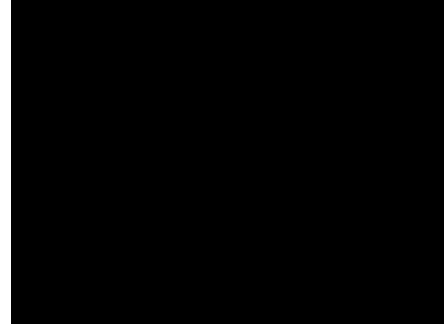
Note (3) The specified power supply current is under the conditions at $V_{CC} = 3.3V$, $T_a = 25 \pm 2^\circ C$, $f_v = 60$ Hz, whereas a power dissipation check pattern below is displayed.

a. White Pattern



Active Area

b. Black Pattern



Active Area

Symbol	Description	Min.	Typ.	Max.	Unit	Note
IR_{LB}	LED String Current	-	140	-	[mA]	Operating with fixed driven current
V_{LB}	LED String Voltage	-	-	32.4	[Volt]	
P_{BLU}	LED Light Bar Power Consumption	-	-	4.54	[Watt]	
LT_{LB}	L/B Life Time	30,000	-	-	[Hour]	

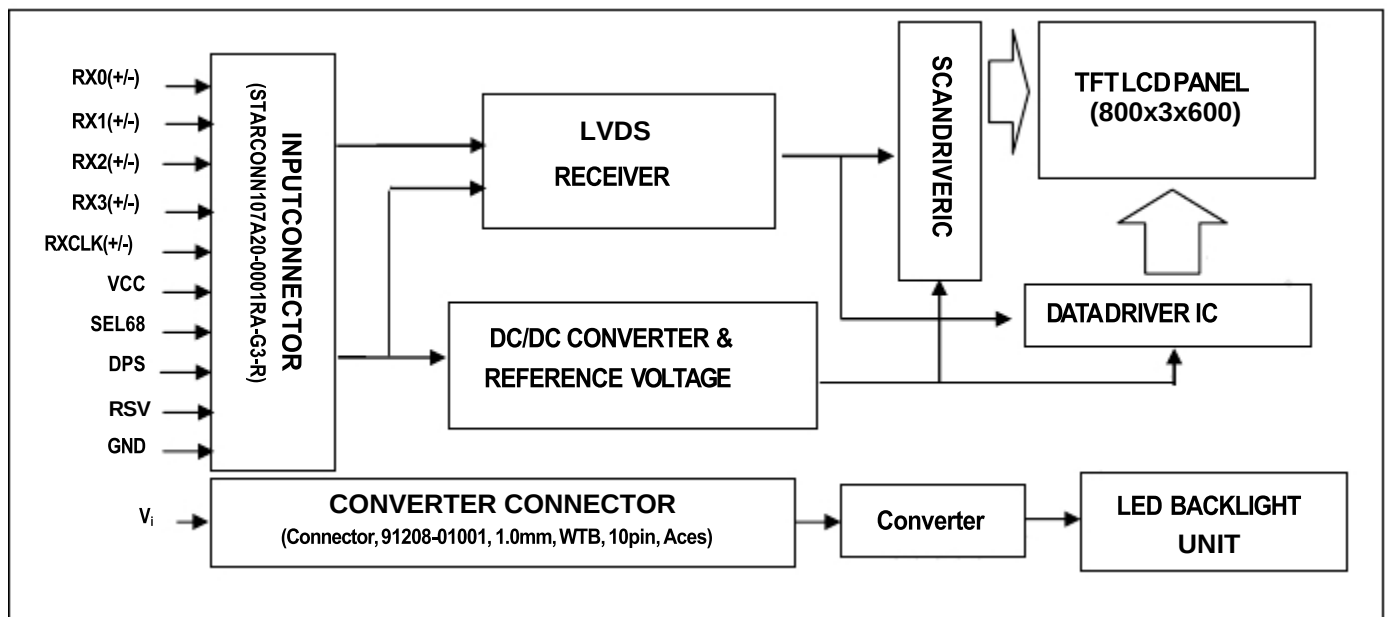
Note 1: T_a means ambient temperature of TFT-LCD module,

Note2: If module is driven by high current or at high ambient temperature & humidity condition. The operating life will be reduced.

Note3: Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

4. BLOCK DIAGRAM

4.1 TFT LCD MODULE



5. INPUT TERMINAL PIN ASSIGNMENT

5.1 TFT LCD MODULE

Pin	Name	Description	Remark
1	VCC	Power supply	
2	VCC	Power supply	
3	GND	Ground	
4	DPS	Reverse Scan Function [High : Enable , Low : Disable]	Note (3)
5	RX0-	Differential Data Input, CH0 (Negative)	
6	RX0+	Differential Data Input, CH0 (Positive)	
7	GND	Ground	
8	RX1-	Differential Data Input, CH1 (Negative)	
9	RX1+	Differential Data Input , CH1 (Positive)	
10	GND	Ground	
11	RX2-	Differential Data Input , CH2 (Negative)	
12	RX2+	Differential Data Input , CH2 (Positive)	
13	GND	Ground	
14	RXC-	Differential Clock Input (Negative)	
15	RXC+	Differential Clock Input (Positive)	
16	GND	Ground	
17	RX3-	Differential Data Input, CH3 (Negative)	
18	RX3+	Differential Data Input, CH3 (Positive)	
19	RSV	Reserved	
20	SEL68	LVDS 6/8 bit select function control, Low or NC 6 bit Input Mode High 8bit Input Mode	Note (3)

Note (1) Connector Part No.: STARCONN 107A20-0001RA-G3-R or equivalent.

Note (2) User's connector Part No.: STARCONN 093A20-010010-T4 or equivalent.

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

5.2 BACKLIGHT UNIT(Converter connector pin)

Connector Name / Designation	LED Connector
Manufacturer	JST
Connector Model Number	PHR-2P
Mating Model Number	SPH-002T-P0.5S

PIN #	Symbol	DESCRIPTION
1	VLED	High Voltage
2	GND	Low Voltage

5.3 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 6-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					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	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
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	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
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
	Red(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(61)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Red(63)	1	1	1	1	1	1	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
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(61)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
Green(63)	0	0	0	0	0	0	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
	Blue(1)	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	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(61)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
Blue(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	

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

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	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	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
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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	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	1	0	0
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	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

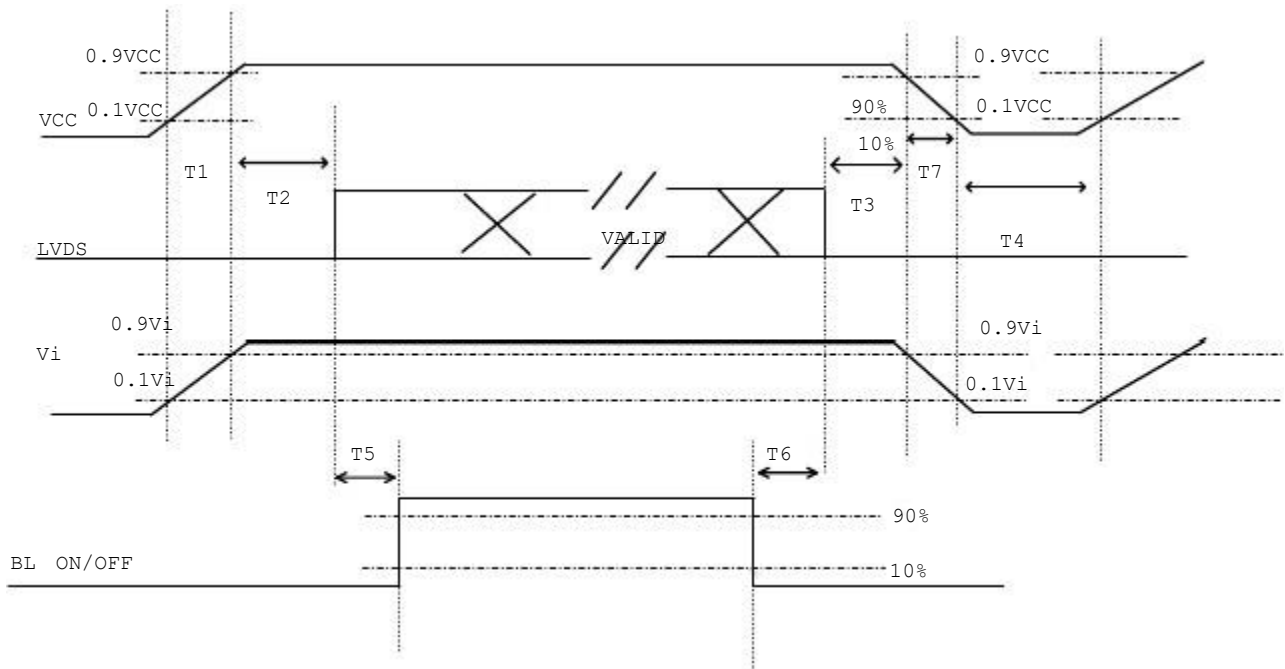
6.1 INPUT SIGNAL TIMING SPECIFICATIONS

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
DCLK	Frequency	Fc		40		MHz	
Vertical Active Display Term	Total	Tv		628		Th	Tv=Tvd+Tvb
	Display	Tvd	-	600	-	Th	-
	Blank	Tvb		28		Th	-
Horizontal Active Display Term	Total	Th		1056		Tc	Th=Thd+Thb
	Display	Thd	-	800	-	Tc	-
	Blank	Thb		256		Tc	-

(2) Frame rate is 60Hz

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.

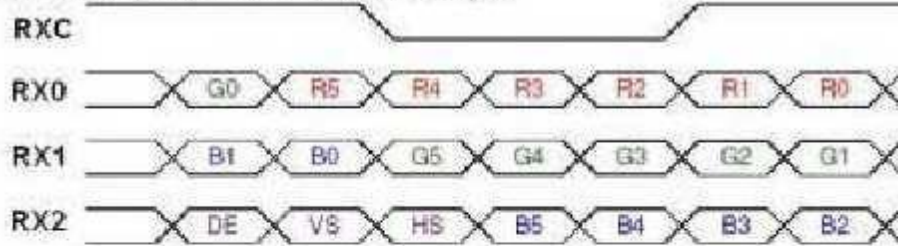
Note (3) The Backlight converter power must be turned on after the power supply for the logic and the interface signal is valid. The Backlight converter power must be turned off before the power supply for the logic and the interface signal is invalid.

Value

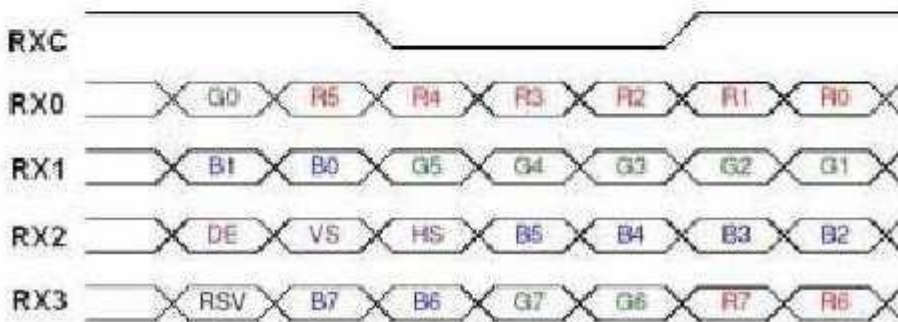
Parameter				Units
	Min	Typ	Max	
T1	0.5	-	10	ms
T2	0	-	50	ms
T3	0	-	50	ms
T4	500	-	-	ms
T5	200	-	-	ms
T6	200	-	-	ms
T7	5	-	300	ms

6.3 The Input Data Format

SEL68 = "Low" or "NC" for 6 bits LVDS Input



SEL68 = "High" for 8 bits LVDS Input



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.

6.4 Scanning Direction

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

Fig.1 Normal Scan



Fig.2 Reverse Scan

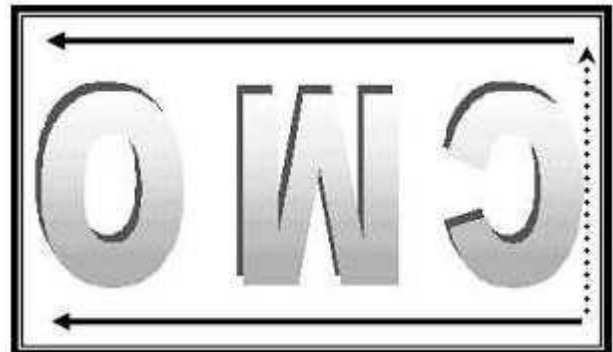


Fig. 1 Normal scan (pin 4, DPS = Low or NC)

Fig. 2 Reverse scan (pin 4, DPS = High)

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}	3.3	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Converter Voltage	V _{in}	12	V
Converter Duty		100%	

7.2 OPTICAL SPECIFICATIONS

The relative measurement methods of optical characteristics are shown in 7.2. The following items

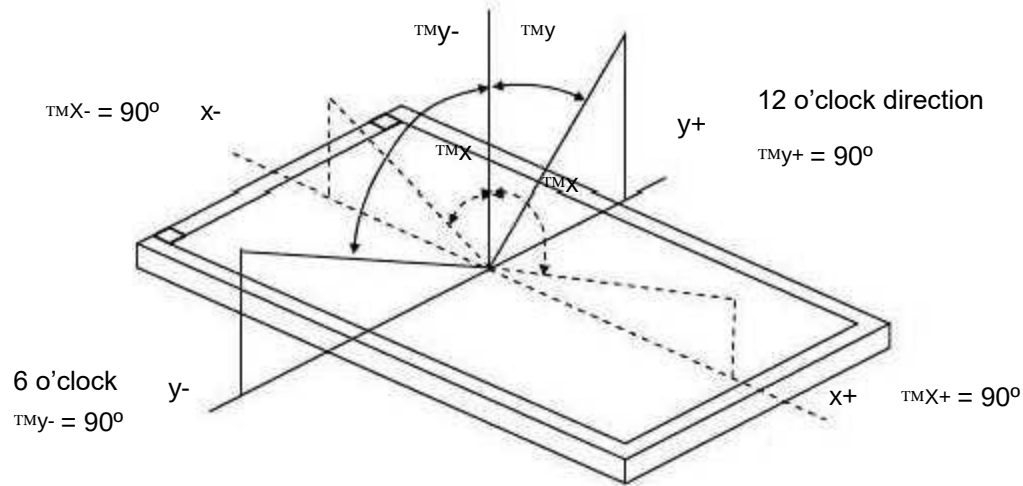
should be measured under the test conditions described in 7.1 and stable environment shown in Note (5).

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity	Red	R _x	$T_{M_x}=0\%, T_{M_y}=0\%$ CS-1000	Typ - 0.05	0.573	Typ + 0.05	-	(1), (5)
		R _y			0.350		-	
	Green	G _x			0.336		-	
		G _y			0.597		-	
	Blue	B _x			0.152		-	
		B _y			0.112		-	
	White	W _x			0.313		-	
		W _y			0.329		-	
	Center Luminance of White				L _C		900	
Contrast Ratio		CR	500	700	-	-	(2), (5)	
Response Time		T _R	$T_{M_x}=0\%, T_{M_y}=0\%$	-	5	10	ms	(3)
		T _F		-	11	16	ms	
White Variation		ΔW	$T_{M_x}=0\%, T_{M_y}=0\%$	-	1.25	1.4	-	(5), (6)
Viewing Angle	Horizontal	T _{Mx+}	CR 10	70	80	-	Deg.	(1), (5)
		T _{Mx-}		70	80	-		
	Vertical	T _{My+}		60	70	-		
		T _{My-}		60	70	-		

Note (1) Definition of Viewing Angle (TMx , TM_y):

Normal

$$TMx = TM_y = 0^\circ$$



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

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

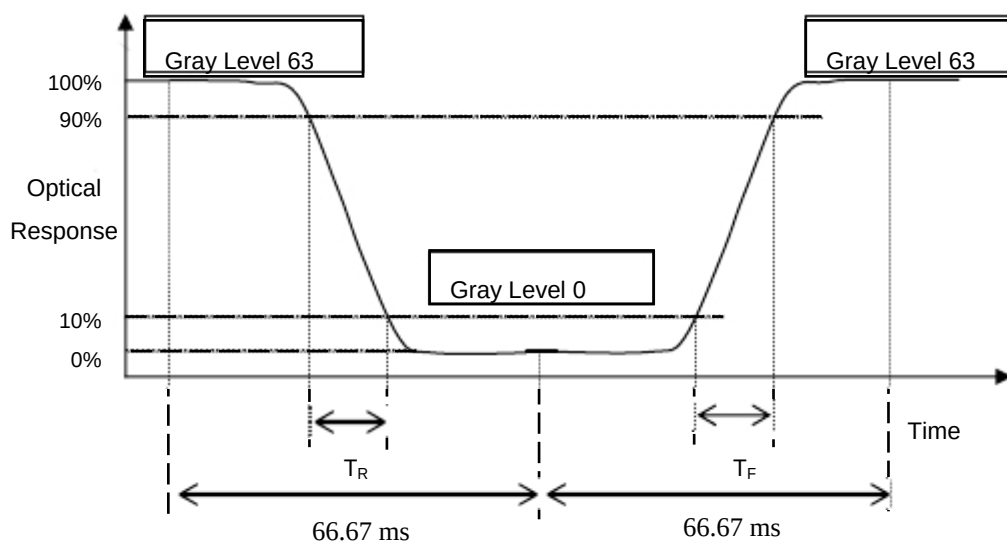
L63: Luminance of gray level 63

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) and measurement method:



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

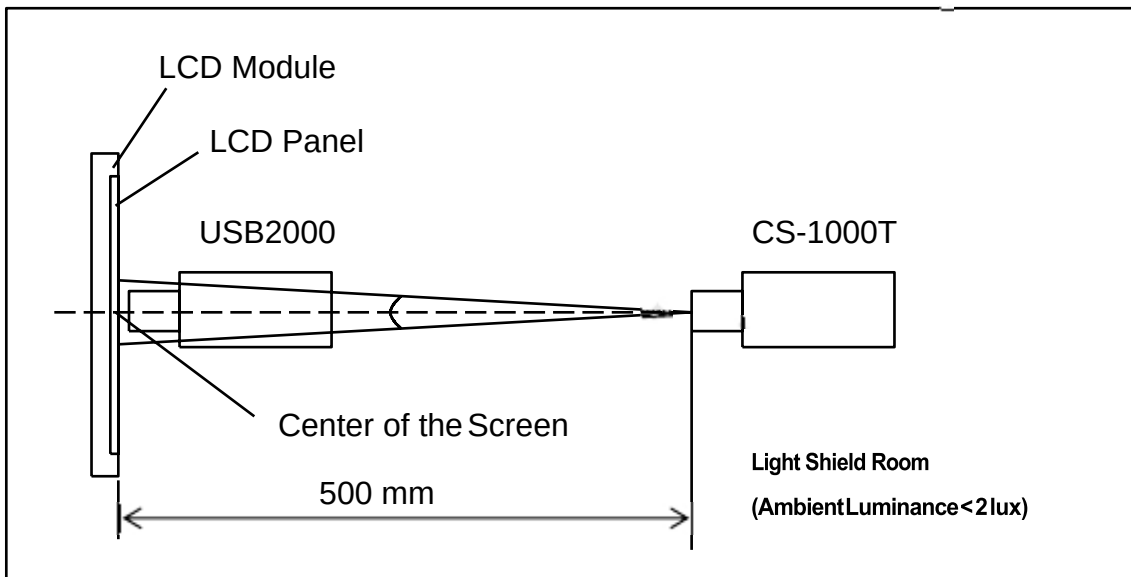
Measure the luminance of gray level 63 at center point

$$L_c = L(5)$$

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

Note (5) Measurement Setup:

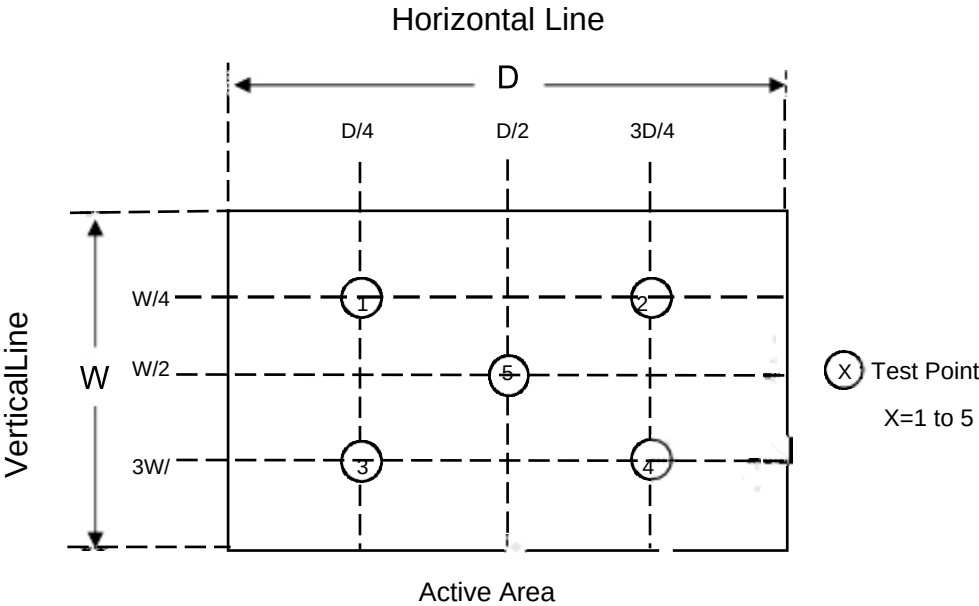
The LCD module should be stabilized at given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



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

Measure the luminance of gray level 63 at 5 points

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



8. RELIABILITY TEST CRITERIA

Test Item	Test Condition	Note
High Temperature Storage Test	80°C, 240 hours	(1)(2)
Low Temperature Storage Test	-40°C, 240 hours	
Thermal Shock Storage Test	-30°C, 0.5hour $\longleftrightarrow$ 70°C, 0.5hour; 1hour/cycle,100cycles	
High Temperature Operation Test	70°C, 240 hours	
Low Temperature Operation Test	-30°C, 240 hours	
High Temperature & High Humidity Operation Test	60°C, 90%RH, 240hours	
Shock (Non-Operating)	200G, 2ms, half sine wave, 1 time for $\pm X$, $\pm Y$, $\pm Z$.	(3)
Vibration (Non-Operating)	1.5G, 10 ~ 300 Hz, 10min/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 specifications are judged before reliability test.

9. PACKAGING

9.1 PACKING SPECIFICATIONS

- (1) 28pcs LCD modules / 1 Box
- (2) Box dimensions: 465 (L) X 362 (W) X 314 (H) mm
- (3) Weight: approximately 16.5 Kg (28 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, 61 cm	Non Operation

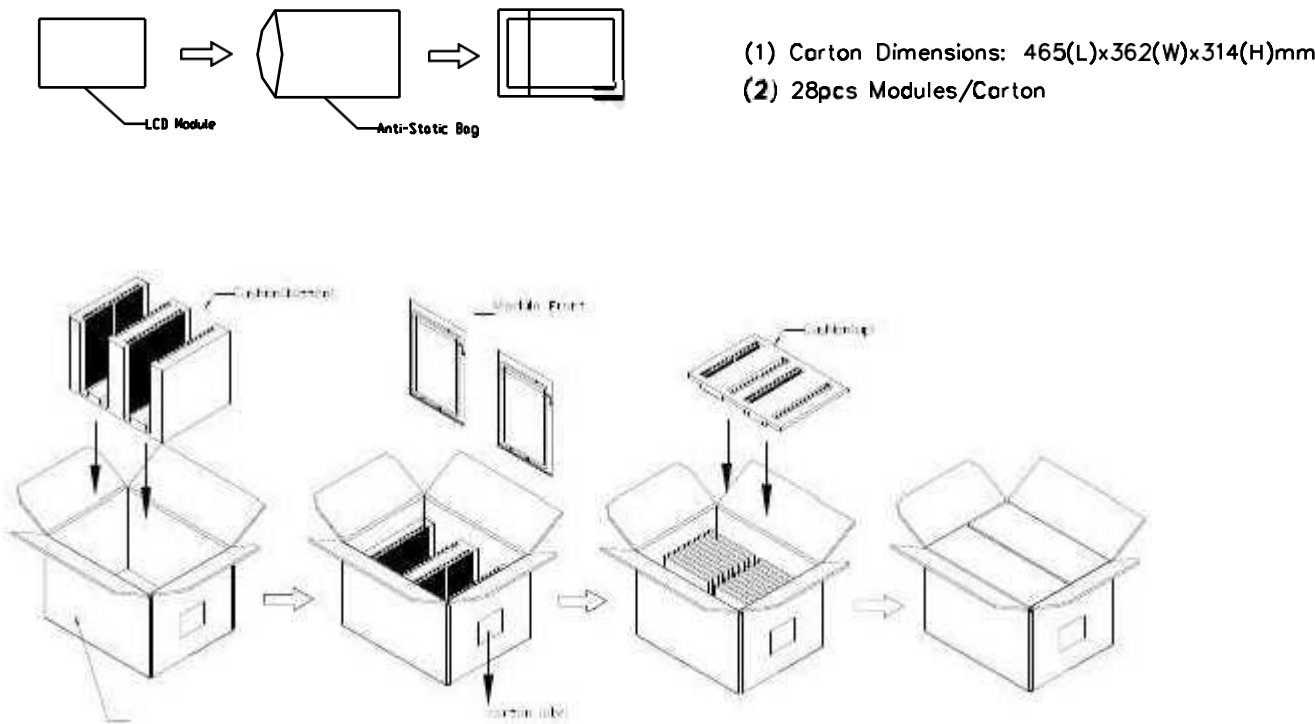


Figure.9-1 packing method

Sea / Land Transportation (40ft Container)

Air Transportation

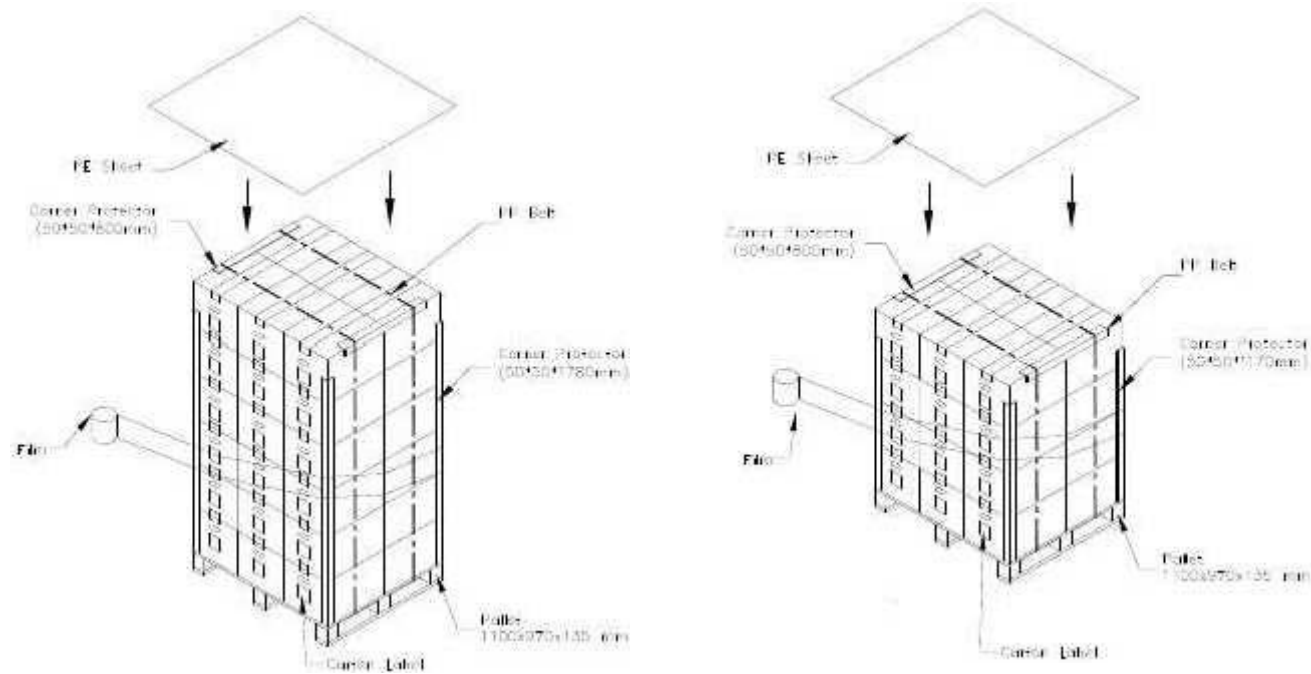


Figure. 9-2 Packing method

10. PRECAUTIONS

10.1 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.

10.2 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.

11. Product Features (產品說明)

Item	Specifications	Unit
面板外形尺寸 Outline Dimension of Glass	240.60 (L) × 190.80 (W) ±0.3	mm
感應層外形尺寸 Outline Dimension of Sensor Layer	232.00 (L) × 176.00 (W) ±0.3	mm
可視區 Viewing Area	211.80 (L) × 159.00 (W) ±0.3	mm
驅動區 Active Area	214.20 (L) × 162.40 (W) ±0.3	mm
總厚度 Total Thickness	2.55± 0.3	mm

12. Pin define(pin 定義)

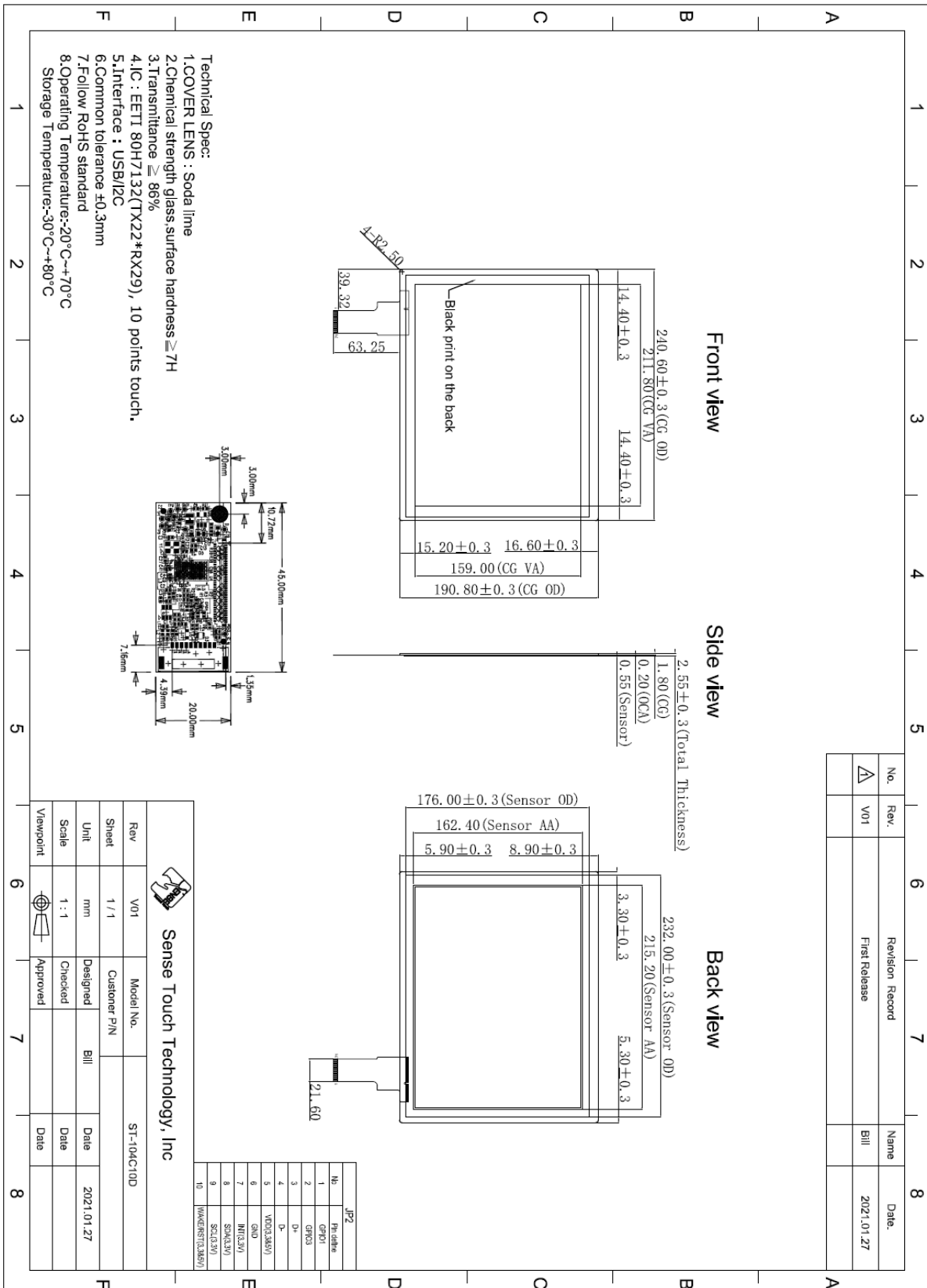


Pin	MOLEX
1	GPIO1
2	GPIO3
3	D+
4	D-
5	VDD(3.3&5V)
6	GND
7	INT(3.3V)
8	SDA(3.3V)
9	SCL(3.3V)
10	WAKE/RST(3.3&5V)

(此產品需配置EXC80H7132搭配SENSE FW)

兩指畫線間距為TP 設計pitch的3倍

13. TP Engineering drawing (工程圖面)



14. Appearance Inspection (外觀檢驗標準)

觸控式螢幕在出貨之前，觸控式螢幕及觸控式螢幕的任一結構需要進行外觀檢驗。外觀檢驗標準詳細如下。
Prior to the shipment, touch panel and any element of touch panel need undergo appearance testing.
Appearance limit standard is as following.

14.1 Scope適用範圍

適用於我司 4.3"~11.6"寸電容式觸控式螢幕的出貨檢驗。

抽樣方法：MIL-STD-105E，正常水準Ⅱ級。

This standard is applicable to shipment inspection for 4.3" inch to 11.6 inch CTP in our company.
Sampling method is MIL-STD-105E, level II of normal levels.

14.2 Testing Method and Condition檢驗方法及條件

14.2.1 檢驗人員所具備的條件 The Qualifications Required of inspectors

產品的外觀必須經一個視力良好的人員進行檢驗。

The appearance of products must be approved by a inspector with good eyesight.

14.2.2 檢驗方法 Testing Method

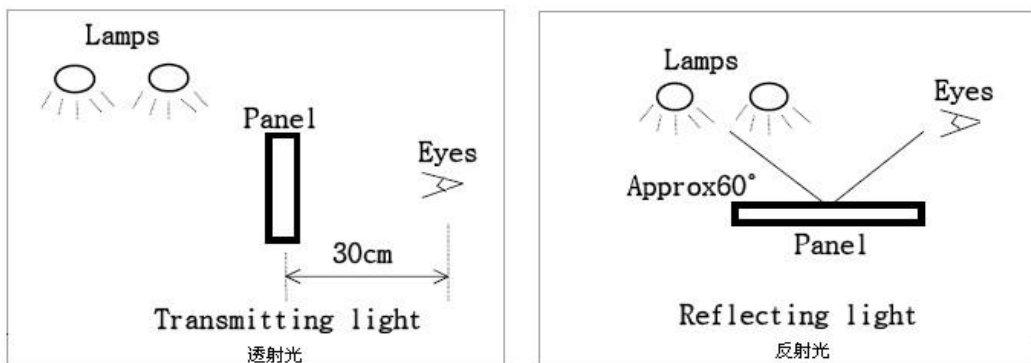
檢驗人員距離產品的距離應為 300mm,使用 700±200Lux 的螢光燈。

圖 6 為檢驗示意圖。需要透過和反射兩種方式檢測

The distance between the Inspectors and the products is 300 mm, and the brightness of the fluorescent lamp is 700±200Lux fluorescent lamp. The sketch drawing is as shown in Figure 6. The testing bases on transmissive mode and reflective mode.

圖6 產品外觀檢驗方法示意圖

Fig. 6 The sketch drawing of products appearance testing method



14.2.3 檢驗注意事項 Inspection Notes

A：檢驗人員必須佩帶丁氰手套指套或手套

A: Inspectors must wear butadiene-acrylonitrile Gloves for all process, and need butadiene-acrylonitrile finger cover in some process.

B：將檢驗的產品置於檢驗員前方的位置，雙手小心托住產品邊緣，不能使產品彎曲。

B: During the testing, the product is placed in front the inspector, and two edges of it is hold by the inspector to keep the flat of product.

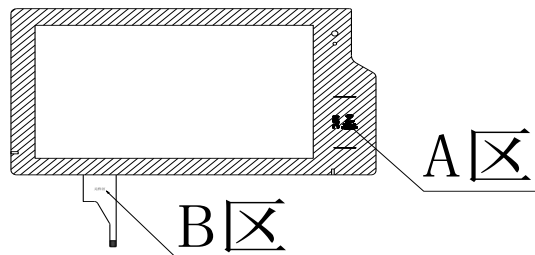
C：檢驗者的眼神應持續的覆看而不是具體的盯住某一點看。

C: The inspector should approve all the surface of the product, not only check one point.

14.3. Inspection equipment/ tool 檢驗設備/工具

檢驗過程所用檢測治工具有：檯燈、10X 放大鏡、點規、酒精/石油醚、黑白背景

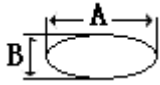
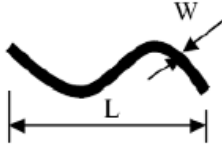
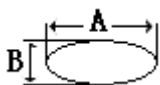
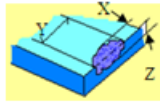
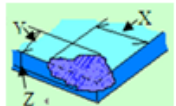
14.4. Inspection area partition 檢驗區域劃分



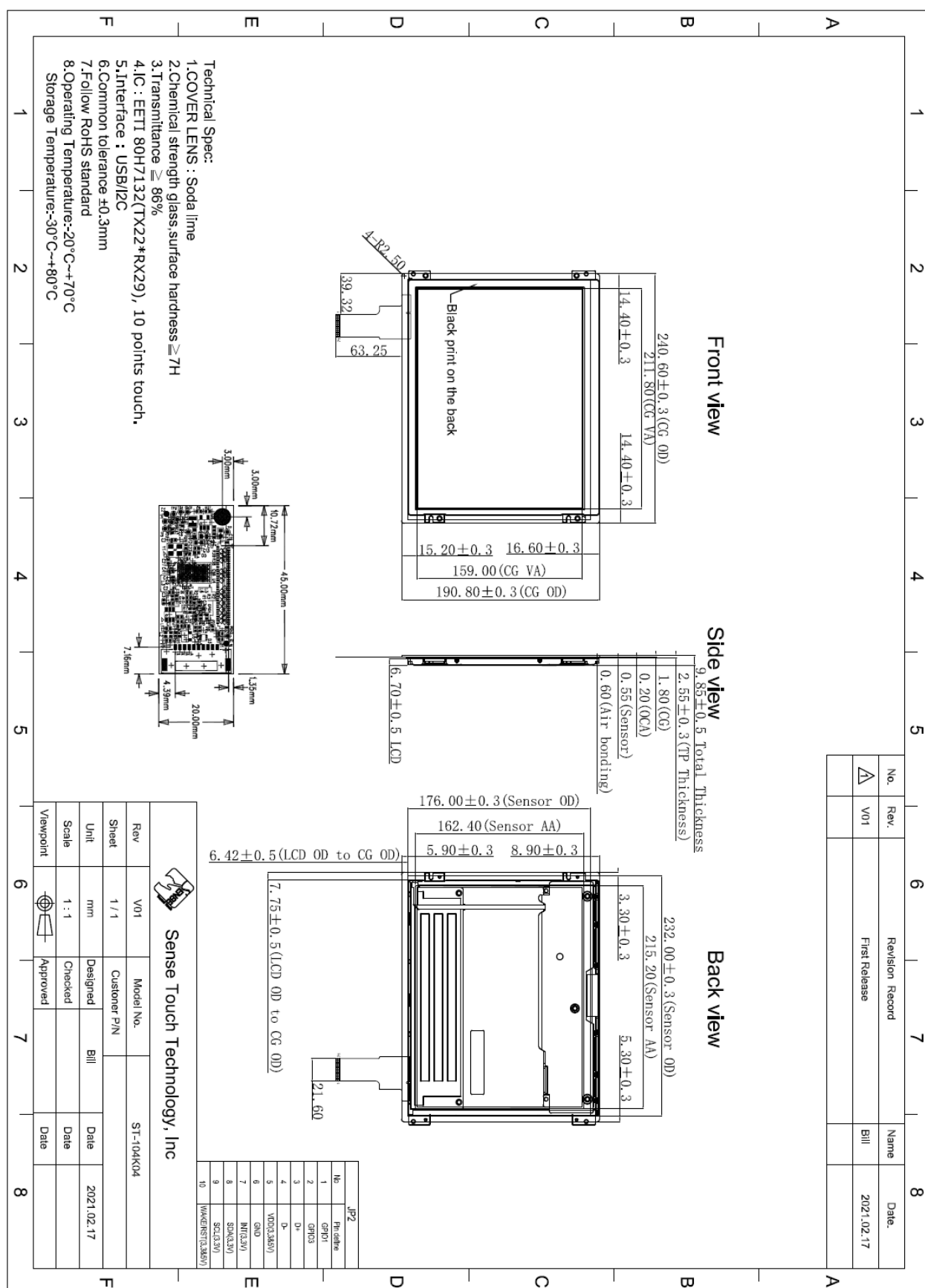
A區：即包括CG油墨印刷區，可視區

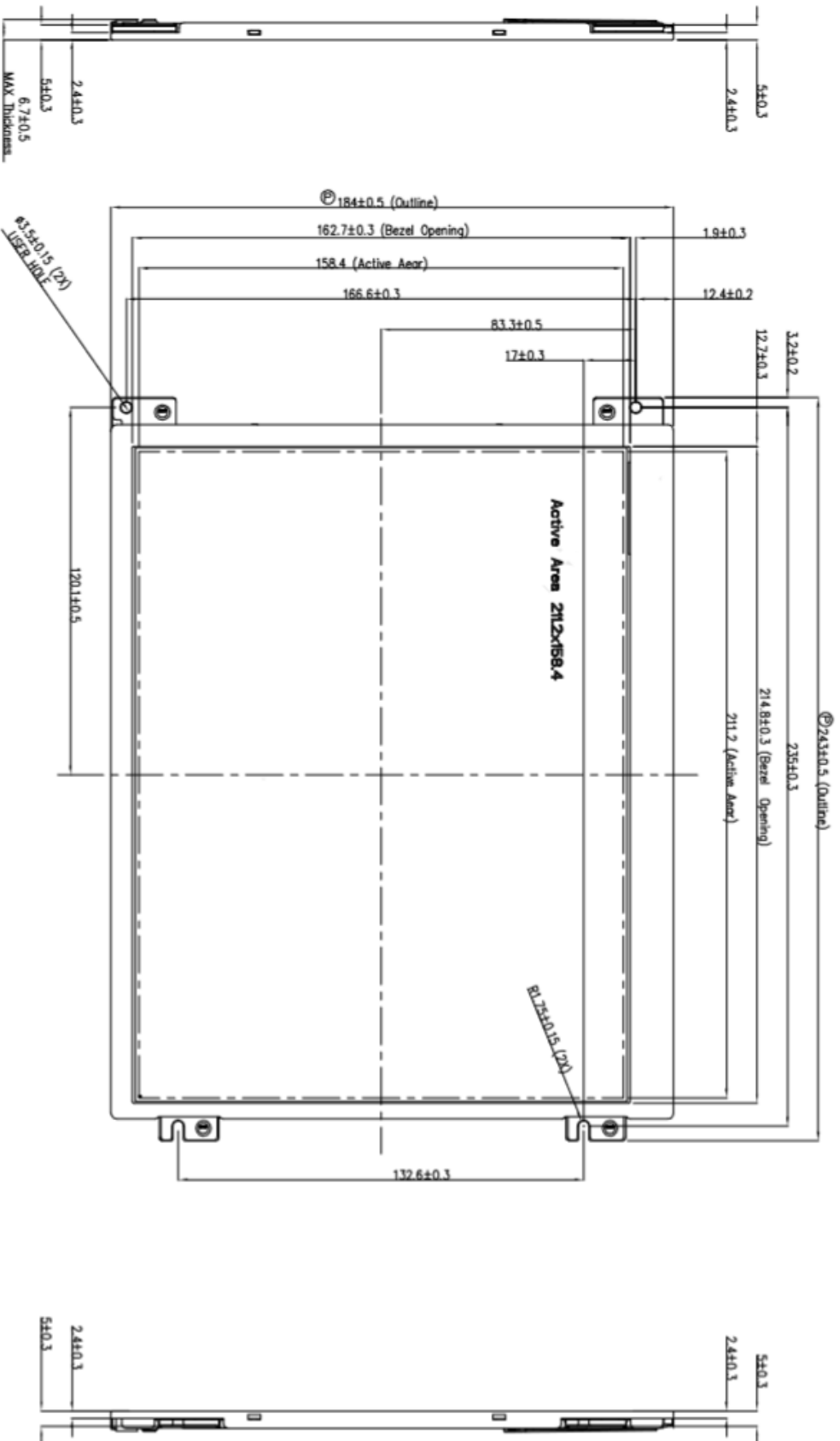
B區：即FPC區域

14.5 Appearance Testing Conten(檢驗標準)

Item 品項	Calculate Method 計算方式	The standard of determination判定標準	
Spot defect (White/ Black) (黑/白/污點、粒子雜物點)	大小: $\Phi=(A+B)/2$ 	大小	允許數量
		$0 \leq \Phi \leq 0.3\text{mm}$	不計
		$0.3\text{mm} < \Phi \leq 0.6\text{mm}$	$N \leq 5$
		$\Phi > 0.6$	$N = 0$
Linear defect 刮傷/毛屑/線狀異物		寬W	長L
		$W \leq 0.05\text{mm}$	不計
		$0.05\text{mm} < W \leq 0.2\text{mm}$	$L \leq 10\text{mm}$, $N \leq 6$
		$0.2 < W$	$N = 0$
Bump point (魚眼、凹凸點)	大小: $\Phi=(A+B)/2$ 	大小	允許數量
		$0 \leq \Phi \leq 0.3\text{mm}$	不計
		$0.3\text{mm} < \Phi \leq 0.6\text{mm}$	$N \leq 5$
		$\Phi > 0.6$	$N = 0$
CG chipping/crack (CG崩邊,裂紋)		正面: $\Phi \leq 0.15\text{mm}$, $Z \leq T/2$ $DS \geq 25\text{mm}$, $N \leq 2$	背面: 1.從正面看不影響外觀; 2. $\Phi \leq 0.5\text{mm}$, $Z \leq T/2$, 不計
		正面: $X \leq 0.15\text{mm}$, $Y \leq 0.15\text{mm}$ $Z \leq T/2$, $N \leq 2$	背面: 1.從正面看不影響外觀 2. $X \leq 2\text{mm}$, $Y \leq 2\text{mm}$ $Z \leq T$, $N \leq 2$
		Crack is not allowed 裂紋不允許	
Dirty 髒污		Wipe the dirt acceptance, cannot be wiped follow the bad liner calculation 可擦拭髒污允收, 不可擦拭按點線狀不良計算	
Light leak 漏光		Flat test is not visible is OK 平光檢驗不可見為OK	
Other not be defined 其他未定義缺陷		See sample limitation 參見限度樣品	

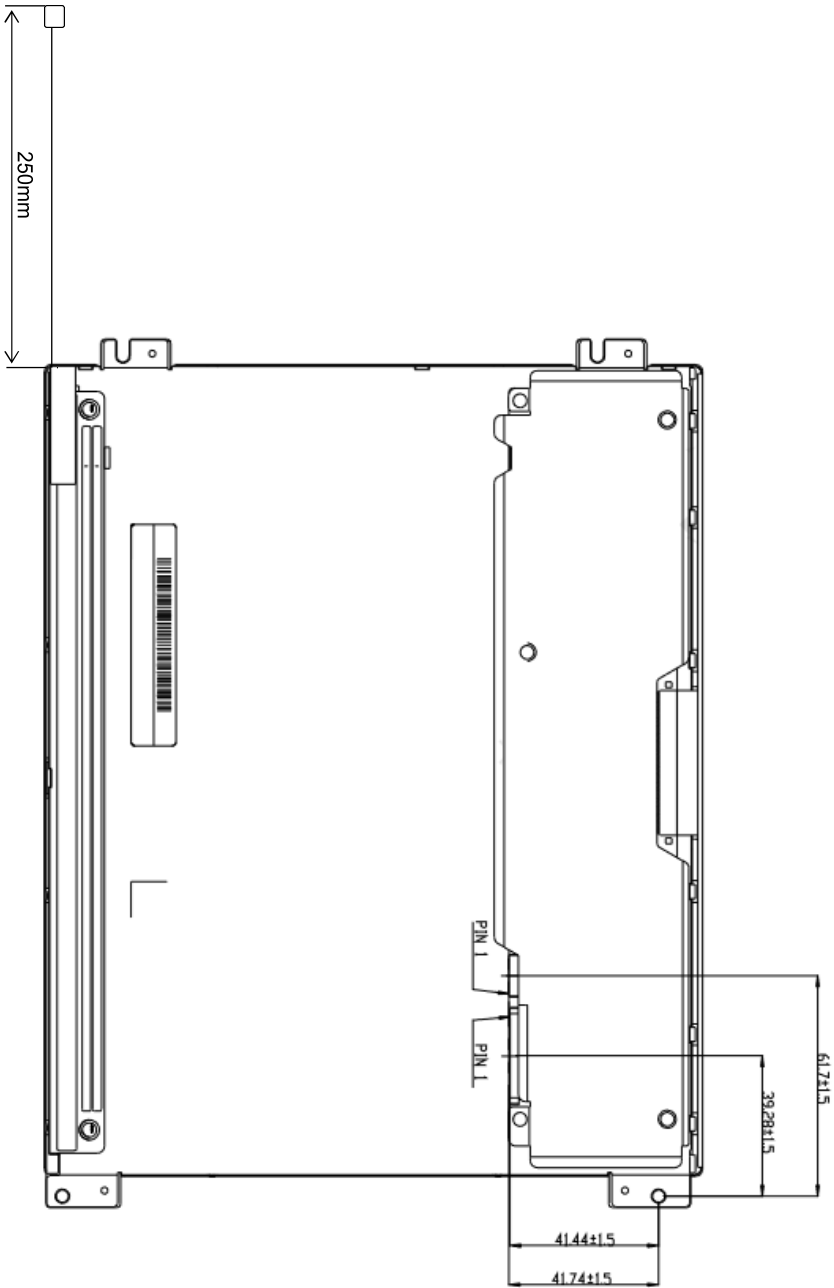
15. TPM Engineering drawing (工程圖面)





Mark	Description	Date	Changed By/Approved By	ECN No.	Remark
1					
2					
3					
4					
5					
6					
7					
8					

TITLE: ASSY MOBILE COVER-L01					
Approved	By: J	Drawing No.	01040101		
Checked	For: au	Part No.	110		
Drawn	Yuen Yung	Material	T10		
Designer	Wong Chan	Date	20-Apr-2010	Scale	1:1
CHI MEI					
CHI MEI ELECTRONICS CORP.					
ALL RIGHTS RESERVED, COPYRIGHT PROTECTED					



TITLE ASSY. MOBILE. G0451-1.01		20 REV.1.0	
Approved	SY F	Drawing No.	G0451.01
Checked	For. Yu	Part No.	1180
Drafter	YiRen.Yong	Material	1180
Designer	MINOR.CHEN	Date	03 May 2010
Scale		Sheet	1 / 1
Unit		Unit	mm



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Work	Description	Date	Changed By	Approved By	ECN No.	Remark