



# Specifications

Doc. No1.

<b>Customer</b>	
<b>Customer Type</b>	<b>T370FBE1-DA</b>
<b>CLT Type</b>	<b>TB1A11 37" LCM</b>
<b>Date</b>	<b>2009-05-04</b>
<b>Revision number</b>	<b>01.0</b>
<b>Code</b>	<b>10190019-A0</b>

<b>Customer Approved</b>

<b>CHI LIN TECHNOLOGY</b>				
<b>QRA</b>	<b>Manufacture</b>	<b>Approved</b>	<b>Checked</b>	<b>Design</b>
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# Specifications

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## Revision History

Version	Date	Page	Section	Description
01.0	2009/05/04	All	All	



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### 1.0 APPLIED TYPE



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This model adopts : AUO T370HW03 V0 (OPEN CELL) .

Therefore, please refer to specifications of T370HW03 V0 for a drive method and an electrical characteristic of CELL.

## 1.1 GENERAL SPECIFICATIONS

Item	Specification	Unit	Note
Active Area	819.36(H) x 460.89 (V) (37" diagonal)	mm	
Bezel Opening Area	842.6 (H) x 485.8 (V)	mm	
Driver Element	a-si TFT active matrix	-	
Pixel Number	1920 x R.G.B. x 1080	pixel	
Pixel Pitch (Sub Pixel)	0.42675	mm	
Pixel Arrangement	RGB vertical stripe	-	
Display Colors	8 bit, 16.7M	color	
Display Operation Mode	Transmissive mode / Normally black	-	
Surface Treatment	Super Wide View Glare coating, Hardness: 3H	-	

## 1.2 MECHANICAL SPECIFICATIONS

Item		Min.	Typ.	Max.	Unit	Note
Module Size	Horizontal(H)	799	880	881	mm	
	Vertical(V)	521	522	523	mm	
	Depth(D)	19.4	19.9	20.4	mm	To Frame Rear
Weight		-	7.4	-	Kg	

## 1.3 LED MODULE INFORMATION

### 1.3.1 LED MODULE SPECIFICATIONS

This model adopts: SAMSUNG LBU37MFAE5 (LED MODULE)

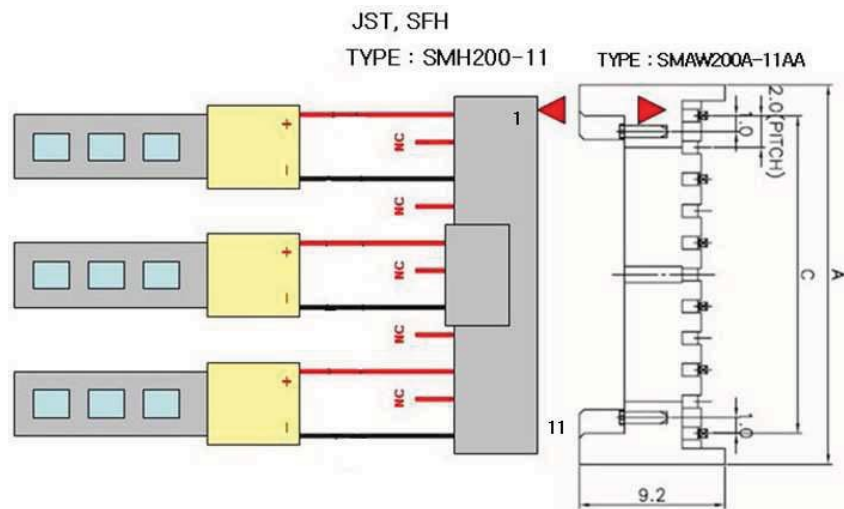
Therefore, please refer to specifications of LBU37MFAE5 for a drive method and an electrical characteristic of LED MODULE.

### 1.3.2 ABSOLUTE MAXIMUM RATING (ELECTRICAL)

No.	ARTICLE		SPECIFICATIONS					Note
			Symbol	MIN	TYP	MAX	Unit	
1	Operating Current	Continuous	Iop	-	-	90	mA	String
		Impulsive	Iop	-	-	140		String
2	Operating Voltage	Continuous	Vop	-	-	146.7	V	42 LEDs / 2 String
		Impulsive	Vop	-	-	148.7		42 LEDs / 2 String

### 1.4 Connector Definition (Pin Assignment)

No	TBJA11
1	VCC
2	N.C
3	—
4	N.C
5	VCC
6	N.C
7	—
8	N.C
9	VCC
10	N.C
11	—



## 2.0 ABSOLUTE MAXIMUM RATING

### 2.1 ABSOLUTE RATINGS OF ENVIRONMENT

Item	Symbol	Value		Unit	Note
		Min.	Max.		
Storage Temperature	T <sub>ST</sub>	-20	+60	°C	(1),(3)
Operating Ambient Temperature	T <sub>OP</sub>	0	+50	°C	(1),(2),(3)
Shock (Non-Operating)	S <sub>NOP</sub>	-	35	G	(3)
Vibration (Non-Operating)	V <sub>NOP</sub>	-	1.0	G	(3)

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

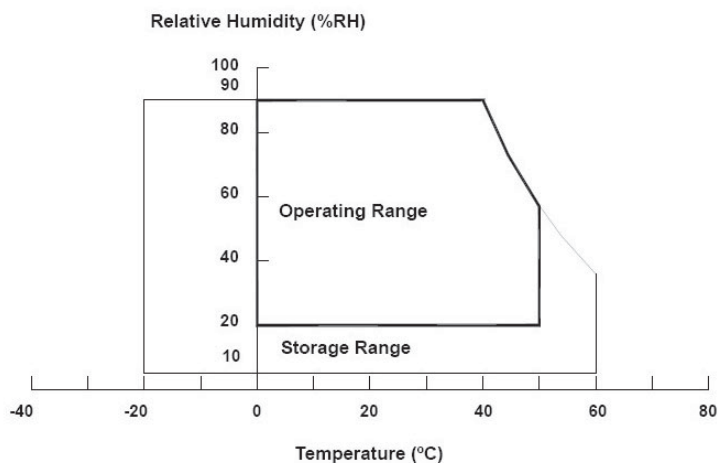
(a) 90 %RH Max. ( $T_a \leq 40$  °C).

(b) Wet-bulb temperature should be 39 °C Max. ( $T_a > 40$  °C).

(c) No condensation.

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 °C with LCD module alone in a temperature controlled chamber. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 65 °C. The range of operating temperature may degrade in case of improper thermal management in final 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.



### 3.0 T-CON Board SPECIFICATIONS

T-Con is Design by AUO.

#### 3.1 INPUT TERMINAL PIN DEFINE

Pin No.	Symbol	Description	Note
1	VDD	Operating Voltage Supply , +12V DC Regulated	Power
2	VDD	Operating Voltage Supply , +12V DC Regulated	
3	VDD	Operating Voltage Supply , +12V DC Regulated	
4	VDD	Operating Voltage Supply , +12V DC Regulated	
5	VDD	Operating Voltage Supply , +12V DC Regulated	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	GND	Ground	
10	RO_0-	LVDS Channel Odd , Signal 0-	LVDS Odd Channel
11	RO_0+	LVDS Channel Odd , Signal 0+	
12	RO_1-	LVDS Channel Odd , Signal 1-	
13	RO_1+	LVDS Channel Odd , Signal 1+	
14	RO_2-	LVDS Channel Odd , Signal 2-	
15	RO_2+	LVDS Channel Odd , Signal 2+	
16	GND	Ground	
17	RO_CLK-	LVDS Channel Odd , Clock -	
18	RO_CLK+	LVDS Channel Odd , Clock +	
19	GND	Ground	
20	RO_3-	LVDS Channel Odd , Signal 3-	
21	RO_3+	LVDS Channel Odd , Signal 3+	
22	NC	No Connect	
23	NC	No Connect	



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24	GND	Ground	
25	RE_0-	LVDS Channel Even , Signal 0-	LVDS Even Channel
26	RE_0+	LVDS Channel Even , Signal 0+	
27	RE_1-	LVDS Channel Even , Signal 1-	
28	RE_1+	LVDS Channel Even , Signal 1+	
29	RE_2-	LVDS Channel Even , Signal 2-	
30	RE_2+	LVDS Channel Even , Signal 2+	
31	GND	Ground	
32	RE_CLK-	LVDS Channel Even , Clock -	
33	RE_CLK+	LVDS Channel even , Clock +	
34	GND	Ground	
35	RE_3-	LVDS Channel Even , Signal 3-	
36	RE_3+	LVDS Channel Even , Signal 3+	
37	NC	No Connect	
38	NC	No Connect	
39	GND	Ground	
40	SCL	EEPROM Serial Clock	
41	NC	No Connect	
42	NC	No Connect	
43	WP	EEPROM Write Protection H : Writable ; L : Protection	Default : Protection
44	SDA	EEPROM Serial Data	
45	LVDS_SEL	Open/High : NS ; Low : JEIDA	Default : NS
46	NC	No Connect	
47	NC	No Connect	
48	NC	No Connect	
49	NC	No Connect	
50	NC	No Connect	
51	AGING	No Connect (Internal Aging Only)	

## 3.2 ABSOLUTE RATING

The following are maximum values which, if exceeded, may cause permanent damage to the unit.

Item	Symbol	Min.	Max.	Unit	Conditions
Logic/LCD Drive Voltage	Vcc	-0.3	14	Volt	1
Input Voltage of signal	Vin	-0.3	3.6	Volt	1

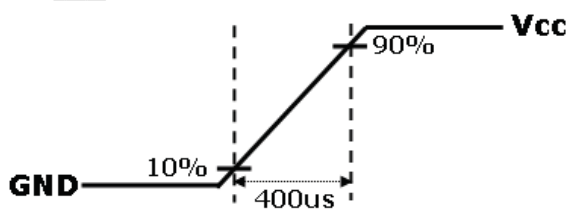
Note 1: Duration:50 msec.

## 3.3 ELECTRIC SPECIFICATION

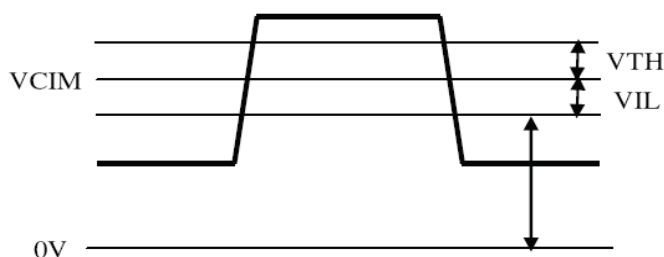
Parameter		Symbol	Values			Unit	Note
			Min.	Typ.	Max.		
Power Supply Input Voltage		Vcc	10.8	12	13.2	Vdc	1
Power Supply Input Current		Icc		1	1.2	A	2
Power Consumption		Pc		12	15.84	Watt	2
Inrush Current		IRUSH			4	Apeak	3
LVDS Interface	Differential Input High Threshold Voltage	VTH			100	mV	4
	Differential Input Low Threshold Voltage	VTL	-100			mV	4
	Common input voltage	VCIM	1.10	1.25	1.40	V	4
CMOS Interface	Input High Threshold Voltage	VIH(High)	2.4		3.3	Vdc	
	Input Low Threshold Voltage	VIL(Low)	0		0.9	Vdc	

Note :

1. The ripple voltage should be controlled under 10% of VCC
2. Vcc = 12V,  $f_v=60\text{Hz}$ ,  $f_{\text{CLK}}=81.5\text{MHz}$ ,  $25^\circ\text{C}$ , Test Pattern : White Pattern
3. Measure Condition :



4. VCIM = 1.2V

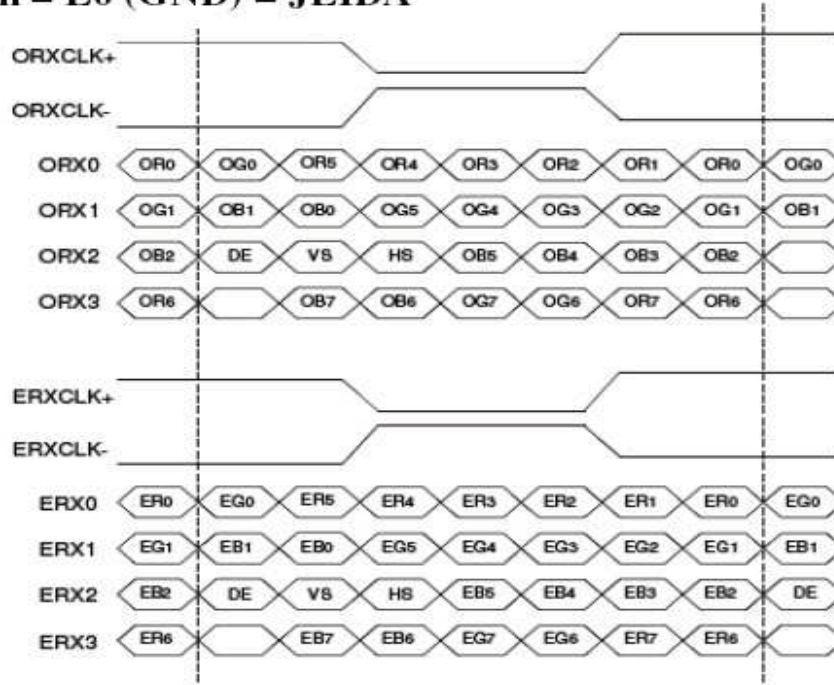




### 3.4 LVDS INTERFACE

**LVDS Option = Hi (3.3V) or Onen = NS**

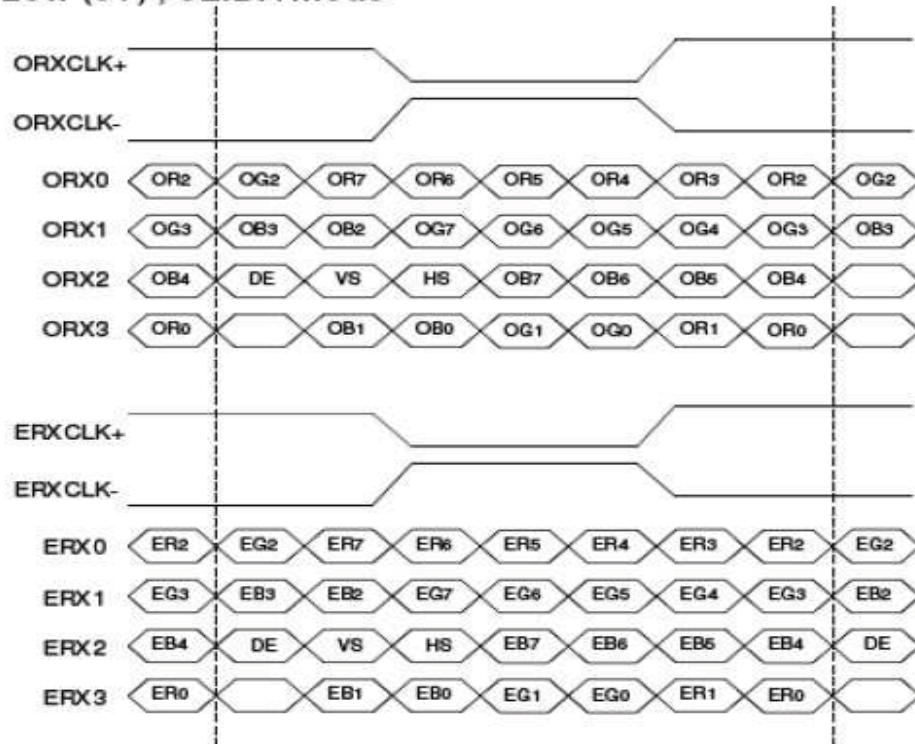
**LVDS Option = Lo (GND) = JEIDA**



Note:

- ◆ Odd data is the first priority.
- ◆ First data is odd.

**LVDS Option = Low (0V) , JEIDA mode**





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## 4.0 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 a reference for color versus data input.

COLOR DATA REFERENCE

Color		Input Color Data																							
		RED								GREEN								BLUE							
		MSB				LSB				MSB				LSB				MSB				LSB			
		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 Color	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(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
	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
	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
	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
RED	RED(000)	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(001)	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(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
GREEN	GREEN(000)	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(001)	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(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
BLUE	BLUE(000)	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(001)	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(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



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## 5.0 INTERFACE TIMING

### 5.1 INPUT SIGNAL TIMING SPECIFICATIONS

Signal	Item	Symbol	Min.	Typ.	Max.	Unit
Vertical Section	Period	Tv	1090	1125	1480	Th
	Active	Tdisp (v)	1080			Th
	Blanking	Tblk (v)	10	45	400	Th
Horizontal Section	Period	Th	1030	1100	1325	Tclk
	Active	Tdisp (h)	960			Tclk
	Blanking	Tblk (h)	70	140	340	Tclk
LVDS Clock	Frequency	1/Tclk	50	74.25	82	MHz
Vertical Frequency	Frequency	Freq	47	60	63	Hz
Horizontal Frequency	Frequency	Freq	60	67.5	73	KHz

Note :

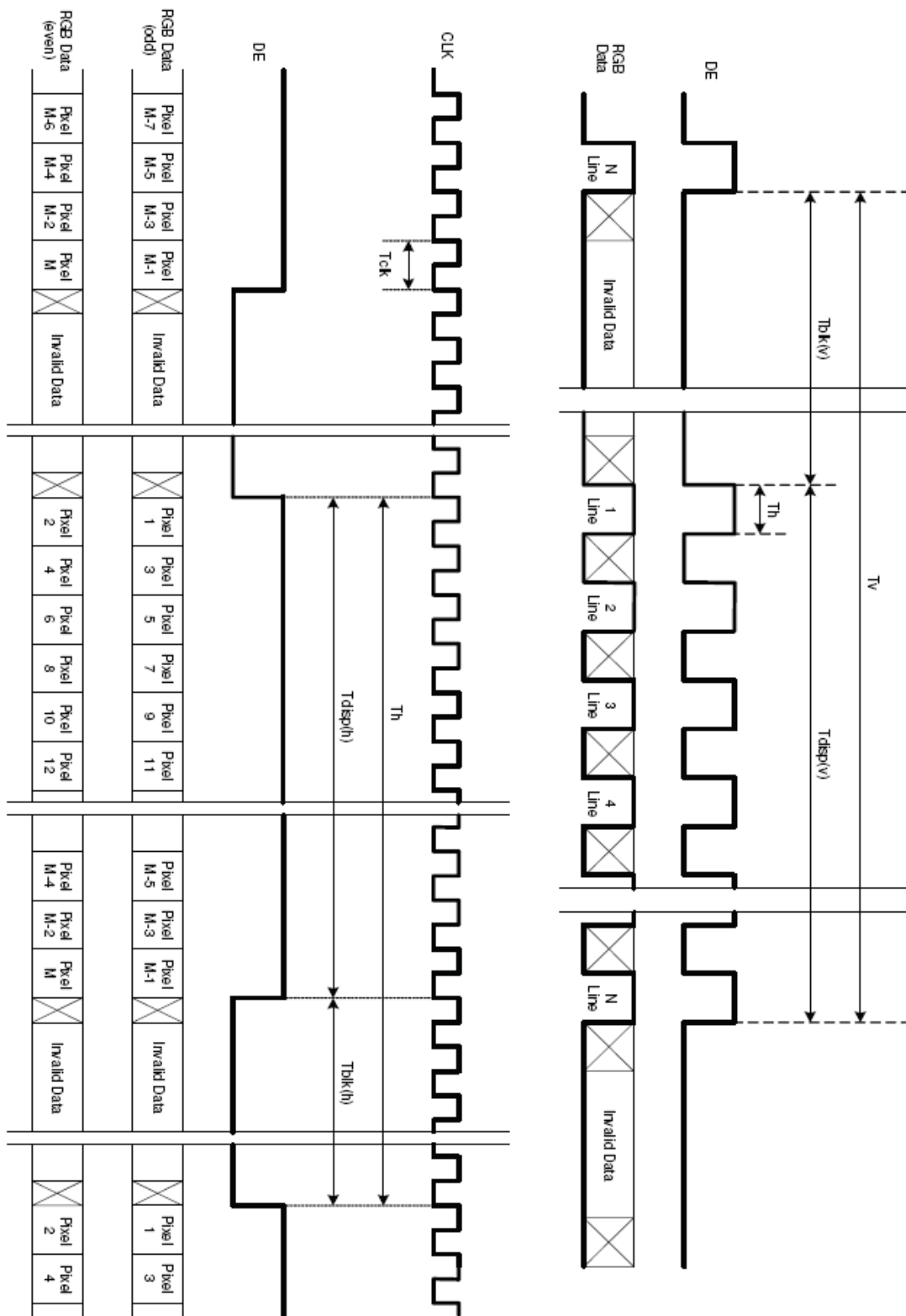
- Display position is specific by the rise of DE signal only.  
Horizontal display position is specified by the rising edge of 1<sup>st</sup> DCLK after the rise of 1<sup>st</sup> DE, is displayed on the left edge of the screen.  
Vertical display position is specified by the rise of DE after a "Low" level period equivalent to eight times of horizontal period. The 1<sup>st</sup> data corresponding to one horizontal line after the rise the of 1<sup>st</sup> DE is displayed at the top line of screen.
- If a period of DEB "High" is less than 1920 DCLK or less than 1080 lines, the rest of the screen displays black.
- The display position does not fit to the screen if a period of DE "High" and the effective data period do not synchronize with each other.



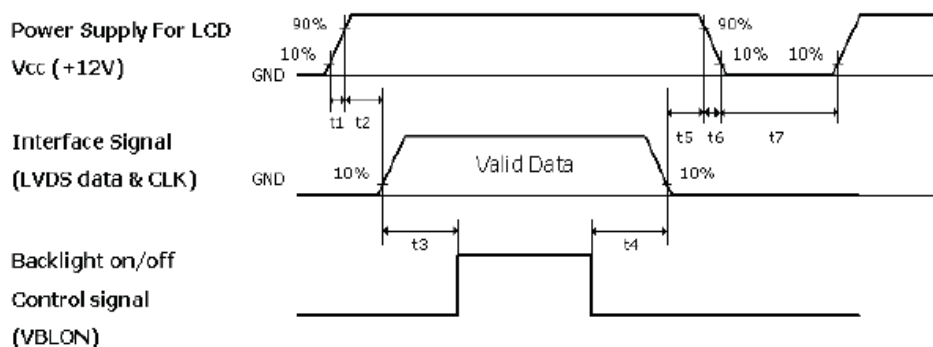
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## 5.2 INPUT TIMING WAVEFORMS



## 5.3 POWER ON/OFF SEQUENCE



Parameter	Values			Unit
	Min.	Typ.	Max.	
T1	0.4	---	30	ms
T2	0.1	---	50	ms
T3	300	---	---	ms
T4	10	---	---	ms
T5	0.1	---	50	ms
T6	---	---	300	ms
T7	500	---	---	ms

## Note:

The timing controller will not be damaged in case of TV set AC input power suddenly shut down.

Once power reset, it should follow power sequence as spec. definition.

(1) Apply the lamp voltage within the LCD operation range. When the back-light turns on before the LCD operation or the LCD turns off before the back-light turns off, the display may momentarily become abnormal screen.

## 6.0 OPTICAL SPECIFICATIONS

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	$\theta x=0^\circ; \theta Y=0^\circ$	4000	5000	—	—	(1), (2),(7)
Response Time		Gray to gray		—	6.5	8	ms	(1), (6)
Brightness		B <sub>1</sub>		—	450	—	cd/m <sup>2</sup>	(1),(3),(7) Center point⑤ at LCM
Uniformity		$\Delta B$		—	75	—	%	(1),(4),(7)
Color Chromaticity	Red	R <sub>x</sub>		Viewing Normal Angle	Typ -0.03	0.648	Typ +0.03	—
		R <sub>y</sub>	0.325					
	Green	G <sub>x</sub>	0.296					
		G <sub>y</sub>	0.634					
	Blue	B <sub>x</sub>	0.151					
		B <sub>y</sub>	0.051					
	White	W <sub>x</sub>	0.276					
		W <sub>y</sub>	0.286					
Viewing Angle	Horizontal	$\theta x+$	CR $\geq$ 10	—	88	—	Deg.	(1),(5)
		$\theta x-$		—	88	—		
	Vertical	$\theta Y+$		—	88	—		
		$\theta Y-$		—	88	—		

Note (1) Measurement Setup: The LCD module should be stabilized at given temperature for 1 hour to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 1 hour in a windless room.

Any outstanding stain (or mura) and/or any outstanding difference of Chromaticity between any parts of the active area will cause Backlight Assembly and LCM to be rejected.

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

The contrast ratio can be calculated by the following expression.

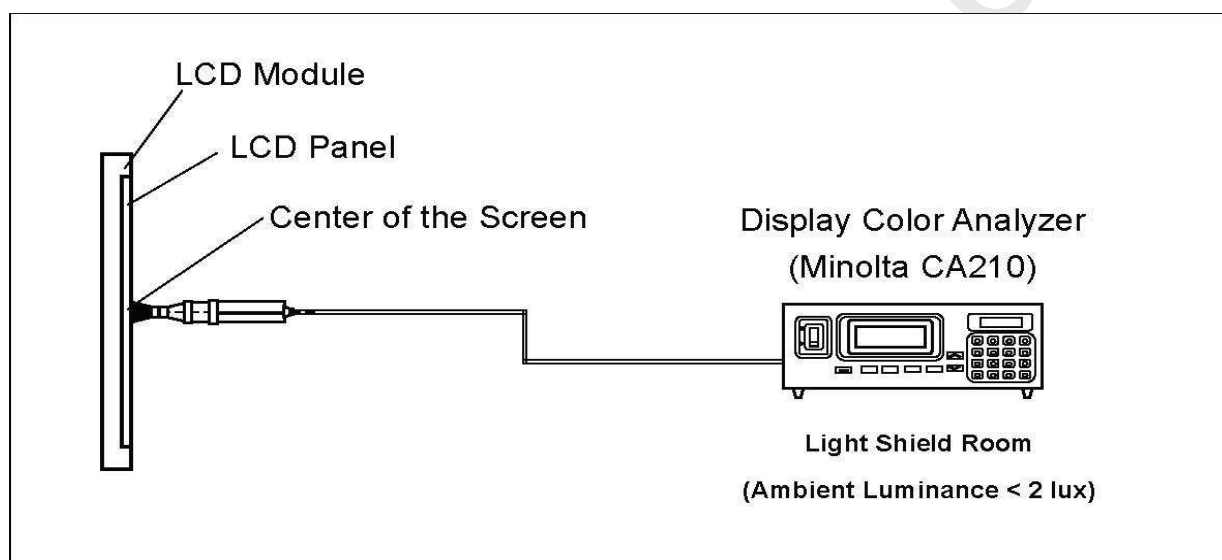
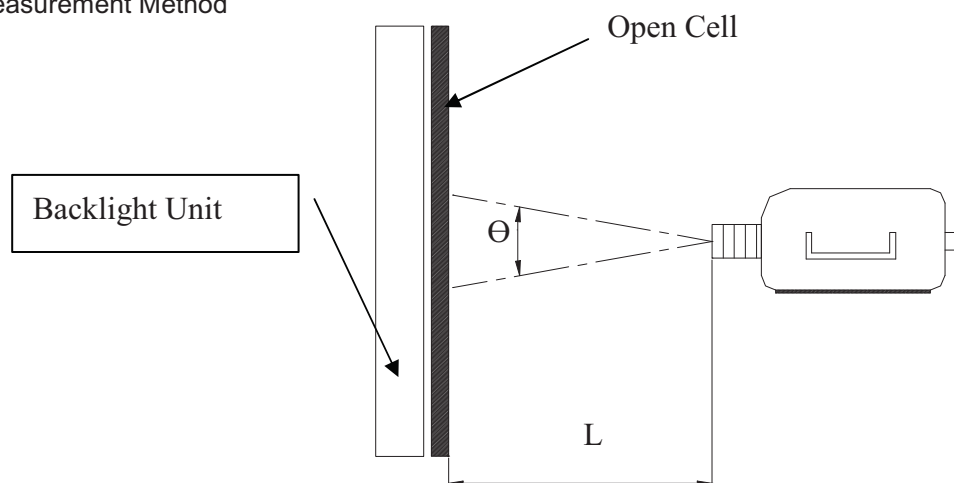
$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

L<sub>255</sub>: Luminance of gray level 255

L<sub>0</sub>: 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 (4)

## Note (3) Measurement Method



Item	E	CA210
Angle $\theta$		$\pm 2.5^\circ$
Distance L		3cm

## Note (4) Definition of White Uniformity ( $\Delta B$ ):

Measure the brightness of white at 9 points

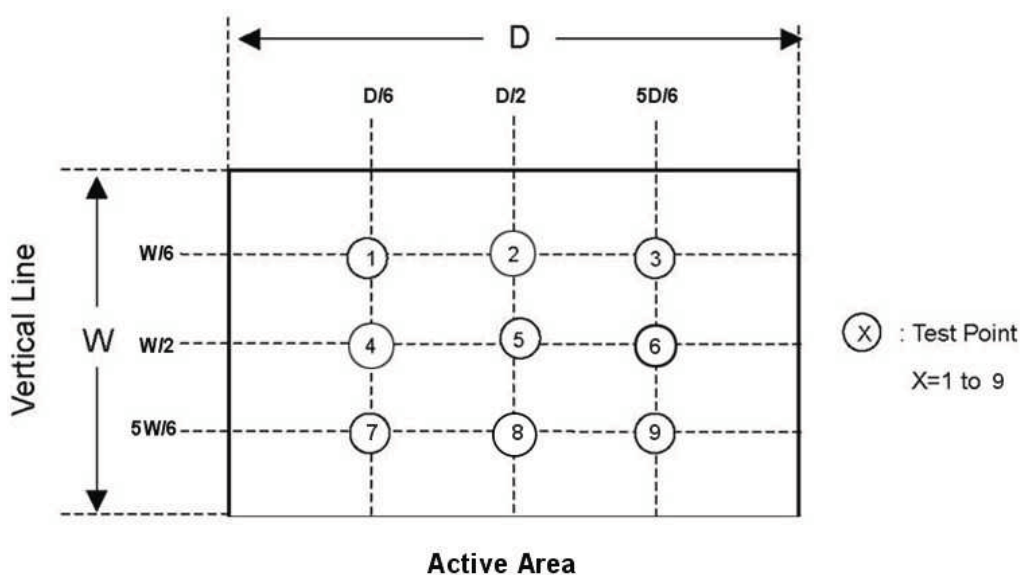
$$\Delta B = \text{Minimum [B (1) ~ B (9)]} / \text{Maximum [B(1) ~ B (9)]}$$

where B (X) is corresponding to the brightness of the point X at the figure below.

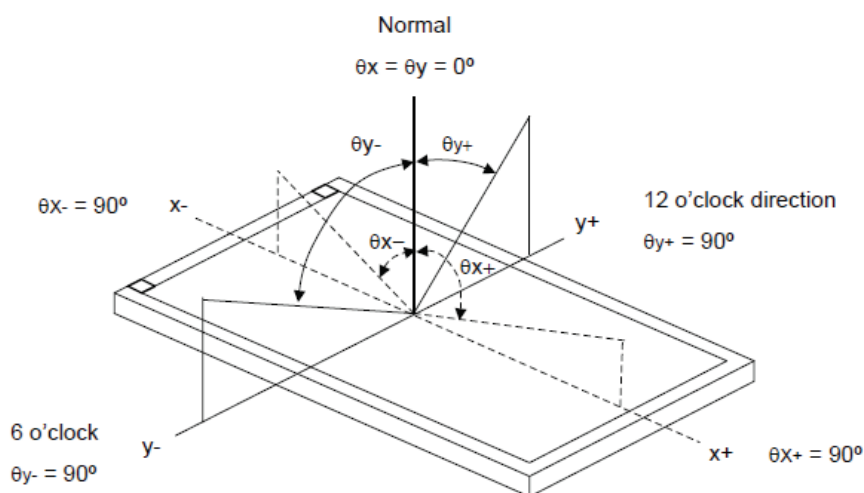


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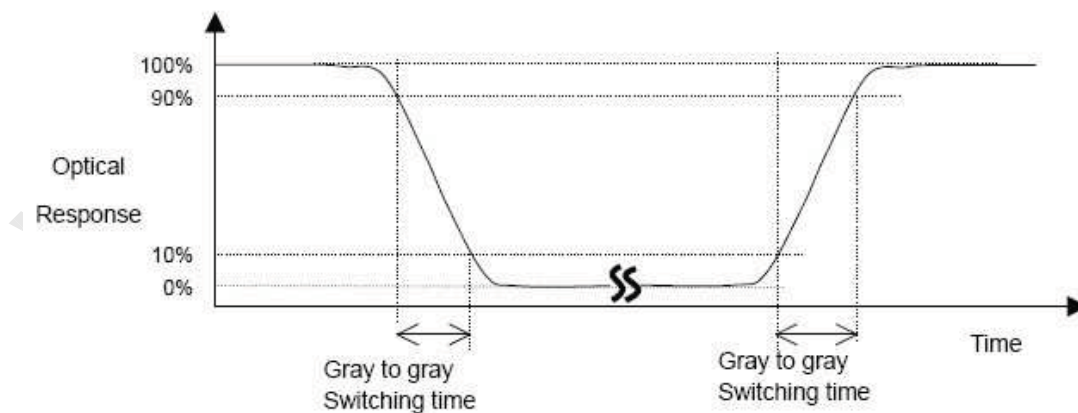
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Note (5) Definition of Viewing Angle ( $\theta_x, \theta_y$ ) :



Note (6) Definition of Gray-to-Gray Switching 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.





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Note(7) Uncertainly spec, need to confirm the pilot run result.

## 7.0 RELIABILITY TEST ITEM

Item	CLT-RA
	Test Condition
High Temperature Operation	50°C (check point : 250/500hrs) Duration 500hrs
High Temperature And High Humidity Operation	50°C / 80%RH (check point : 250/500hrs) Duration 500hrs
Thermal Shock (Non-operation)	-25°C / 1hrs ~ 65°C / 1hrs ,100cycles
Temp. Cycling	[(0°C 1 hr)→ (1hr) →(55°C 1hr)]/100cycle; 4hrs/Cycle , 9min/On,1min/Off,
Altitude	On : 570mb/50°C/72HRS Off : 115mb/70°C/72HRS
ESD	On : Air(+/-15Kv) 100 Points, 150pF , 330Ω,1time
	On: Contact +/-8Kv) 100 Points, 150pF , 330Ω,1time
Vibration	Frequency: 10~300Hz /10min, Acceleration:1.5G Sweep Rate: 30min/1cycle Direction: X → Y → Z, (1 cycles/axis)
Shock	Wave :Half-sine Acceleration: 35G Duration :11 msec Direction : ± X → ±Y → ±Z (1 times/axis )
Pallet Vibration	Frequency: 1~200Hz Acceleration:1.14G Sweep Rate: X, Y 30min/1cycle Sweep Rate: Z 10min/1cycles Direction: X → Y → Z, (1 cycles/axis)
Noise	Follow SEC 標準 (Implement PV/PR/MP Stage )
Dust test	JIS D0207 F3 with JIS test power 1, class 8(6.6~8.6um) Blow on 5 min/ off 15 min 30 cycles, (power on 7 min, off 3 min) (Implement PV/PR/MP Stage )



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## 8.0 PACKING

### 8.1 PACKING SPECIFICATIONS

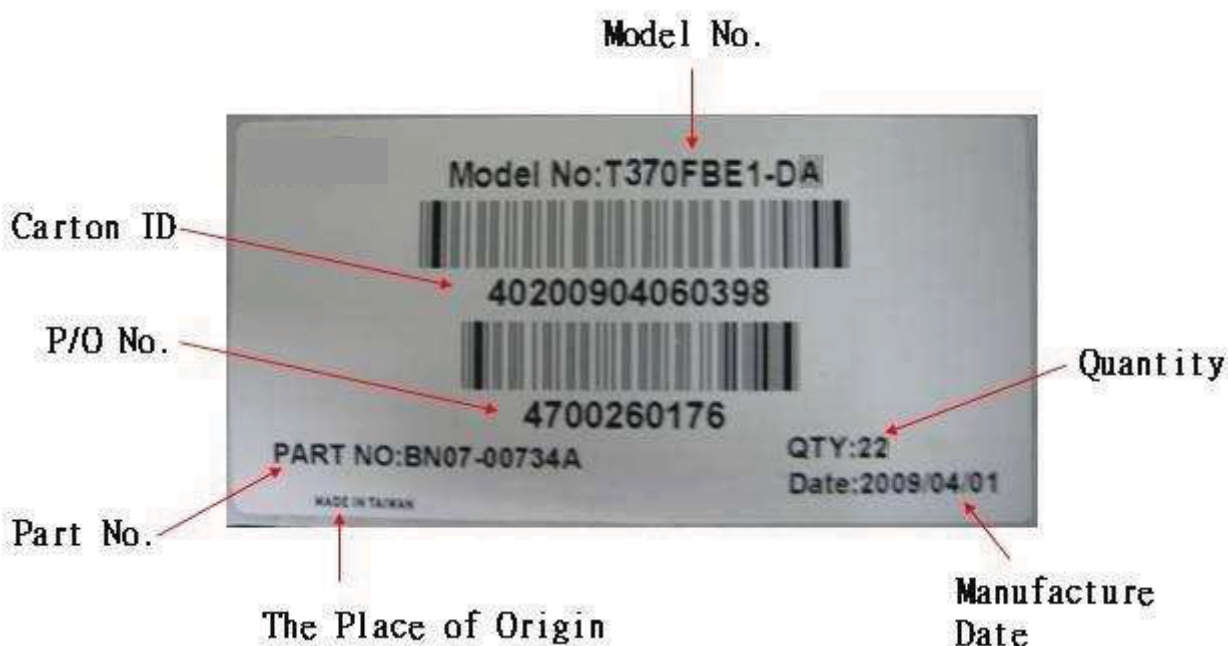
- (1) 22 LCD modules / 1Box
- (2) Box dimensions : 1086 mm (L) X 1006 mm(W) X 693 mm (H)
- (3) Weight: approximately 169 kg (22 modules per box , packaging materials including pallet)
- (4) 1 Box / 1 Pallet

### 8.2 PACKING METHOD

- (1) The carton by using 8pcs corner proector cover on the eight edges
- (2) Cover the PE film on the entire carton
- (3) The PP Bel over the carton & pallet, each side 2 band

### 8.3 PACKAGING LABEL

The shipping tag (Packaging Label) on both right & left side of carton



Item	Description	Comments
<b>Model No.</b>	Model Name	T370FBE1-DA
<b>Carton ID</b>	Carton Barcode It is used ONLY inside of CLT for management purpose	WW/YYYY + Carton serial numberXXXXXXXXX ex.) 50200901150001
<b>P/O No.</b>	Purchase Order Code	P/O No.
<b>Part No.</b>	Part Number	BN07-00734A
<b>QTY</b>	The number of Panel in a box	22
<b>Date</b>	Manufacture Date	YYYY/MM/DD ex.) 2009/04/01
<b>Made in Taiwan</b>	Manufacture Place	Made in Taiwan

## 9.0 STORAGE CONDITION

Normal condition: Temperature: 15°C~35°C; Humidity: 30% ~70%

## 10.0 WARRANTY

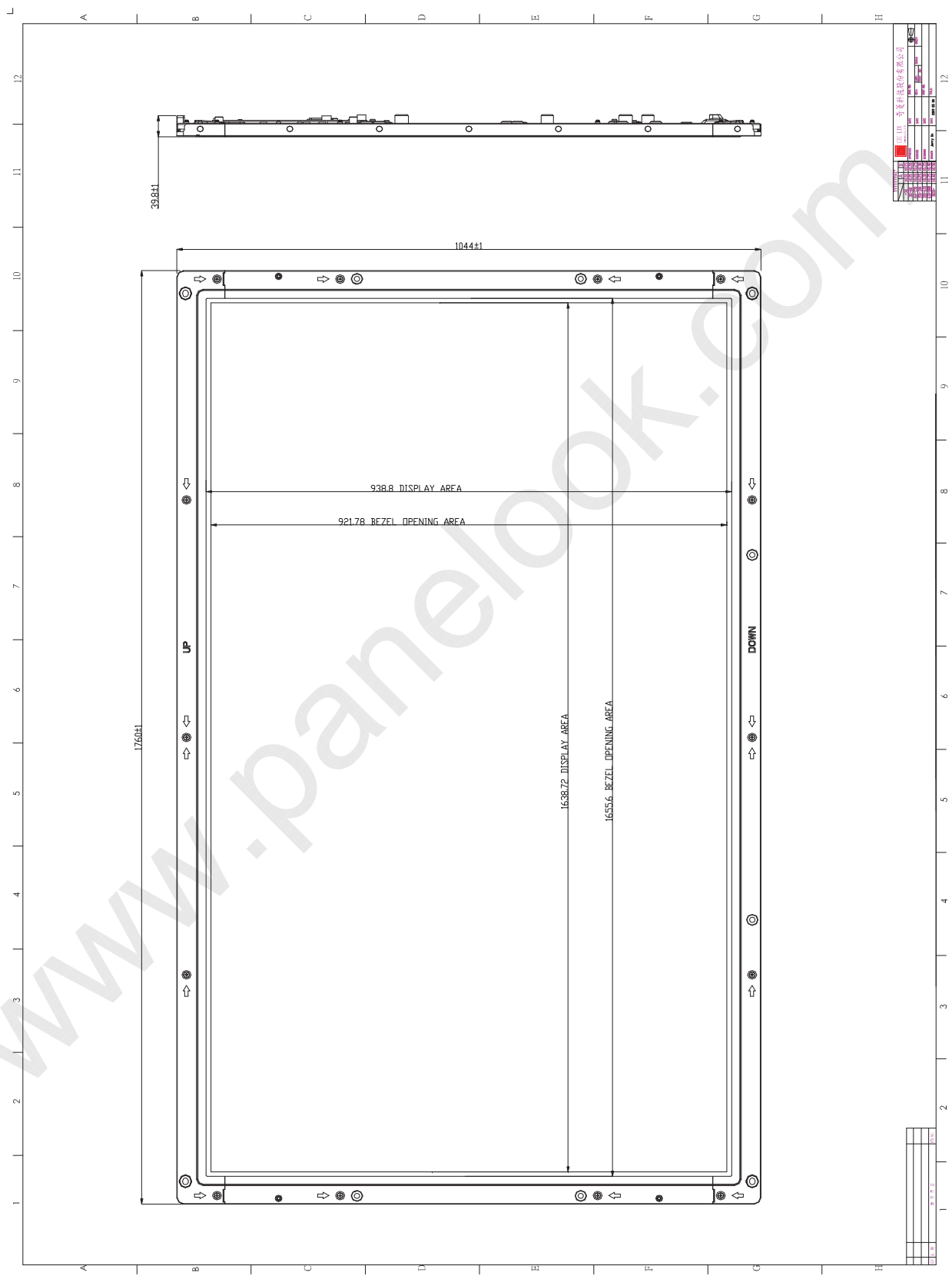
The warranty period is one year after manufacturing.



# Specifications

Doc. No20.

## 8.0 MECHANICAL CHARACTERISTICS





# Specifications

Doc. No21.

