



# Product Specification

B121EW04 V1

- (V ) Preliminary Specifications
- ( ) Final Specifications

|                   |                          |
|-------------------|--------------------------|
| <b>Module</b>     | 12.1" WXGA Color TFT-LCD |
| <b>Model Name</b> | B121EW04 V1              |

|  |             |
|--|-------------|
| <b>Customer</b>  | <b>Date</b> |
| _____  | _____       |
| <b>Checked &amp; Approved by</b>                                     |             |
| _____  | _____       |
| <p>Note: This Specification is subject to change without notice.</p> |             |

|   |                  |
|---|------------------|
| <b>Approved by</b>  | <b>Date</b>      |
| Howard Lee _____  | 2007/10/12 _____ |
| <b>Prepared by</b>  |                  |
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| <p>NBBU Marketing Division /<br/>AU Optronics corporation</p> |                  |



# Product Specification

B121EW04 V1

## 2. General Description

B121EW04 V2 is a Color Active Matrix Liquid Crystal Display composed of a TFT LCD panel, a driver circuit, LED backlight system, and a digitizer unit. The screen format is intended to support the WXGA (1280(H) x 800(V)) screen and 262k colors (RGB 6-bits data driver). All input signals are LVDS interface compatible.

B121EW04 V2 is designed for a display unit of tablet style personal computer and industrial machine.

### 2.1 General Specification

The following items are characteristics summary on the table at 25 °C condition:

| Items   | Unit                 | Specifications   |       |       |      |
|---|----------------------|--|-------|-------|------|
| Screen Diagonal   | [mm]                 | 307.9 (12.1 W")  |       |       |      |
| Active Area   | [mm]                 | 261.12 (H) x 163.2 (V)   |       |       |      |
| Pixels H x V  |                      | 1280x3(RGB) x 800  |       |       |      |
| Pixel Pitch   | [mm]                 | 0.204  |       |       |      |
| Pixel Arrangement   |                      | R.G.B. Vertical Stripe   |       |       |      |
| Display Mode  |                      | Normally White   |       |       |      |
| White Luminance (ILED=20.0mA)<br>Note: ILED is lamp current | [cd/m <sup>2</sup> ] | 220 Typ. (5 points average)<br>200 Min. (5 points average)<br>(Note1)    |       |       |      |
| Luminance Uniformity  |                      | 1.25 max. (5 points)   |       |       |      |
| Contrast Ratio  |                      | 600:1 Typ.,500:1 Min.  |       |       |      |
| Optical Rise Time/Fall Time                                 | [msec]               | 25 Typ., 35 Max.   |       |       |      |
| Nominal Input Voltage VDD                                   | [Volt]               | +3.3 Typ.  |       |       |      |
| Power Consumption   | [Watt]               | 5.5 Max. (Including logic and BLU power,with LED circuit loss) @ 20.0 mA |       |       |      |
| Weight (w/o Inverter)                                       | [Grams]              | 220g Max.  |       |       |      |
| Physical Size   | [mm]                 |  | L     | W     | T    |
|   |                      | Max  | 294.1 | 178.5 | 3.5  |
|   |                      | Typ  | 293.6 | 178.0 | 3.15 |
|   |                      | min  | 293.1 | 177.5 | -    |
| Electrical Interface  |                      | 1 channel LVDS   |       |       |      |
| Surface Treatment   |                      | Anti-galre, 3H   |       |       |      |
| Support Color   |                      | 262K colors ( RGB 6-bit )  |       |       |      |
| Temperature Range<br>Operating<br>Storage (Non-Operating)   | [°C]<br>[°C]         | 0 to +50<br>-20 to +60   |       |       |      |
| RoHS Compliance   |                      | RoHS Compliance  |       |       |      |



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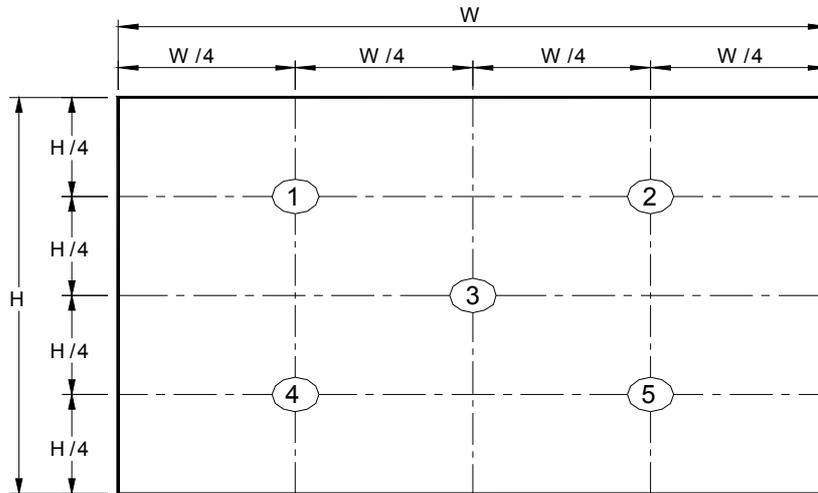
B121EW04 V1

## 2.2 Optical Characteristics

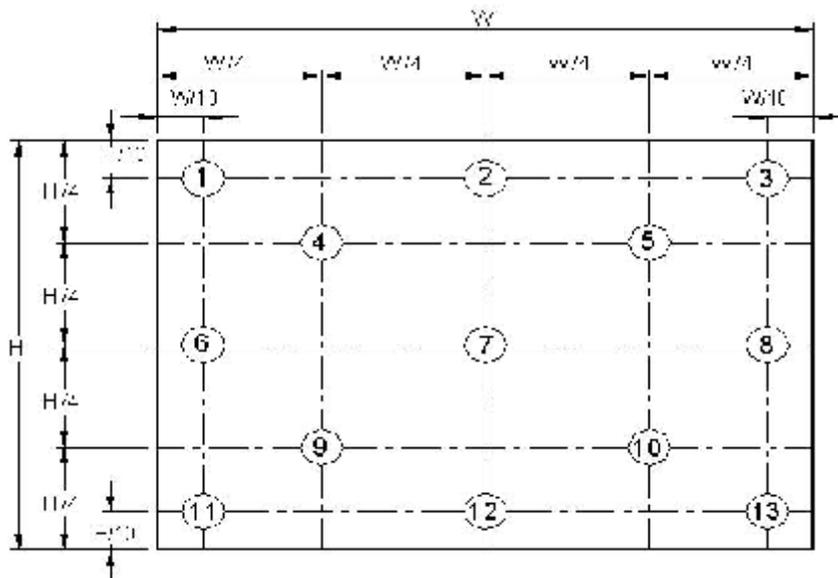
The optical characteristics are measured under stable conditions at 25°C (Room Temperature):

| Item  | Unit                 | Conditions                           | Min.  | Typ.  | Max.  | Note     |
|---|----------------------|--------------------------------------|-------|-------|-------|----------|
| White Luminance<br>ILED=20.0mA                        | [cd/m <sup>2</sup> ] | 5 points average                     | 220   | 250   | -     | 1, 4, 5. |
| Viewing Angle   | [degree]<br>[degree] | Horizontal (Right)<br>CR = 10 (Left) | 70    | 80    | -     | 8        |
|   |                      |                                      | 70    | 80    | -     |          |
|   | [degree]<br>[degree] | Vertical (Upper)<br>CR = 10 (Lower)  | 70    | 80    | -     |          |
|   |                      |                                      | 70    | 80    | -     |          |
| Luminance Uniformity                                  |                      | 5 Points                             |       |       | 1.25  | 1        |
| Luminance Uniformity                                  |                      | 13 Points                            |       |       | 1.80  | 2        |
| CR: Contrast Ratio                                    |                      |                                      | 500   | 600   | -     | 6        |
| Cross talk  | %                    |                                      |       |       | 1.4   | 7        |
| Response Time   | [msec]               | Rising                               | -     | 15    | 20    | 8        |
|   | [msec]               | Falling                              | -     | 10    | 15    |          |
|   | [msec]               | Rising + Falling                     |       | 25    | 35    |          |
| Color / Chromaticity<br>Coordinates<br><br>(CIE 1931) |                      | <b>Red x</b>                         | 0.550 | 0.580 | 0.610 | 2,8      |
|   |                      | <b>Red y</b>                         | 0.310 | 0.340 | 0.370 |          |
|   |                      | <b>Green x</b>                       | 0.300 | 0.330 | 0.360 |          |
|   |                      | <b>Green y</b>                       | 0.545 | 0.575 | 0.605 |          |
|   |                      | <b>Blue x</b>                        | 0.125 | 0.155 | 0.185 |          |
|   |                      | <b>Blue y</b>                        | 0.105 | 0.135 | 0.165 |          |
|   |                      | <b>White x</b>                       | 0.283 | 0.313 | 0.343 |          |
|   |                      | <b>White y</b>                       | 0.299 | 0.329 | 0.359 |          |
| NTSC  | [%]                  | CIE 1931                             | -     | 45    | -     |          |

**Note 1:** 5 points position (Display area: 261.12 (H) x 163.2 (V) mm)



**Note 2:** 13 points position



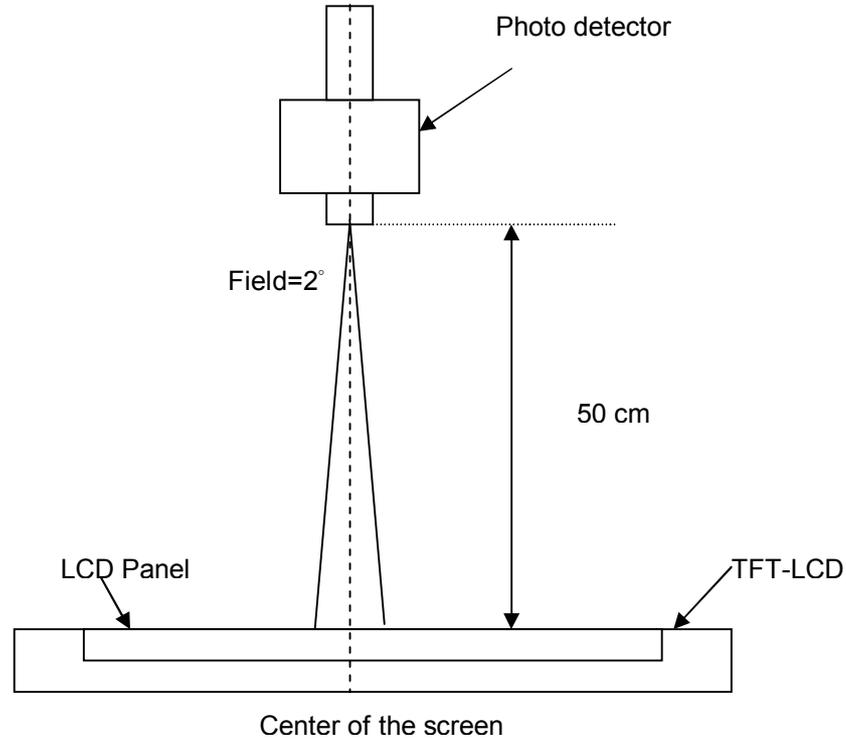
**Note 3:** The luminance uniformity of 5 and 13 points is defined by dividing the maximum luminance values by the minimum test point luminance

$$\delta_{w5} = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

$$\delta_{w13} = \frac{\text{Maximum Brightness of thirteen points}}{\text{Minimum Brightness of thirteen points}}$$

**Note 4:** Measurement method

The LCD module 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 stable, windless and dark room.



**Note 5:** Definition of Average Luminance of White ( $Y_L$ ):

Measure the luminance of gray level 63 at 5 points ·  $Y_L = [L (1)+ L (2)+ L (3)+ L (4)+ L (5)] / 5$   
 $L (x)$  is corresponding to the luminance of the point X at Figure in Note (1).

**Note 6:** Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

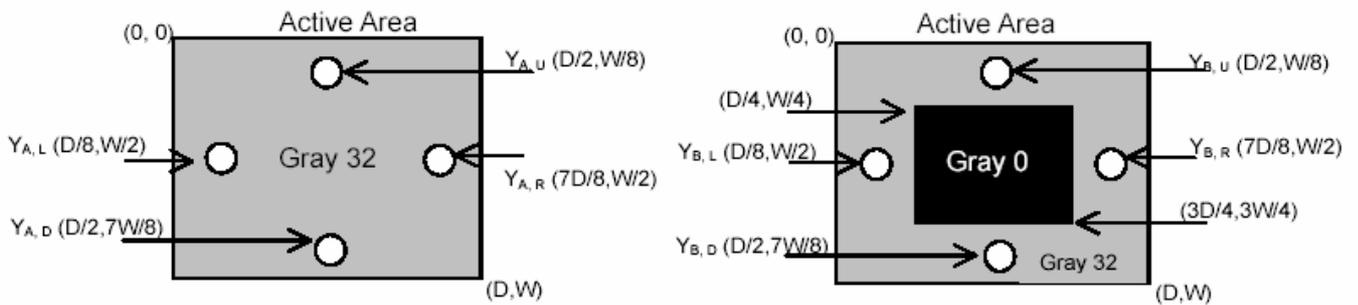
**Note 7:** Definition of Cross Talk (CT)

$$CT = |Y_B - Y_A| / Y_A \times 100 (\%)$$

Where

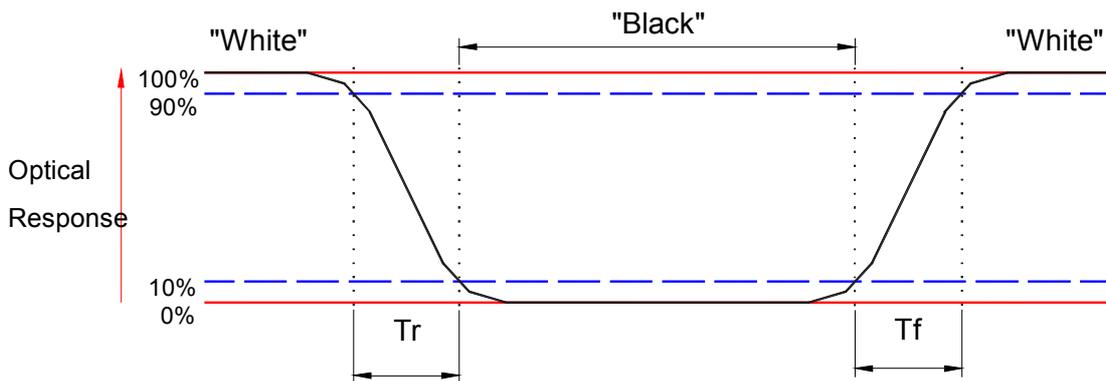
$Y_A$  = Luminance of measured location without gray level 0 pattern (cd/m<sup>2</sup>)

$Y_B$  = Luminance of measured location with gray level 0 pattern (cd/m<sup>2</sup>)



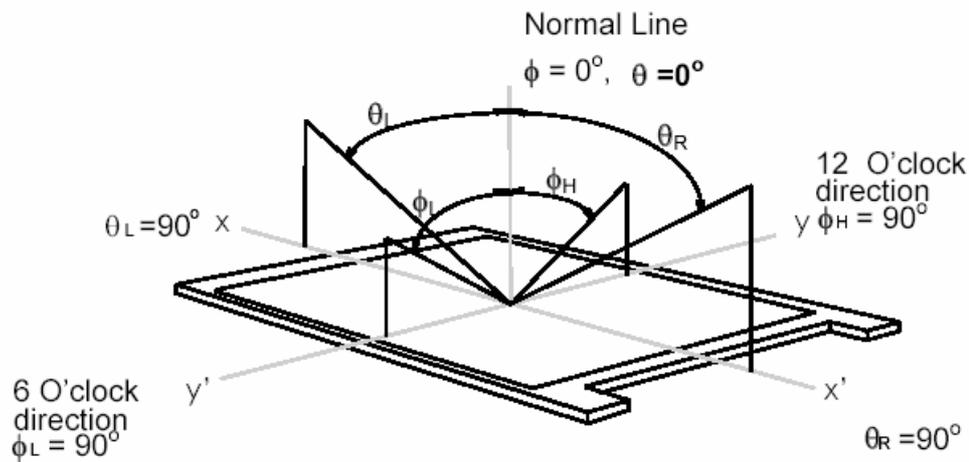
**Note 8:** Definition of response time:

The output signals of BM-7 or equivalent are measured when the input signals are changed from "Black" to "White" (falling time) and from "White" to "Black" (rising time), respectively. The response time interval between the 10% and 90% of amplitudes. Refer to figure as below.



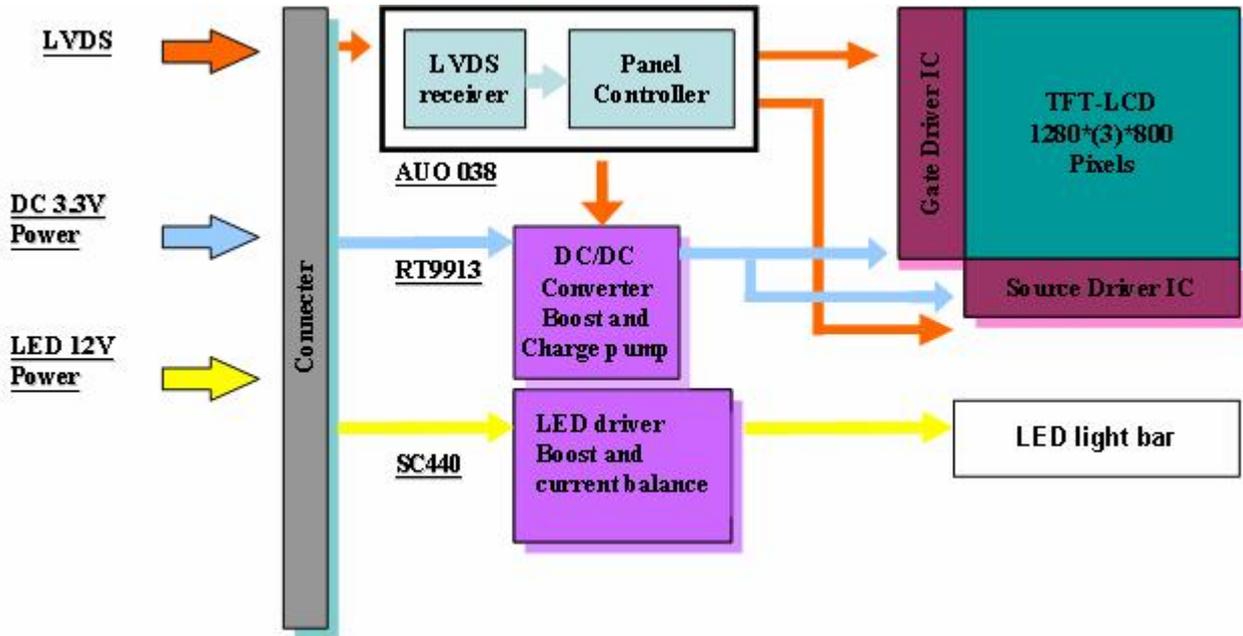
**Note 9:** Definition of viewing angle

Viewing angle is the measurement of contrast ratio  $\geq 10$ , at the screen center, over a  $180^\circ$  horizontal and  $180^\circ$  vertical range (off-normal viewing angles). The  $180^\circ$  viewing angle range is broken down as follows;  $90^\circ$  ( $\theta$ ) horizontal left and right and  $90^\circ$  ( $\Phi$ ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



## 3. Functional Block Diagram

The following diagram shows the functional block of the 12.1 inches wide Color TFT/LCD Module with touch panel:



## 4. Absolute Maximum Ratings

Absolute maximum ratings of the module are as following:

### 4.1 Absolute Ratings of TFT LCD Module

| Item            | Symbol | Min  | Max  | Unit   | Conditions |
|-----------------|--------|------|------|--------|------------|
| Logic/LCD Drive | VDD    | -0.3 | +4.0 | [Volt] | Note 1,2   |

### 4.2 Absolute Ratings of Backlight Unit

| Item        | Symbol | Min | Max  | Unit     | Conditions |
|-------------|--------|-----|------|----------|------------|
| LED Current | ILED   | -   | 20.0 | [mA] rms | Note 1,2   |

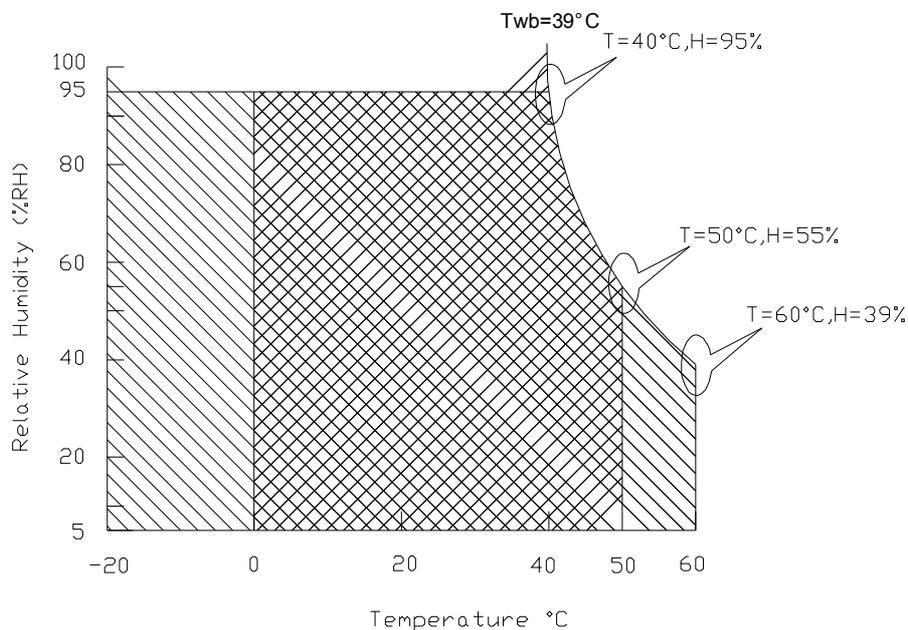
### 4.3 Absolute Ratings of Environment

| Item                  | Symbol | Min | Max | Unit  | Conditions |
|-----------------------|--------|-----|-----|-------|------------|
| Operating Temperature | TOP    | 0   | +50 | [°C]  | Note 3     |
| Operation Humidity    | HOP    | 5   | 95  | [%RH] | Note 3     |
| Storage Temperature   | TST    | -20 | +60 | [°C]  | Note 3     |
| Storage Humidity      | HST    | 5   | 95  | [%RH] | Note 3     |

**Note 1:** At Ta (25°C)

**Note 2:** Permanent damage to the device may occur if exceed maximum values

**Note 3:** For quality performance, please refer to AUO IIS(Incoming Inspection Standard).



Operating Range



Storage Range



## 5. Electrical characteristics

### 5.1 TFT LCD Module

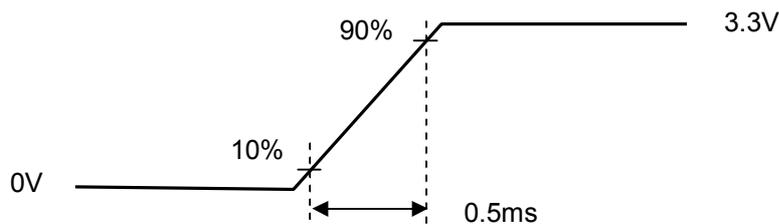
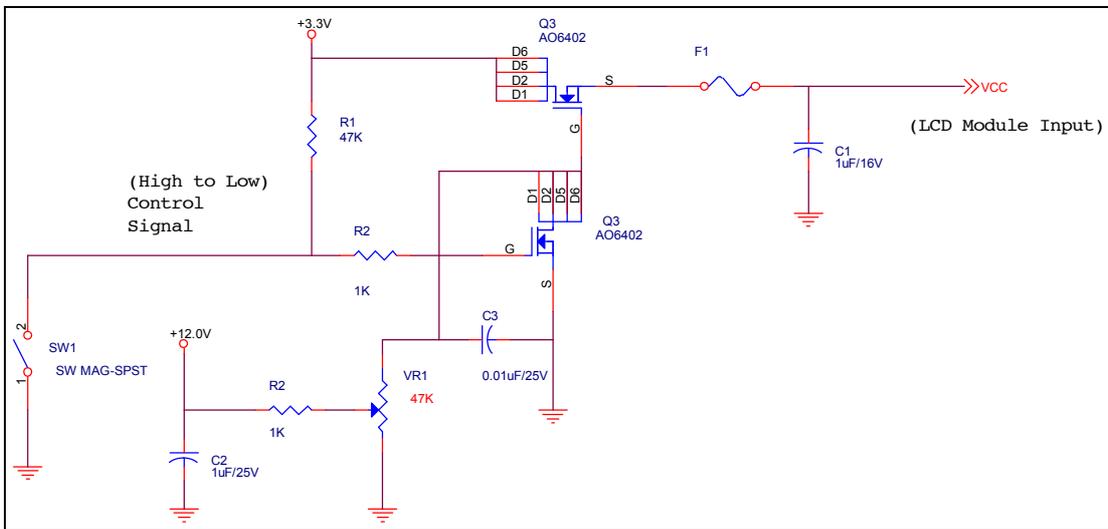
#### 5.1.1 Power Specification

Input power specifications are as follows;

| Symble | Parameter                                | Min | Typ | Max  | Units    | Note   |
|--------|--|-----|-----|------|----------|--------|
| VDD    | Logic/LCD Drive Voltage                  | 3.0 | 3.3 | 3.6  | [Volt]   |        |
| PDD    | VDD Power                                |     | 1.3 | 1.5  | [Watt]   | Note 1 |
| IDD    | IDD Current                              |     | 400 | 420  | [mA]     | Note 1 |
| IRush  | Inrush Current                           |     |     | 1800 | [mA]     | Note 2 |
| VDDrp  | Allowable Logic/LCD Drive Ripple Voltage |     |     | 500  | [mV] p-p |        |
| VDDns  | Allowable Logic/LCD Drive Ripple Noise   |     |     | 100  | [mV] p-p |        |

**Note 1:** Maximum Measurement Condition : Black Pattern

**Note 2:** Measure Condition



**Vin rising time**

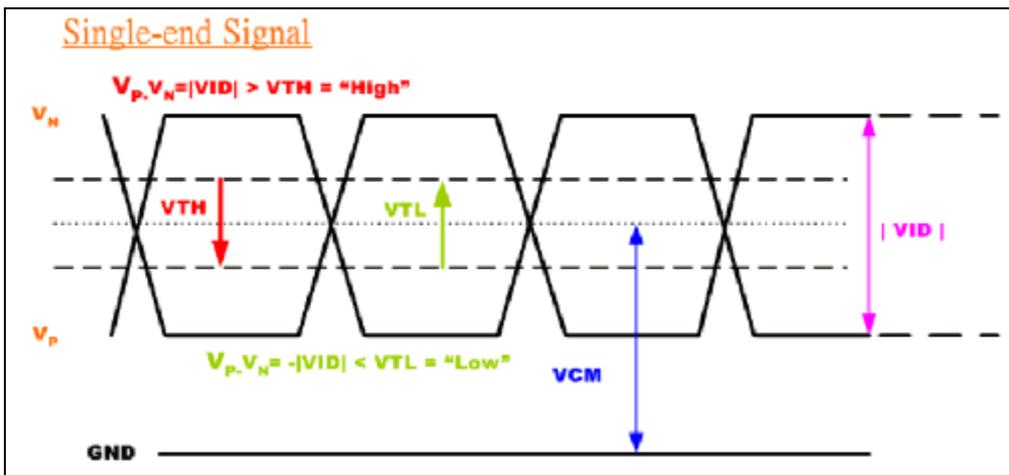
## 5.1.2 Signal Electrical Characteristics

Input signals shall be low or High-impedance state when VDD is off.

Signal electrical characteristics are as follows;

| Parameter | Condition                                     | Min  | Max | Unit |
|-----------|---|------|-----|------|
| Vth       | Differential Input High Threshold (Vcm=+1.2V) |      | 100 | [mV] |
| Vtl       | Differential Input Low Threshold (Vcm=+1.2V)  | -100 |     | [mV] |
| Vcm       | Differential Input Common Mode Voltage        | 0.3  | 2.2 | [V]  |

**Note:** LVDS Differential Voltage





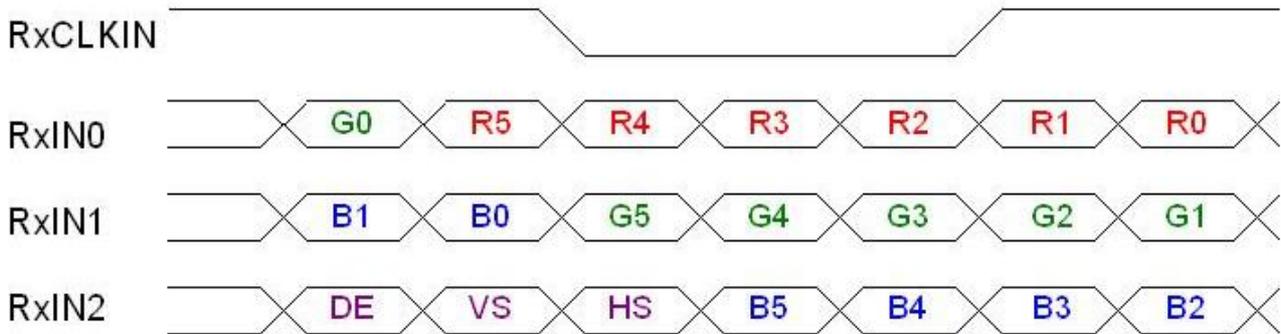
## 5.2 Backlight Unit

Parameter guideline for LED Inverter

| Parameter  | Min  | Typ  | Max  | Units                | Condition  |
|--|------|------|------|----------------------|--|
| White Luminance<br>5 points average                    | 220  | 250  | -    | [cd/m <sup>2</sup> ] | (Ta=25°C)  |
| LED current(I <sub>LED</sub> )                         | 18.8 | 20.0 | 21.2 | [mA] rms             | (Ta=25°C)  |
| LED Frequency(F <sub>LED</sub> )                       | -    | 800  | -    | [KHz]                | (Ta=25°C)  |
| LED Voltage (Reference)<br>(V <sub>LED</sub> )         | 3.0  | 3.2  | 3.3  | [Volt] rms           | (Ta=25°C)  |
| LED Power consumption<br>(P <sub>LED</sub> ) @ 20.0 mA | -    | 3.6  | 4.0  | [Watt]               | (Ta=25°C)<br>(Including circuit driving<br>loss) |



## 6.2 The input data format



| Signal Name  | Description   |  |
|--|---|--|
| +RED5 (R5)<br>+RED4 (R4)<br>+RED3 (R3)<br>+RED2 (R2)<br>+RED1 (R1)<br>+RED0 (R0)                   | Red Data 5 (MSB)<br>Red Data 4<br>Red Data 3<br>Red Data 2<br>Red Data 1<br>Red Data 0 (LSB)<br><b>(Red-pixel Data)</b>               | Red-pixel Data<br>Each red pixel's brightness data consists of these 6 bits pixel data.  |
| +GREEN 5 (G5)<br>+GREEN 4 (G4)<br>+GREEN 3 (G3)<br>+GREEN 2 (G2)<br>+GREEN 1 (G1)<br>+GREEN 0 (G0) | Green Data 5 (MSB)<br>Green Data 4<br>Green Data 3<br>Green Data 2<br>Green Data 1<br>Green Data 0 (LSB)<br><b>(Green-pixel Data)</b> | Green-pixel Data<br>Each green pixel's brightness data consists of these 6 bits pixel data.  |
| +BLUE 5 (B5)<br>+BLUE 4 (B4)<br>+BLUE 3 (B3)<br>+BLUE 2 (B2)<br>+BLUE 1 (B1)<br>+BLUE 0 (B0)       | Blue Data 5 (MSB)<br>Blue Data 4<br>Blue Data 3<br>Blue Data 2<br>Blue Data 1<br>Blue Data 0 (LSB)<br><b>(Blue-pixel Data)</b>        | Blue-pixel Data<br>Each blue pixel's brightness data consists of these 6 bits pixel data.  |
| -DTCLK   | <b>Data Clock</b>   | The typical frequency is 71.1 MHz. The signal is used to strobe the pixel data and DSPTMG signals. All pixel data shall be valid at the falling edge when the DSPTMG signal is high. |
| DSPTMG (DE)  | <b>Display Timing</b>   | This signal is stored at the falling edge of -DTCLK. When the signal is high, the pixel data shall be valid to be displayed.   |
| VSUNC (VS)   | <b>Vertical Sync</b>  | The signal is synchronized to -DTCLK .   |
| HSUNC (HS)   | <b>Horizontal Sync</b>  | The signal is synchronized to -DTCLK .   |

Note: Output signals from any system shall be low or High-impedance state when VDD is off.

### 6.3 Signal Description/Pin Assignment

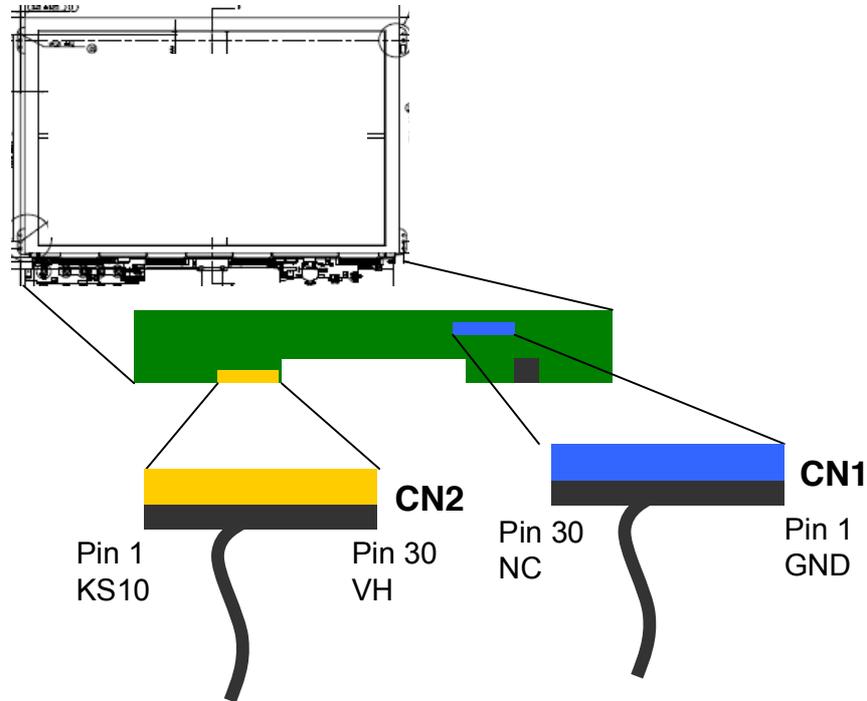
LVDS (CN1) is a differential signal technology for LCD interface and high speed data transfer device.

| Pin | Signal Name          | Pin | Signal Name         |
|-----|----------------------|-----|---------------------|
| 1   | GND                  | 2   | VDD                 |
| 3   | VDD                  | 4   | V <sub>EDID</sub>   |
| 5   | Aging                | 6   | CLK <sub>EDID</sub> |
| 7   | DATA <sub>EDID</sub> | 8   | RxIN0-              |
| 9   | RxIN0+               | 10  | GND                 |
| 11  | RxIN1-               | 12  | RxIN1+              |
| 13  | GND                  | 14  | RxIN2-              |
| 15  | RxIN2+               | 16  | GND                 |
| 17  | RxCLKIN-             | 18  | RxCLKIN+            |
| 19  | GND                  | 20  | NC                  |
| 21  | NC                   | 22  | GND                 |
| 23  | NC                   | 24  | NC                  |
| 25  | GND                  | 26  | NC                  |
| 27  | NC                   | 28  | GND                 |
| 29  | NC                   | 30  | NC                  |

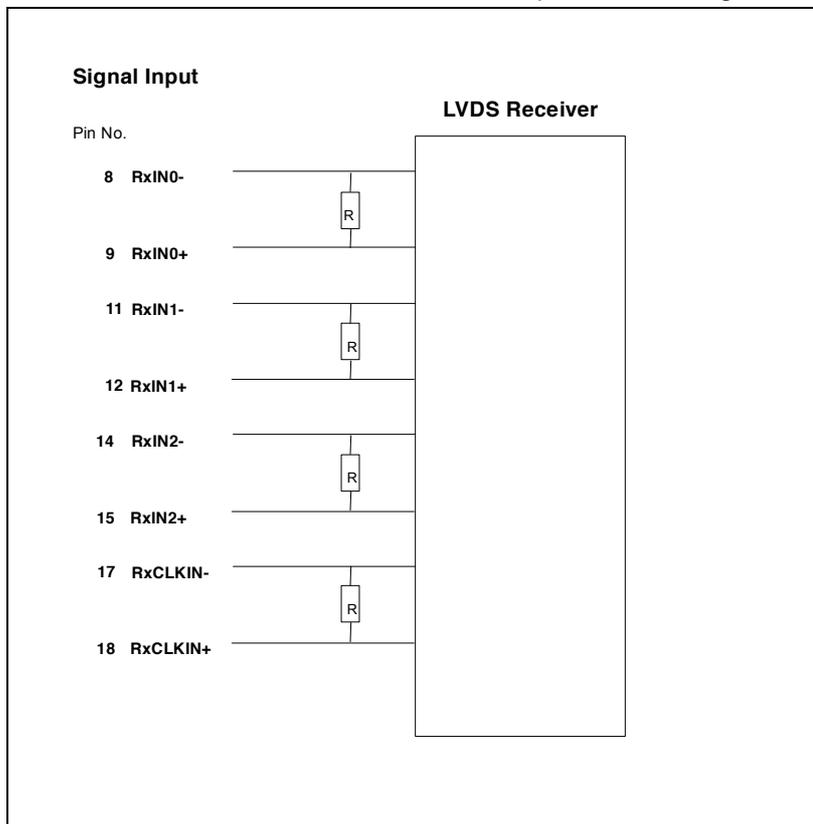
LED driving connector (CN2) provides the interface between system and LCD for control and power of LED BLU.

| Pin | Signal Name    | Pin | Signal Name    |
|-----|----------------|-----|----------------|
| 1   | KS10           | 2   | KS11           |
| 3   | KS12           | 4   | KS13           |
| 5   | KS17           | 6   | KSC18          |
| 7   | GND            | 8   | Power SW       |
| 9   | Breath PWR LED | 10  | +3.3V          |
| 11  | GND            | 12  | LCD SMDCLK     |
| 13  | LCD SMB DAT    | 14  | GND            |
| 15  | HDD LED        | 16  | BAT2 LED       |
| 17  | BAT1 LED       | 18  | BT LED         |
| 19  | LED WLAN OUT   | 20  | GND            |
| 21  | AUD DMIC IN0   | 22  | AUO DMIC CLK_G |
| 23  | VL             | 24  | VL             |
| 25  | VL             | 26  | V <sub>5</sub> |
| 27  | NC             | 28  | VH             |
| 29  | VH             | 30  | VH             |

**Note1:** Start from right side



**Note2:** Input signals shall be low or High-impedance state when VDD is off.  
 Internal circuit of LVDS inputs are as following.  
 The module uses a 100ohm resistor between positive and negative data lines of each receiver input



## 6.4 Interface Timing

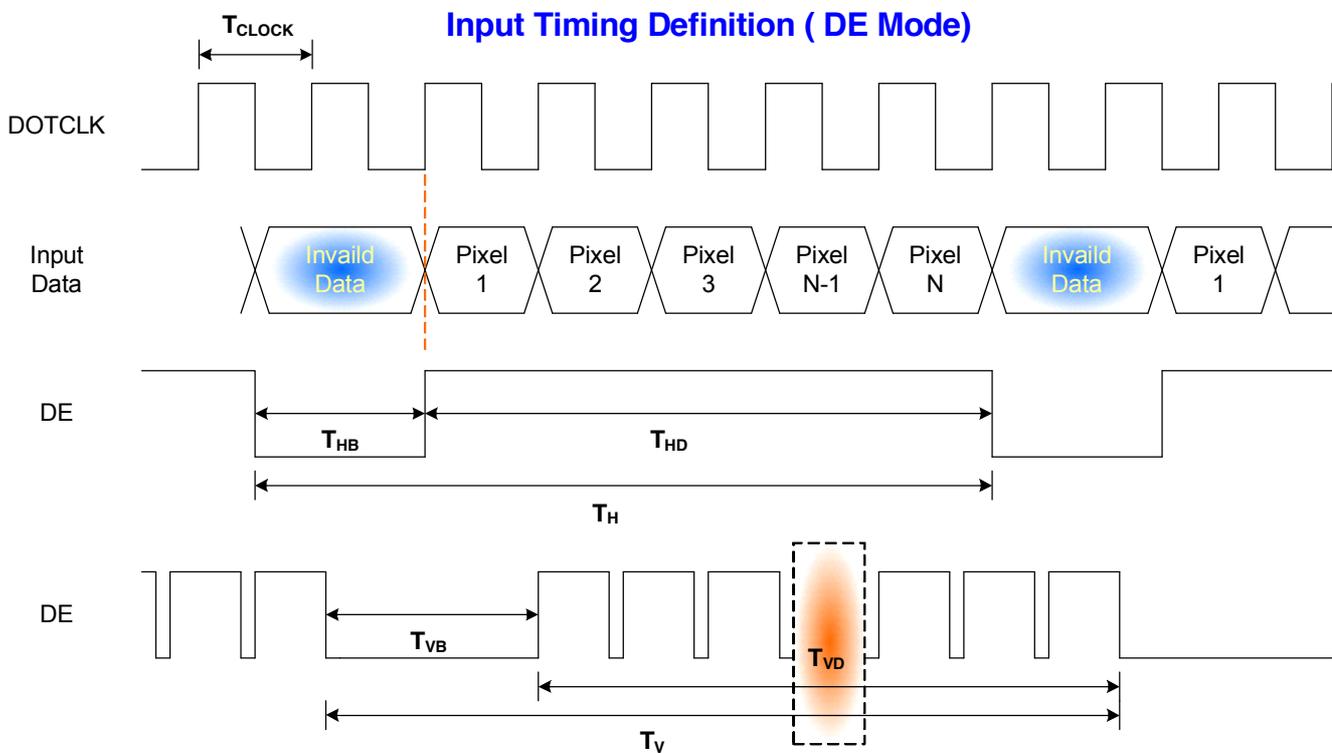
### 6.4.1 Timing Characteristics

Basically, interface timings should match the 1280x800 /60Hz manufacturing guide line timing.

| Parameter          | Symbol               | Min.     | Typ. | Max. | Unit |                    |
|--------------------|----------------------|----------|------|------|------|--------------------|
| Frame Rate         | -                    |          | 60   | -    | Hz   |                    |
| Clock frequency    | $1/T_{\text{Clock}}$ |          | 71.1 |      | MHz  |                    |
| Vertical Section   | Period               | $T_V$    | 803  | 823  | 1023 | $T_{\text{Line}}$  |
|                    | Active               | $T_{VD}$ | 800  | 800  | 800  |                    |
|                    | Blanking             | $T_{VB}$ | 3    | 23   | 223  |                    |
| Horizontal Section | Period               | $T_H$    | 1303 | 1440 | 2047 | $T_{\text{Clock}}$ |
|                    | Active               | $T_{HD}$ | 1280 | 1280 | 1280 |                    |
|                    | Blanking             | $T_{HB}$ | 23   | 160  | 767  |                    |

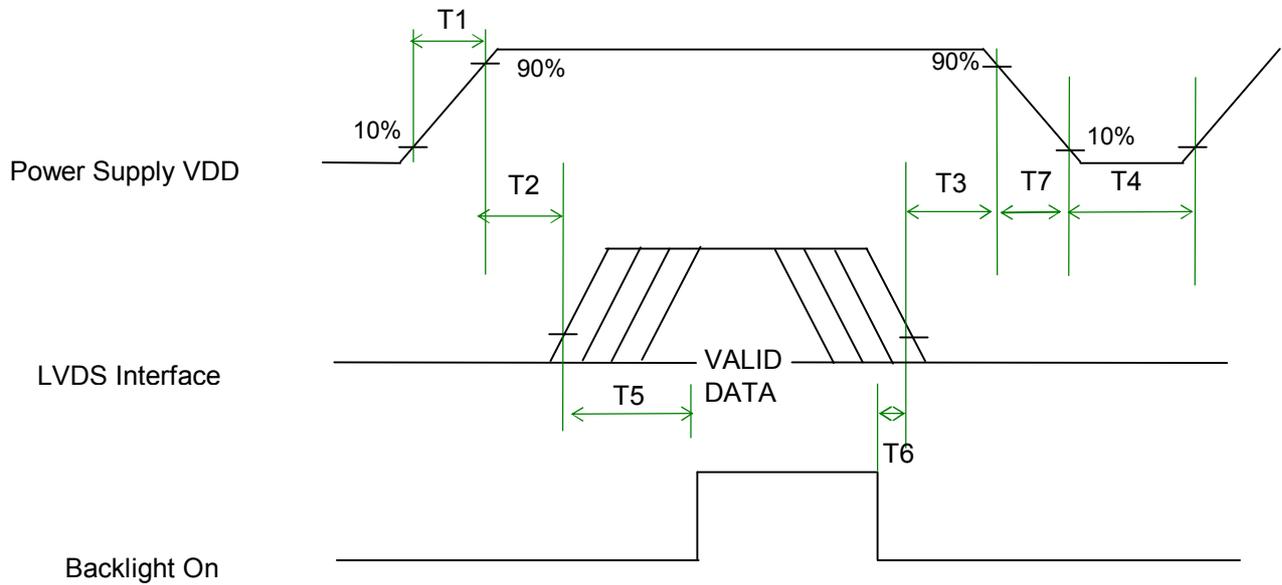
**Note:** DE mode only

### 6.4.2 Timing diagram



## 6.5 Power ON/OFF Sequence

VDD power and lamp on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.



## Power Sequence Timing

| Parameter | Value |      |      | Units |
|-----------|-------|------|------|-------|
|           | Min.  | Typ. | Max. |       |
| T1        | 0.5   | -    | 10   | (ms)  |
| T2        | 0     | -    | 50   | (ms)  |
| T3        | 0     | -    | 50   | (ms)  |
| T4        | 400   | -    | -    | (ms)  |
| T5        | 200   | -    | -    | (ms)  |
| T6        | 200   | -    | -    | (ms)  |
| T7        | 0     | -    | 10   | (ms)  |



## 7. Connector Description

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

|                                     |                                  |
|-------------------------------------|----------------------------------|
| <b>Connector Name / Designation</b> | <b>LVDS (CN1)/ LED BLU (CN2)</b> |
| Manufacturer                        | JAE                              |
| Type / Part Number                  | JAE FI-J30S-VF15N                |
| Mating Housing/Part Number          | JAE FI-J30C3                     |
| Mating Contact/Part Number          | JAE FI-J30C3                     |



## 8. Vibration and Shock Test

### 8.1 Vibration Test

**Test Spec:**

Test method: Non-Operation  
Acceleration: 1.5G , sine wave  
Frequency: 10 - 500Hz Random  
Sweep: 0.5 octave/minute in each of three mutually perpendicular axes.

### 8.2 Shock Test Spec:

**Test Spec:**

Test method: Non-Operation  
Acceleration: 180 G , Half sine wave  
Active time: 2 ms  
Pulse: Half sine wave

## 9. Reliability

| Subject                           | Description   |
|-----------------------------------|---|
| Operating High Temperature        | +50°C ,Dynamic ,250hr ,Humidity 20%   |
| Operating Low Temperature         | 0°C ,Dynamic ,250hr ,Humidity 20%   |
| Storage High Temperature          | +65°C ,Non_Operating ,250hr ,Humidity 20%   |
| Storage Low Temperature           | -20°C ,Non_Operating ,250hr   |
| High Temp &High Humidity          | +40°C ,Dynamic ,Humidity 95% ,250hr   |
| Temperature Cycling Non-Operating | -40°C to +65°C ,Ramp< 20°C /min, Duration at Temp. = 30 min, Test Cycles =50  |
| Altitude                          | Op(0~14000 ft)<br>Non-op (0~40000ft)  |
| MTBF                              | 200K hrs  |
| Storage Shock                     | 180g's, 2.0 ms, Half Sine Wave ± 3 Axis ( +X, -X, +Y, -Y, +Z, -Z)<br>1Shocks per Direction  |
| Storage Vibration                 | 1.5 Grms, 30 min/side, PSD Spectrum Break Points, 26 Hz<br>G2/Hz=0.316, 50 Hz G2/Hz=0.007, 222 Hz G2/Hz=0.0018, 500Hz<br>G2/Hz=0.0001 |
| ESD                               | Contact : ±8 KV<br>Air : ±15 KV   |

**Note1:** According to EN61000-4-2, ESD class B: Some performance degradation allowed. No data lost. Self-recoverable. No hardware failures.

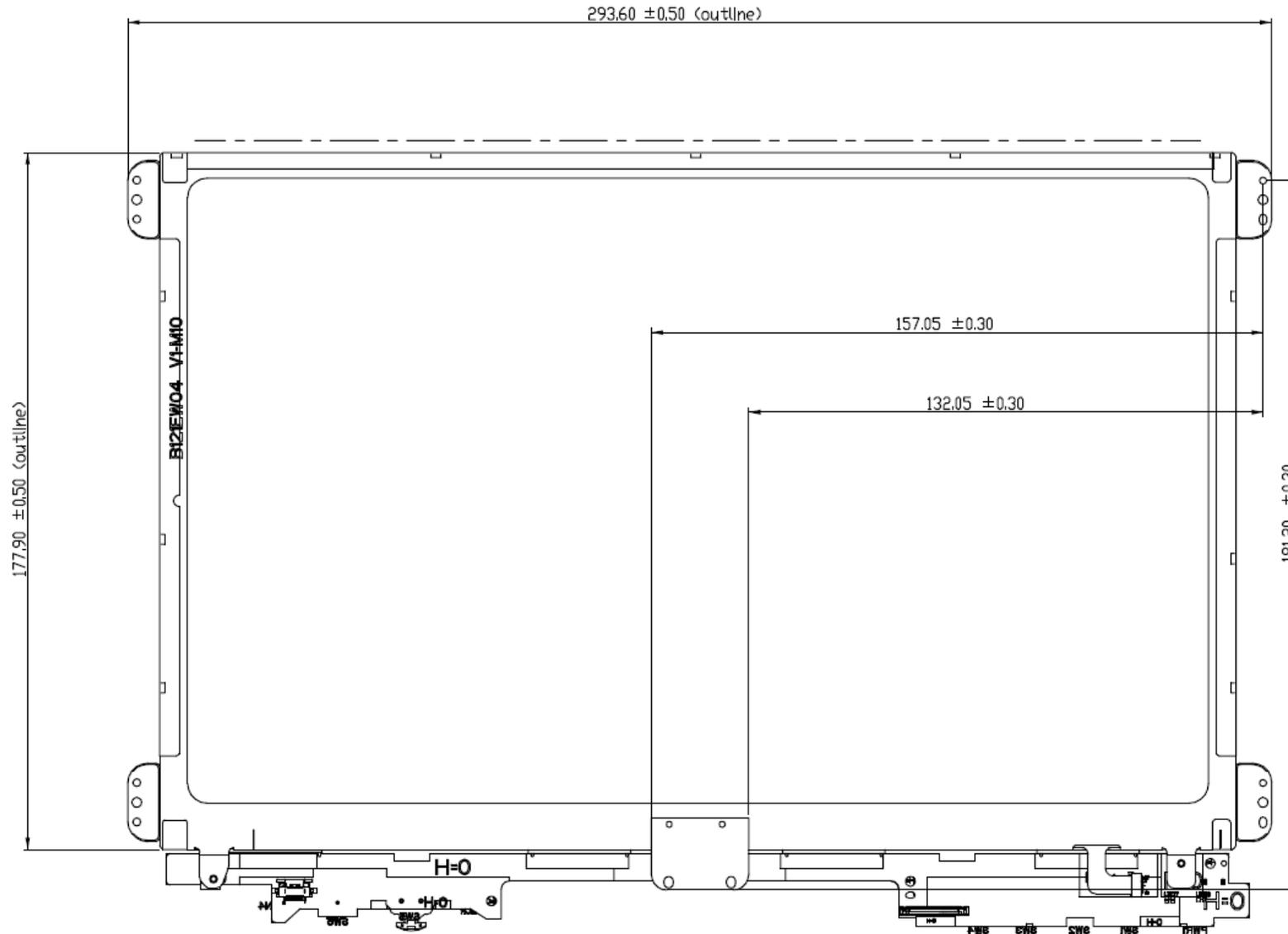
**Note2:** MTBF (Excluding the LED): 20,000 hours with a confidence level 90%.





# Product Specification

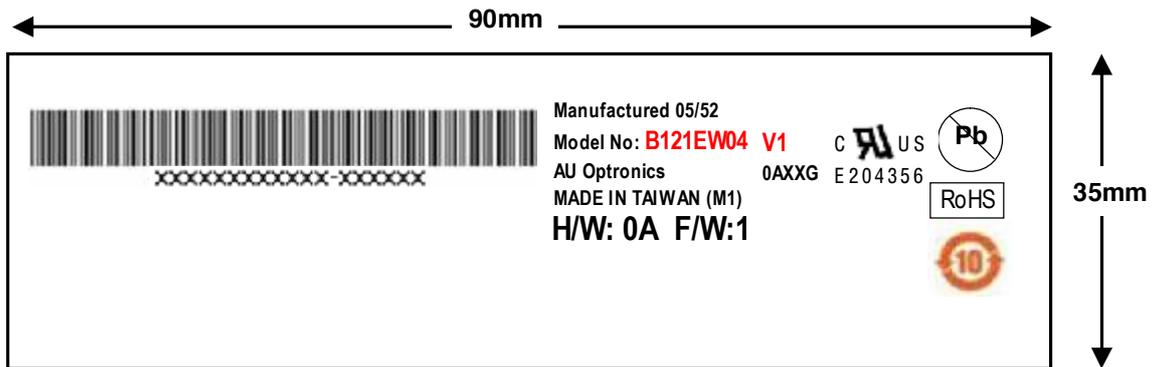
B121EW04 V1



## 11. Shipping and Package

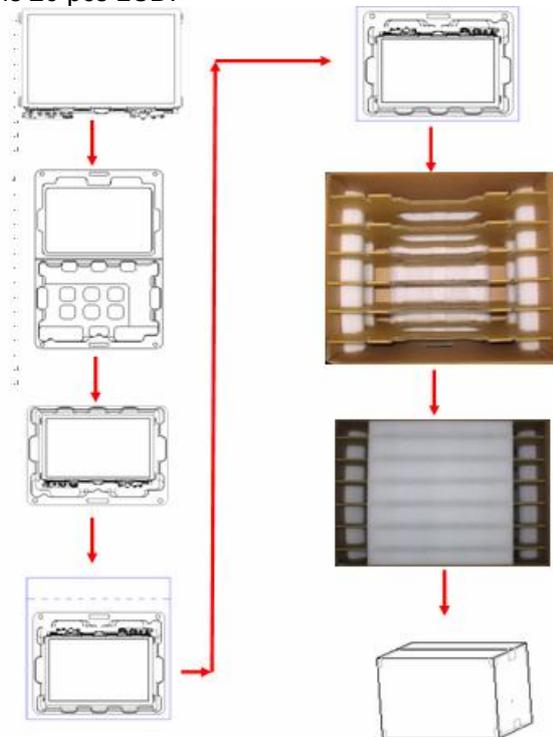
### 11.1 Shipping Label Format

AUO LCD S/N Label: This label records the model name, firmware/ hardware version, manufacture date, and serial number of the LCD in AUO.

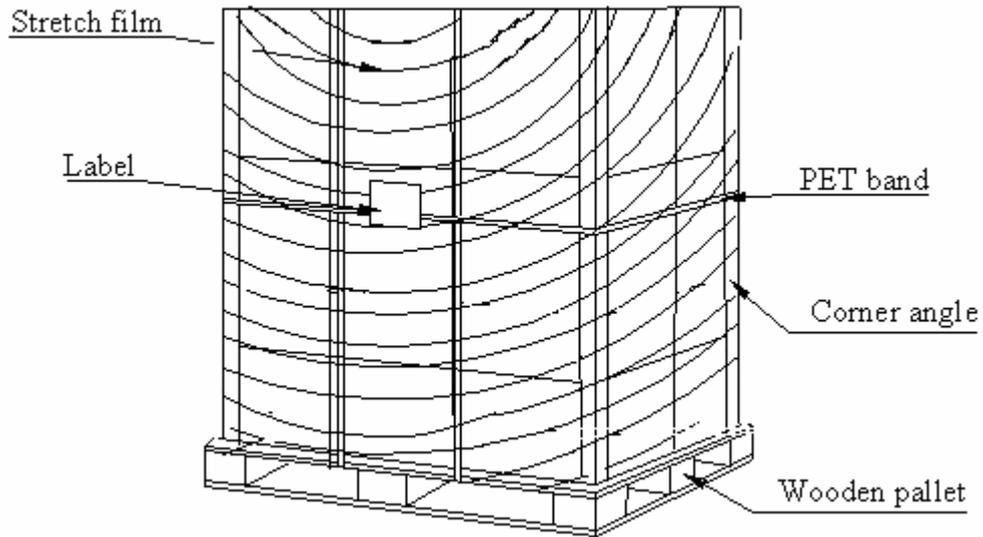


### 11.2. Carton package

The outside dimension of carton is 423(L)mm\* 374(W)mm\* 335(H)mm, carton and cushion weight are 1800g. Maximum quantity of each carton is 20 pcs LCD.



## 11.3 Shipping package of palletizing





## 12. Appendix: EDID description

| HEX | FUNCTION   |    |          |     |
|-----|--|----|----------|-----|
| 00  | Header   | 00 | 00000000 | 0   |
| 01  | Header   | FF | 11111111 | 255 |
| 02  | Header   | FF | 11111111 | 255 |
| 03  | Header   | FF | 11111111 | 255 |
| 04  | Header   | FF | 11111111 | 255 |
| 05  | Header   | FF | 11111111 | 255 |
| 06  | Header   | FF | 11111111 | 255 |
| 07  | Header   | 00 | 00000000 | 0   |
| 08  | EISA manufacture code = 3 Character ID                               | 06 | 00000110 | 6   |
| 09  | EISA manufacture code (Compressed ASCII)                             | AF | 10101111 | 175 |
| 0A  | Panel Supplier Reserved – Product Code                               | 14 | 00010100 | 20  |
| 0B  | Panel Supplier Reserved – Product Code                               | 42 | 01000010 | 66  |
| 0C  | LCD module Serial No - Preferred but Optional (“0” if not used)      | 00 | 00000000 | 0   |
| 0D  | LCD module Serial No - Preferred but Optional (“0” if not used)      | 00 | 00000000 | 0   |
| 0E  | LCD module Serial No - Preferred but Optional (“0” if not used)      | 00 | 00000000 | 0   |
| 0F  | LCD module Serial No - Preferred but Optional (“0” if not used)      | 00 | 00000000 | 0   |
| 10  | Week of manufacture  | 01 | 00000001 | 1   |
| 11  | Year of manufacture  | 11 | 00010001 | 17  |
| 12  | EDID structure version # = 1   | 01 | 00000001 | 1   |
| 13  | EDID revision # = 3  | 03 | 00000011 | 3   |
| 14  | Video I/P definition = Digital I/P (80h)                             | 80 | 10000000 | 128 |
| 15  | Max H image size = (Rounded to cm)                                   | 1A | 00011010 | 26  |
| 16  | Max V image size = (Rounded to cm)                                   | 10 | 00010000 | 16  |
| 17  | Display gamma = (gamma ×100)-100<br>Example: ( 2.2×100 ) – 100 = 120 | 78 | 01111000 | 120 |
| 18  | Feature support ( no DPMS, Active off, RGB, timing BLK 1)            | 0A | 00001010 | 10  |
| 19  | Red/Green Low bit (RxRy/GxGy)  | 89 | 10001001 | 137 |
| 1A  | Blue/White Low bit (BxBY/WxWy)                                       | E5 | 11100101 | 229 |



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|    |  |    |          |     |
|----|--|----|----------|-----|
| 1B | Red X  | 94 | 10010100 | 148 |
| 1C | Red Y  | 57 | 01010111 | 87  |
| 1D | Green X  | 54 | 01010100 | 84  |
| 1E | Green Y  | 93 | 10010011 | 147 |
| 1F | Blue X   | 27 | 00100111 | 39  |
| 20 | Blue Y   | 22 | 00100010 | 34  |
| 21 | White X  | 50 | 01010000 | 80  |
| 22 | White Y  | 54 | 01010100 | 84  |
| 23 | Established timings 1 (00h if not used)                        | 00 | 00000000 | 0   |
| 24 | Established timings 2 (00h if not used)                        | 00 | 00000000 | 0   |
| 25 | Manufacturer's timings (00h if not used)                       | 00 | 00000000 | 0   |
| 26 | Standard timing ID1 (01h if not used)                          | 01 | 00000001 | 1   |
| 27 | Standard timing ID1 (01h if not used)                          | 01 | 00000001 | 1   |
| 28 | Standard timing ID2 (01h if not used)                          | 01 | 00000001 | 1   |
| 29 | Standard timing ID2 (01h if not used)                          | 01 | 00000001 | 1   |
| 2A | Standard timing ID3 (01h if not used)                          | 01 | 00000001 | 1   |
| 2B | Standard timing ID3 (01h if not used)                          | 01 | 00000001 | 1   |
| 2C | Standard timing ID4 (01h if not used)                          | 01 | 00000001 | 1   |
| 2D | Standard timing ID4 (01h if not used)                          | 01 | 00000001 | 1   |
| 2E | Standard timing ID5 (01h if not used)                          | 01 | 00000001 | 1   |
| 2F | Standard timing ID5 (01h if not used)                          | 01 | 00000001 | 1   |
| 30 | Standard timing ID6 (01h if not used)                          | 01 | 00000001 | 1   |
| 31 | Standard timing ID6 (01h if not used)                          | 01 | 00000001 | 1   |
| 32 | Standard timing ID7 (01h if not used)                          | 01 | 00000001 | 1   |
| 33 | Standard timing ID7 (01h if not used)                          | 01 | 00000001 | 1   |
| 34 | Standard timing ID8 (01h if not used)                          | 01 | 00000001 | 1   |
| 35 | Standard timing ID8 (01h if not used)                          | 01 | 00000001 | 1   |
| 36 | Pixel Clock/10,000 (LSB)                                       | E9 | 11101001 | 233 |
| 37 | Pixel Clock/10,000 (MSB)                                       | 1B | 00011011 | 27  |
| 38 | Horizontal Active (lower 8 bits)                               | 00 | 00000000 | 0   |
| 39 | Horizontal Blanking (Thbp) (lower 8 bits)                      | A8 | 10101000 | 168 |
| 3A | Horizontal Active/Horizontal blanking (Thbp) (upper4:4 bits)   | 50 | 01010000 | 80  |
| 3B | Vertical Active  | 20 | 00100000 | 32  |
| 3C | Vertical Blanking (Tvbp) (DE Blanking typ. for DE only panels) | 16 | 00010110 | 22  |
| 3D | Vertical Active: Vertical Blanking (Tvbp) (upper4:4 bits)      | 30 | 00110000 | 48  |



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|    |  |    |          |     |
|----|--|----|----------|-----|
| 3E | Horizontal Sync, Offset (Thfp)   | 30 | 00110000 | 48  |
| 3F | Horizontal Sync, Pulse Width   | 20 | 00100000 | 32  |
| 40 | Vertical Sync, Offset (Tvfp) Sync Width  | 36 | 00110110 | 54  |
| 41 | Horizontal Vertical Sync Offset/Width upper 2 bits   | 00 | 00000000 | 0   |
| 42 | Horizontal Image Size  | 05 | 00000101 | 5   |
| 43 | Vertical image Size  | A3 | 10100011 | 163 |
| 44 | Horizontal Image Size / Vertical image size  | 10 | 00010000 | 16  |
| 45 | Horizontal Border = 0 (Zero for Notebook LCD)  | 00 | 00000000 | 0   |
| 46 | Vertical Border = 0 (Zero for Notebook LCD)  | 00 | 00000000 | 0   |
|    | Non-interlaced, Normal, no stereo, Separate sync, H/V pol<br>Negatives, <b>DE only note: LSB is set to "1" if panel is<br/>DE-timing only. H/V can be ignored.</b> |    |          |     |
| 47 |  | 19 | 00011001 | 25  |
| 48 | Pixel Clock/10,000 (LSB)   | 00 | 00000000 | 0   |
| 49 | Pixel Clock/10,000 (MSB)   | 00 | 00000000 | 0   |
| 4A | Horizontal Active = xxxx pixels (lower 8 bits)   | 00 | 00000000 | 0   |
| 4B | Horizontal Blanking (Thbp) = xxxx pixels (lower 8 bits)  | 00 | 00000000 | 0   |
| 4C | Horizontal Active/Horizontal blanking (Thbp) (upper4:4 bits)   | 00 | 00000000 | 0   |
| 4D | Vertical Active = xxxx lines   | 00 | 00000000 | 0   |
|    | Vertical Blanking (Tvbp) = xxxx lines (DE Blanking typ. for DE<br>only panels)   |    |          |     |
| 4E |  | 00 | 00000000 | 0   |
| 4F | Vertical Active : Vertical Blanking (Tvbp) (upper4:4 bits)   | 00 | 00000000 | 0   |
| 50 | Horizontal Sync, Offset (Thfp) = xxxx pixels   | 00 | 00000000 | 0   |
| 51 | Horizontal Sync, Pulse Width = xxxx pixels   | 00 | 00000000 | 0   |
|    | Vertical Sync, Offset (Tvfp) = xx lines<br>Sync Width = xx lines   |    |          |     |
| 52 |  | 00 | 00000000 | 0   |
| 53 | Horizontal Vertical Sync Offset/Width upper 2 bits   | 00 | 00000000 | 0   |
| 54 | Horizontal Image Size =xxx mm  | 00 | 00000000 | 0   |
| 55 | Vertical image Size = xxx mm   | 00 | 00000000 | 0   |
| 56 | Horizontal Image Size / Vertical image size  | 00 | 00000000 | 0   |
| 57 | Horizontal Border = 0 (Zero for Notebook LCD)  | 00 | 00000000 | 0   |
| 58 | Vertical Border = 0 (Zero for Notebook LCD)  | 00 | 00000000 | 0   |
| 59 | Module "A" Revision = Example: 00, 01, 02, 03, etc.  | 00 | 00000000 | 0   |
| 5A | Flag   | 00 | 00000000 | 0   |
| 5B | Flag   | 00 | 00000000 | 0   |
| 5C | Flag   | 00 | 00000000 | 0   |
| 5D | Dummy Descriptor   | FE | 11111110 | 254 |



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|    |  |    |          |     |
|----|--|----|----------|-----|
| 5E | Flag   | 00 | 00000000 | 0   |
| 5F | Dell P/N 1 <sup>st</sup> Character   | 4B | 01001011 | 75  |
| 60 | Dell P/N 2 <sup>nd</sup> Character   | 58 | 01011000 | 88  |
| 61 | Dell P/N 3 <sup>rd</sup> Character   | 37 | 00110111 | 55  |
| 62 | Dell P/N 4 <sup>th</sup> Character   | 37 | 00110111 | 55  |
| 63 | Dell P/N 5 <sup>th</sup> Character   | 34 | 00110100 | 52  |
| 64 | LCD Supplier EEDID Revision #  | 01 | 00000001 | 1   |
| 65 | Manufacturer P/N   | 42 | 01000010 | 66  |
| 66 | Manufacturer P/N   | 31 | 00110001 | 49  |
| 67 | Manufacturer P/N   | 32 | 00110010 | 50  |
| 68 | Manufacturer P/N   | 31 | 00110001 | 49  |
| 69 | Manufacturer P/N   | 45 | 01000101 | 69  |
| 6A | Manufacturer P/N   | 57 | 01010111 | 87  |
| 6B | Manufacturer P/N (If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h) | 34 | 00110100 | 52  |
| 6C | Flag   | 00 | 00000000 | 0   |
| 6D | Flag   | 00 | 00000000 | 0   |
| 6E | Flag   | 00 | 00000000 | 0   |
| 6F | Data Type Tag:   | FE | 11111110 | 254 |
| 70 | Flag   | 00 | 00000000 | 0   |
| 71 | SMBUS Value  | 0B | 00001011 | 11  |
| 72 | SMBUS Value  | 13 | 00010011 | 19  |
| 73 | SMBUS Value  | 1B | 00011011 | 27  |
| 74 | SMBUS Value  | 21 | 00100001 | 33  |
| 75 | SMBUS Value  | 43 | 01000011 | 67  |
| 76 | SMBUS Value  | 7A | 01111010 | 122 |
| 77 | SMBUS Value  | A6 | 10100110 | 166 |
| 78 | SMBUS Value = max nits (Typically = 00h)   | FF | 11111111 | 255 |
| 79 | Number of LVDS receiver chips = '01' or '02'   | 01 | 00000001 | 1   |
| 7A | BIST Enable: Yes = '01' No = '00'  | 01 | 00000001 | 1   |
| 7B | (If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)                  | 0A | 00001010 | 10  |
| 7C | (If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)                  | 20 | 00100000 | 32  |
| 7D | (If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)                  | 20 | 00100000 | 32  |



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|           |   |    |          |     |
|-----------|---|----|----------|-----|
| <b>7E</b> | Extension flag (# of optional 128 EDID extension blocks to follow, Typ = 0) | 00 | 00000000 | 0   |
| <b>7F</b> | Checksum (The 1-byte sum of all 128 bytes in this EDID block shall = 0)     | D3 | 11010011 | 211 |