



# LITEMAX SSD2825 V3

## Spaxpixel

### 28" LED B/L LCD

### User Manual

(1st Edition 2013/7/23)

All information is subject to change without notice.

| Approved by | Checked by | Prepared by |
|-------------|------------|-------------|
|             |            |             |

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**RECORD OF REVISION**

| Version and Date | Page | Old Description | New Description | Remark |
|------------------|------|-----------------|-----------------|--------|
| Jul,23,2013      | all  |                 | Initial Release |        |
|                  |      |                 |                 |        |
|                  |      |                 |                 |        |
|                  |      |                 |                 |        |
|                  |      |                 |                 |        |
|                  |      |                 |                 |        |



## 1.0 GENERAL DESCRIPTION

SSD2825 V3 is an innovative ultra-wide, LED backlight LCD display. It provides LCD panel with specific ratios for digital signage, public transportation, exhibition hall, department store, vending machine and industrial applications.

## 1.1 FEATURES

- Resizing LCD
- Ultra Wide Screen (16 : 3)
- LED Backlight
- High Brightness 1000nits
- Low Power Consumption
- Wide Viewing Angle
- High Uniformity
- Wide Dimming
- Life Expectancy

## 1.2 GENERAL SPECIFICATIONS

| Model No.               | SSD2825 V3                                          |
|-------------------------|-----------------------------------------------------|
| Description             | 28" Resizing LCD, 1000nits, LED backlight, 1366x254 |
| Display Area            | 697.7 x 129.7 mm                                    |
| Brightness              | 1000nits                                            |
| Resolution              | 1366 x 254                                          |
| Aspect Ratio            | 16 : 3                                              |
| Contrast Ratio          | 3000:1                                              |
| Pixel Pitch (mm)        | 0.51 x 0.51                                         |
| Viewing Angle           | 178°(H), 178°(V)                                    |
| Display Colors          | 16.7M                                               |
| Response Time (Typical) | 6.5 ms                                              |
| Power Consumption       | 28W                                                 |
| Dimensions (mm)         | 745.6x183.3x51.5mm (w/o Handle)                     |
| Weight (Net)            | 5.8Kg                                               |

### 1.3 ABSOLUTE MAXIMUM RATINGS

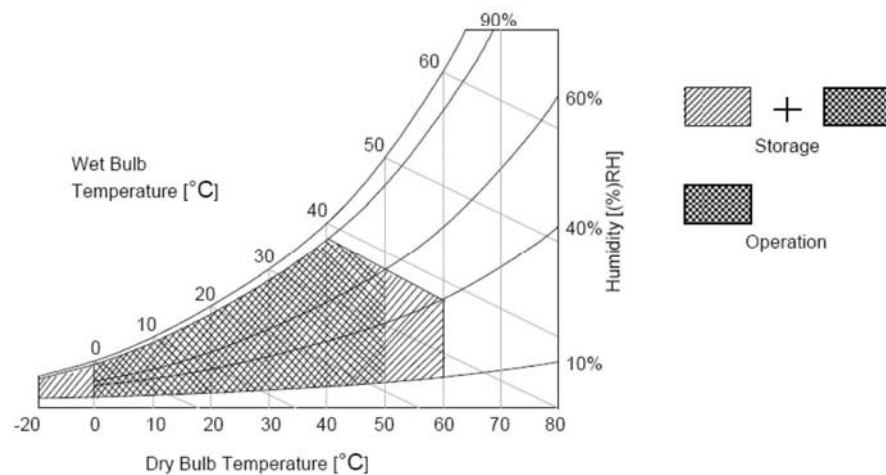
| Item                      | Symbol | Min  | Max | Unit   | Conditions |
|---------------------------|--------|------|-----|--------|------------|
| Logic/LCD Drive Voltage   | Vcc    | -0.3 | 14  | [Volt] | Note 1     |
| Input Voltage of Signal   | Vin    | -0.3 | 4   | [Volt] | Note 1     |
| Operating Temperature     | TOP    | 0    | +50 | [°C]   | Note 2     |
| Operating Humidity        | HOP    | 10   | 80  | [%RH]  | Note 2     |
| Storage Temperature       | TST    | -20  | +60 | [°C]   | Note 2     |
| Storage Humidity          | HST    | 10   | 90  | [%RH]  | Note 2     |
| Panel Surface Temperature | PST    |      | 65  | [°C]   | Note 3     |

Note 1: Duration:50 msec.

Note 2 : Maximum Wet-Bulb should be 39°C and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40°C or less. At temperatures greater than 40°C, the wet bulb temperature must not exceed 39°C.

Note 3: Surface temperature is measured at 50°C Dry condition



## 2.0 Electrical characteristics

## DC Characteristics

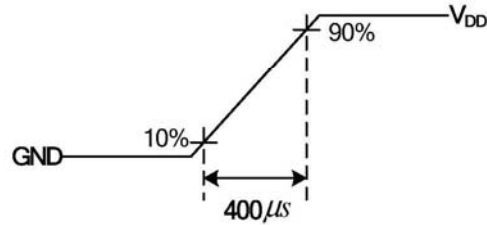
| Parameter                                        |                                           | Symbol                    | Value |      |                      | Unit                | Note |
|--------------------------------------------------|-------------------------------------------|---------------------------|-------|------|----------------------|---------------------|------|
|                                                  |                                           |                           | Min.  | Typ. | Max                  |                     |      |
| LCD                                              |                                           |                           |       |      |                      |                     |      |
| Power Supply Input Voltage                       |                                           | V <sub>DD</sub>           | 10.8  | 12   | 13.2                 | V <sub>DC</sub>     |      |
| Power Supply Input Current                       |                                           | I <sub>DD</sub>           | --    | 0.39 | 0.53                 | A                   | 1    |
| Power Consumption                                |                                           | P <sub>C</sub>            | --    | 4.68 | 5.28                 | Watt                | 1    |
| Inrush Current                                   |                                           | I <sub>RUSH</sub>         | --    | --   | 3                    | A                   | 2    |
| Permissible Ripple of Power Supply Input Voltage |                                           | V <sub>RP</sub>           | --    | --   | V <sub>DD</sub> * 5% | mV <sub>pk-pk</sub> | 3    |
| LVDS<br>Interface                                | Input Differential Voltage                | V <sub>ID</sub>           | 200   | 400  | 600                  | mV <sub>DC</sub>    | 4    |
|                                                  | Differential Input High Threshold Voltage | V <sub>TH</sub>           | +100  | --   | +300                 | mV <sub>DC</sub>    | 4    |
|                                                  | Differential Input Low Threshold Voltage  | V <sub>TL</sub>           | -300  | --   | -100                 | mV <sub>DC</sub>    | 4    |
|                                                  | Input Common Mode Voltage                 | V <sub>ICM</sub>          | 1.1   | 1.25 | 1.4                  | V <sub>DC</sub>     | 4    |
| CMOS<br>Interface                                | Input High Threshold Voltage              | V <sub>IH</sub><br>(High) | 2.7   | --   | 3.3                  | V <sub>DC</sub>     | 6    |
|                                                  | Input Low Threshold Voltage               | V <sub>IL</sub><br>(Low)  | 0     | --   | 0.6                  | V <sub>DC</sub>     | 6    |

## AC Characteristics

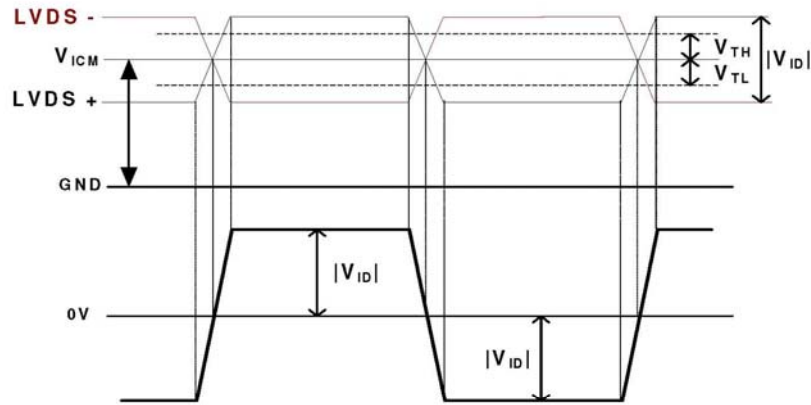
| Parameter      |                                                              | Symbol  | Value        |          |             | Unit | Note |
|----------------|--------------------------------------------------------------|---------|--------------|----------|-------------|------|------|
|                |                                                              |         | Min.         | Typ.     | Max         |      |      |
| LVDS interface | Receiver Clock : Spread Spectrum Modulation range            | Fclk_ss | Fclk<br>-3%  | --       | Fclk<br>+3% | MHz  | 8    |
|                | Receiver Clock : Spread Spectrum Modulation frequency        | Fss     | 30           | --       | 200         | KHz  | 8    |
|                | Receiver Data Input Margin<br>Fclk = 85 MHz<br>Fclk = 65 MHz | tRMG    | -0.4<br>-0.5 | --<br>-- | 0.4<br>0.5  | ns   | 9    |

**Note :**

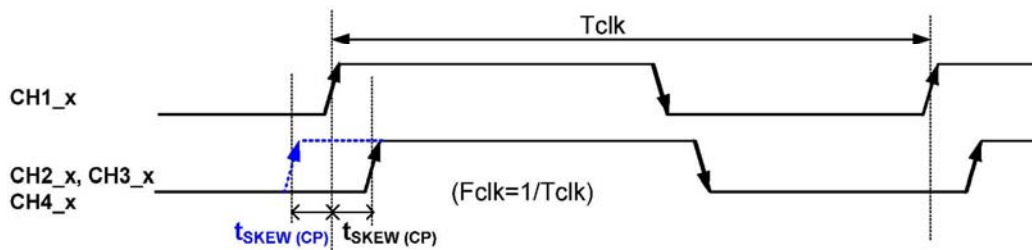
1.  $V_{DD} = 12.0V$ ,  $F_v = 60Hz$ ,  $F_{clk} = \text{Max freq.}$ ,  $25^\circ C$ , Test Pattern : White Pattern
2. Measurement condition : Rising time =  $400\mu s$



3. Test Condition:
  - (1) The measure point of  $V_{RP}$  is in LCM side after connecting the System Board and LCM.
  - (2) Under Max. Input current spec. condition.
4.  $V_{ICM} = 1.25V$

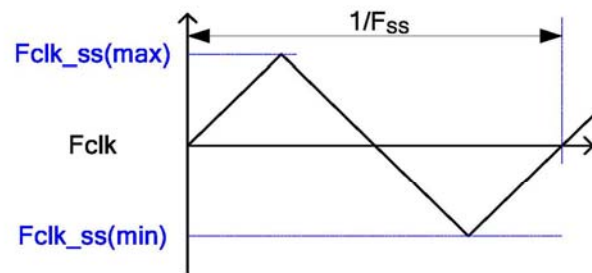


5. The measure points of  $V_{IH}$  and  $V_{IL}$  are in LCM side after connecting the System Board and LCM.
6. Input Channel Pair Skew Margin



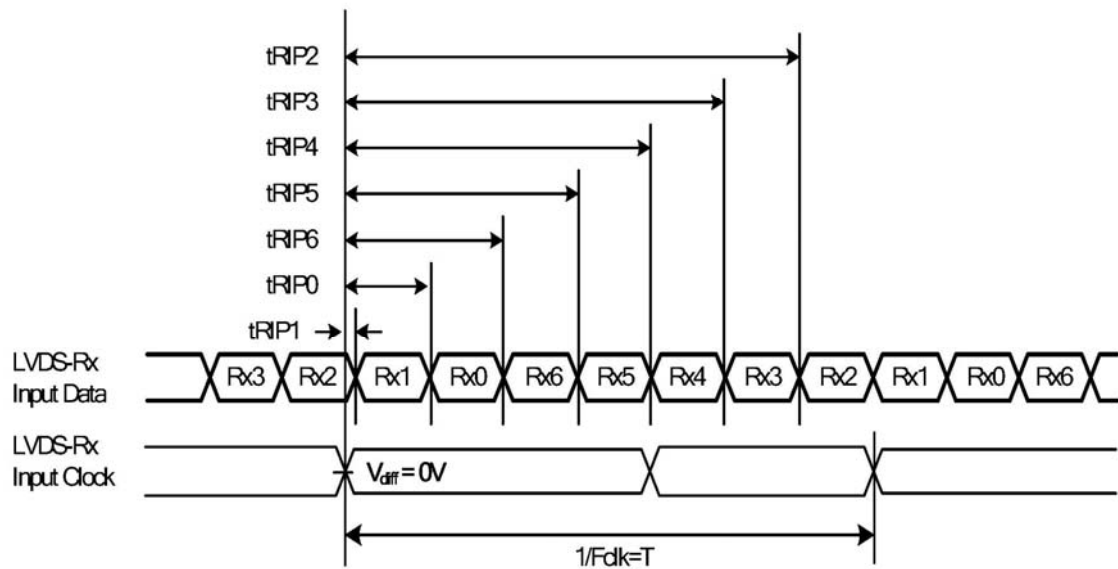
Note:  $x = 0, 1, 2, 3, 4$

7. LVDS Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures



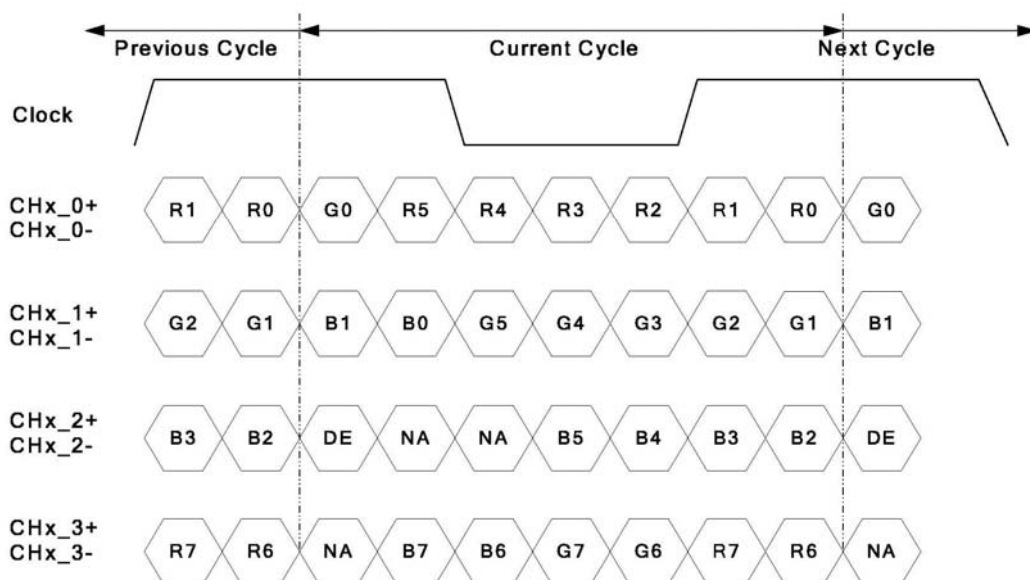
8. Receiver Data Input Margin

| Parameter             | Symbol | Rating        |        |               | Unit | Note       |
|-----------------------|--------|---------------|--------|---------------|------|------------|
|                       |        | Min           | Type   | Max           |      |            |
| Input Clock Frequency | Fclk   | Fclk (min)    | --     | Fclk (max)    | MHz  | $T=1/Fclk$ |
| Input Data Position0  | tRIP1  | - tRMG        | 0      | tRMG          | ns   |            |
| Input Data Position1  | tRIP0  | $T/7- tRMG $  | $T/7$  | $T/7+ tRMG $  | ns   |            |
| Input Data Position2  | tRIP6  | $2T/7- tRMG $ | $2T/7$ | $2T/7+ tRMG $ | ns   |            |
| Input Data Position3  | tRIP5  | $3T/7- tRMG $ | $3T/7$ | $3T/7+ tRMG $ | ns   |            |
| Input Data Position4  | tRIP4  | $4T/7- tRMG $ | $4T/7$ | $4T/7+ tRMG $ | ns   |            |
| Input Data Position5  | tRIP3  | $5T/7- tRMG $ | $5T/7$ | $5T/7+ tRMG $ | ns   |            |
| Input Data Position6  | tRIP2  | $6T/7- tRMG $ | $6T/7$ | $6T/7+ tRMG $ | ns   |            |



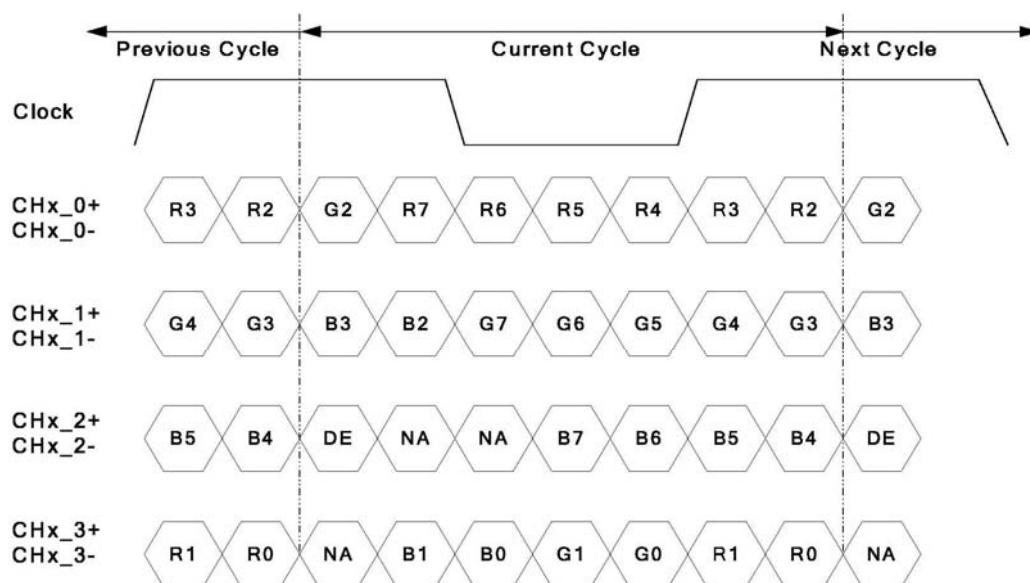


## LVDS Option = High/Open→NS



Note: x = 1, 2, 3, 4...

## LVDS Option = Low→JEIDA



Note: x = 1, 2, 3, 4...

## Signal Timing Specification

This is the signal timing required at the input of the user connector. All of the interface signal timing should be satisfied with the following specifications for its proper operation.

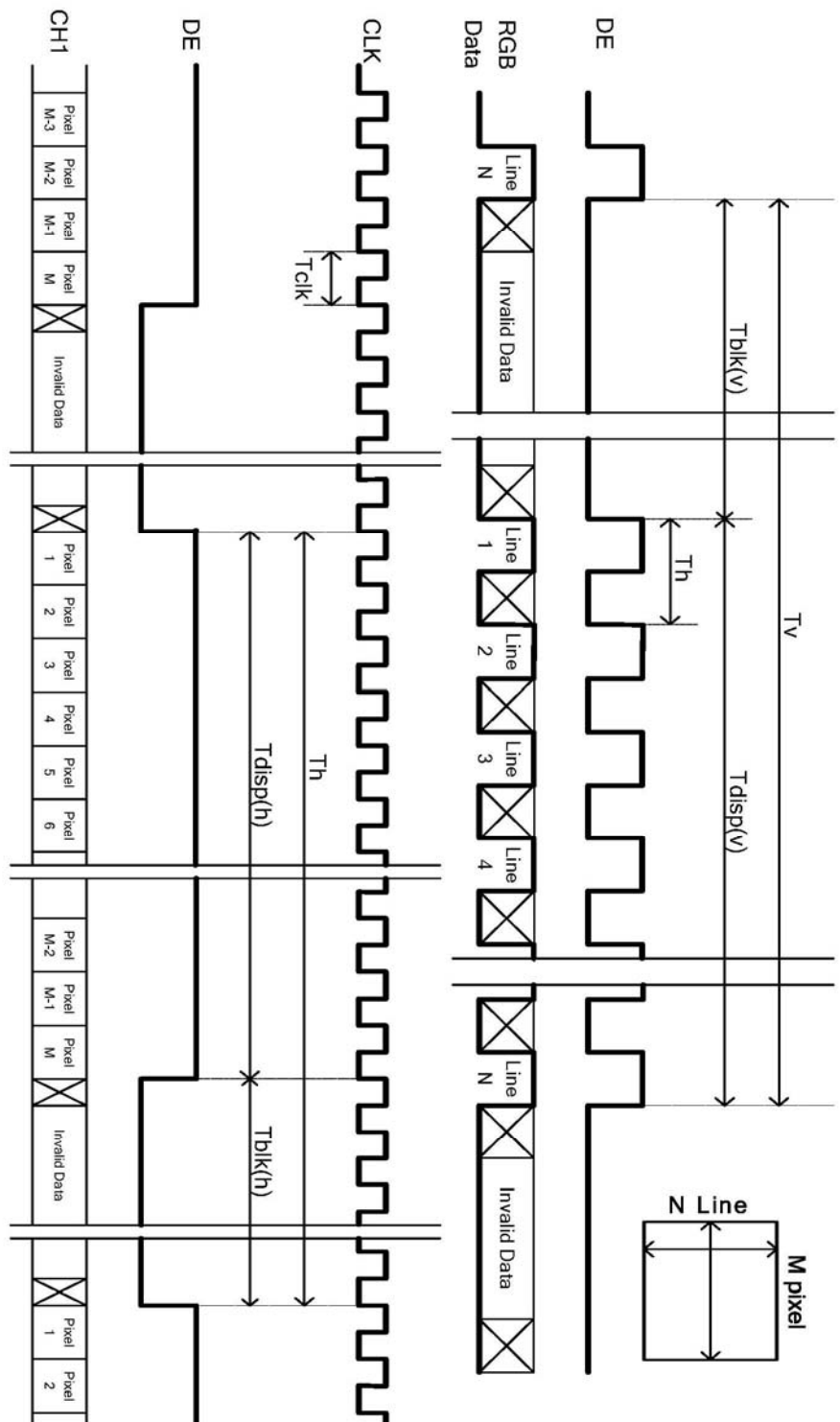
### Timing Table (DE only Mode)

| Signal               | Item      | Symbol      | Min. | Typ. | Max  | Unit |
|----------------------|-----------|-------------|------|------|------|------|
| Vertical Section     | Period    | Tv          | 788  | 810  | 1015 | Th   |
|                      | Active    | Tdisp (v)   | 768  |      |      |      |
|                      | Blanking  | Tblk (v)    | 20   | 42   | 247  | Th   |
| Horizontal Section   | Period    | Th          | 1460 | 1648 | 2000 | Tclk |
|                      | Active    | Tdisp (h)   | 1366 |      |      |      |
|                      | Blanking  | Tblk (h)    | 94   | 282  | 634  | Tclk |
| Clock                | Frequency | Fclk=1/Tclk | 53   | 80   | 86   | MHz  |
| Vertical Frequency   | Frequency | Fv          | 47   | 60   | 63   | Hz   |
| Horizontal Frequency | Frequency | Fh          | 43   | 48   | 53   | KHz  |

Notes:

- (1) 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.
- (2) 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 of 1<sup>st</sup> DE is displayed at the top line of screen.
- (3) If a period of DE "High" is less than 1366 DCLK or less than 768 lines, the rest of the screen displays black.
- (4) 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.

### Signal Timing Waveform

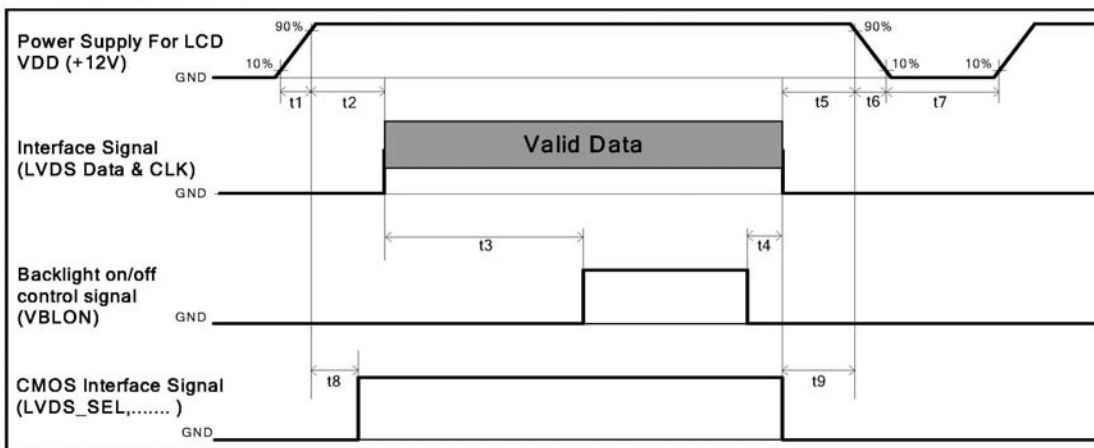


The brightness of each primary color (red, green and blue) is based on the 8 bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

**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  |
| R           | 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  |
| G           | 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  | 1  | 0  | 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  |
| B           | 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  | 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  |

### Power Sequence for LCD



| Parameter | Values           |       |                   | Unit |
|-----------|------------------|-------|-------------------|------|
|           | Min.             | Type. | Max.              |      |
| t1        | 0.4              | ---   | 30                | ms   |
| t2        | 0.1              | ---   | 50                | ms   |
| t3        | 450              | ---   | ---               | ms   |
| t4        | 0 <sup>*1</sup>  | ---   | ---               | ms   |
| t5        | 0                | ---   | ---               | ms   |
| t6        | ---              | ---   | --- <sup>*2</sup> | ms   |
| t7        | 500              | ---   | ---               | ms   |
| t8        | 10 <sup>*3</sup> | ---   | 50                | ms   |
| t9        | 0                | ---   | ---               | ms   |

Note:

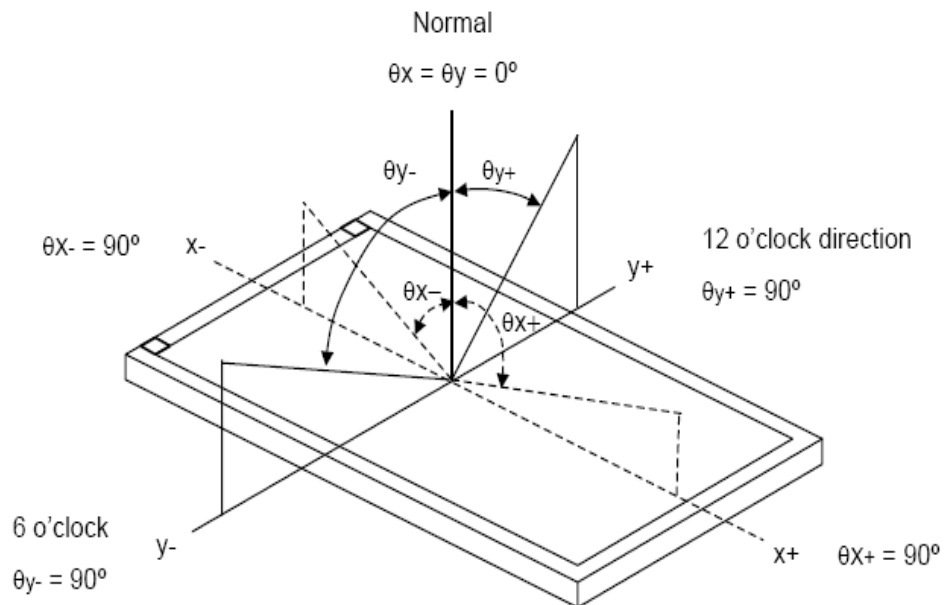
- (1)  $t_4=0$  : concern for residual pattern before BLU turn off.
- (2)  $t_6$  : voltage of VDD must decay smoothly after power-off. (customer system decide this value)
- (3) When CMOS Interface signal is N.C. (no connection), opened in Transmitted end,  $t_8$  timing spec can be negligible.

### 3.0 OPTICAL SPECIFICATION

| Item               |                           | Symbol      | Condition                            | Data   | Unit | Note                       |
|--------------------|---------------------------|-------------|--------------------------------------|--------|------|----------------------------|
| Color chromaticity | Red                       | Rx          | $\theta x=0$<br>$\theta y=0$<br>BM-7 | 0.650  | -    | Test Mode :<br>(1) (2) (3) |
|                    |                           | Ry          |                                      | 0.330  | -    |                            |
|                    | Green                     | Gx          |                                      | 0.290  | -    |                            |
|                    |                           | Gy          |                                      | 0.640  | -    |                            |
|                    | Blue                      | Bx          |                                      | 0.146  | -    |                            |
|                    |                           | By          |                                      | 0.047  | -    |                            |
|                    | White                     | Wx          |                                      | 0.272  | -    |                            |
|                    |                           | Wy          |                                      | 0.296  | -    |                            |
|                    | Center Luminance of White |             |                                      | Lc     | 1000 |                            |
| Uniform            |                           | Lu          | 80                                   | %      |      |                            |
| Contrast Ratio     |                           | CR          | $\theta x=0$                         | 3000:1 | -    | Test Mode :<br>(1) (4)     |
| Color Saturation   |                           | NTSC        | $\theta y=0$<br>Klein K-10           | 80     | %    |                            |
| Viewing Angle      | Horizontal                | $\theta x+$ | $CR \geq 10$                         | 89     | Deg  | Test Mode :<br>(1) (3)     |
|                    |                           | $\theta x-$ |                                      | 89     |      |                            |
|                    | Vertical                  | $\theta y+$ |                                      | 89     |      |                            |
|                    |                           | $\theta y-$ |                                      | 89     |      |                            |

#### Test Mode :

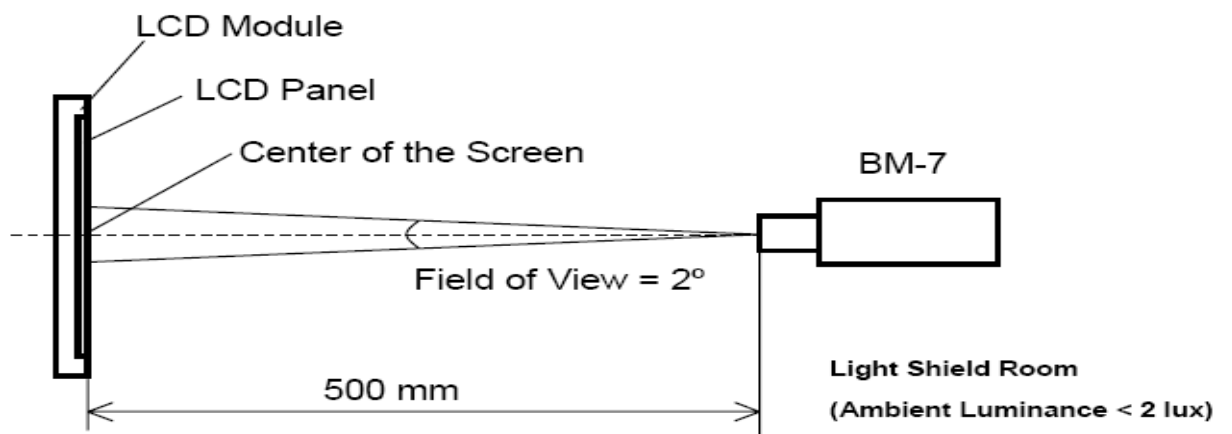
(1) Definition of Viewing Angle ( $\theta_x$ ,  $\theta_y$ ) :



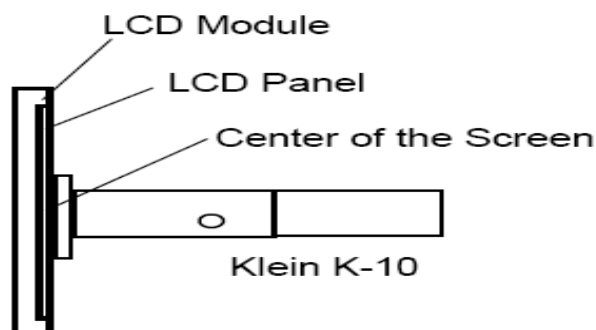
**(2) Definition of Test Point :**



### (3) **BM-7 Measurement Setup:**



#### (4) Klein K-10 Measurement Setup:



## 4.0 LED Driving Board Specifications

## LED Application

**This specification is applied to LED converter unit for 2825 V3 1000nits LED backlight**

## Operating Characteristics

| Item                               | Symbol | Conditions               | MIN.  | TYP.  | MAX.  | Unit | Remark  |
|------------------------------------|--------|--------------------------|-------|-------|-------|------|---------|
| Input Voltage                      | Vin    |                          | 10.0  | 12.0  | 14.0  | V    |         |
| Input Current<br>(Low Brightness)  | IinL   | VIN=12V,Vadj=5V          | 0.0   | ----- | ----- | mA   |         |
| Input Current<br>(High Brightness) | IinH   | VIN=12V,Vadj=0V          | 2.08  | 1.71  | 1.45  | A    |         |
| LED Current<br>(Low Brightness)    | IoutL  | VIN=12V,Vadj=5V          | 0.0   | ----- | ----- | Arms |         |
| LED Current<br>(High Brightness)   | IoutH  | VIN=12V,Vadj=0V          | 0.612 | 0.612 | 0.612 | A    |         |
| Working Frequency                  | Freq   | VIN=12V,Vadj=0V          | 575   | 625   | 675   | KHZ  |         |
| Brightness Control                 | Vadj   | Connection of<br>Voltage | 0.5   | ----- | 4.8   | V    | Vadj±5% |
| ON/OFF Control                     | Von/on | Normal Operation         | 2     | ----- | 5     | V    |         |
| Output Voltage                     | Vout   | VIN=12V,Vadj=0V          | 30.1  | 30.1  | 30.1  | V    |         |
| Efficiency                         | $\eta$ | VIN=12V,Vadj=0V          | 88.56 | 90.1  | 91.5  | %    |         |

## Connector Socket

**Input Connector: J1(JST B2B-PH-K-S or Compatible)**

• •

| PIN No | Symbol     | Description                       |
|--------|------------|-----------------------------------|
| 1      | Vin        | DC+12V                            |
| 2      | Vin        | DC+12V                            |
| 3      | Vin        | DC+12V                            |
| 4      | GND        | Ground                            |
| 5      | GND        | Ground                            |
| 6      | GND        | Ground                            |
| 7      | Brightness | Brightness Control 0.5V~4.8V      |
| 8      | Control    | ON/OFF Control 0.8V(OFF) 2~5V(ON) |

**Output Connector: J2,J3(JST S2B-EH or Compatible)**

□

□

| PIN NO | Symbol | Description           |
|--------|--------|-----------------------|
| 1      | Output | LED High Voltage( + ) |
| 2      | Output | LED Low Voltage ( - ) |

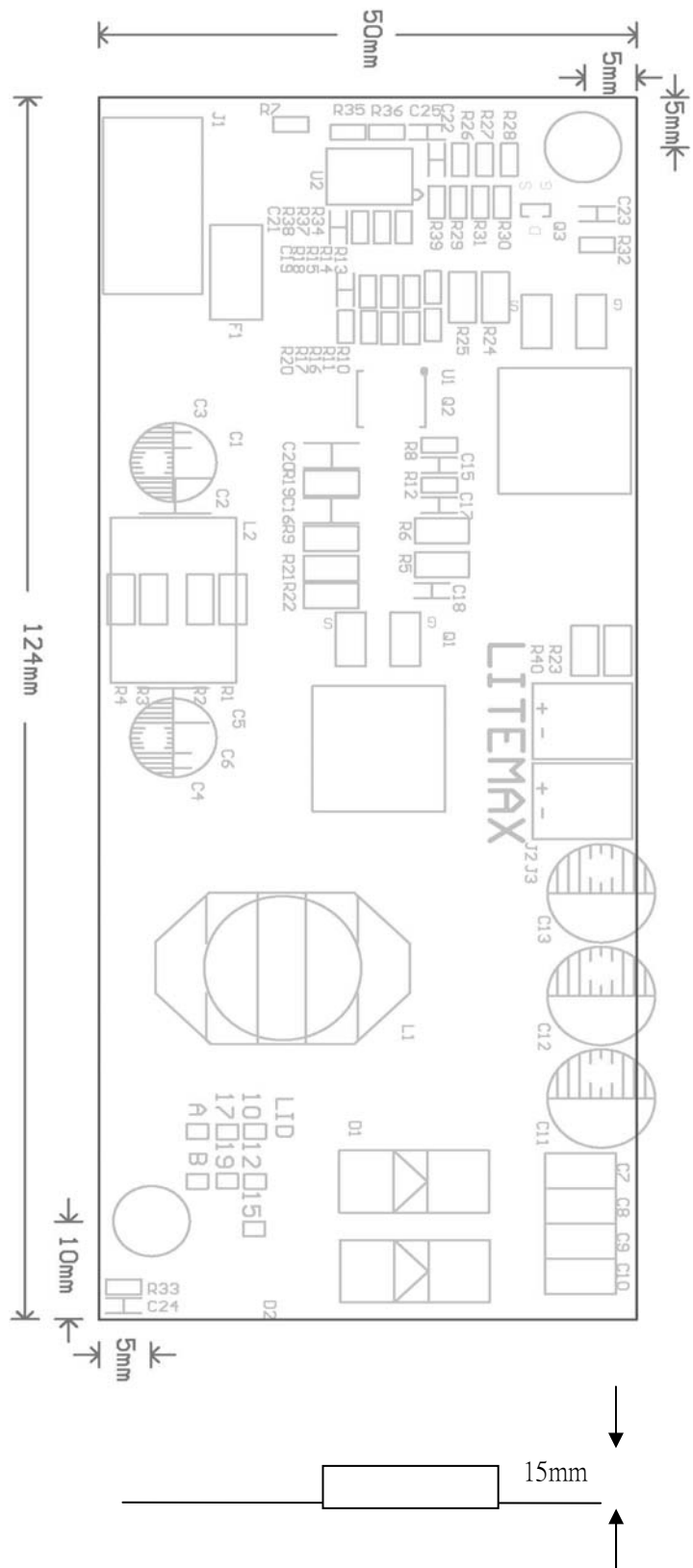
## Mechanical Characteristics

Dimension: 124mm\*50mm\*15mm

### INPUT CONNECTOR

J1:

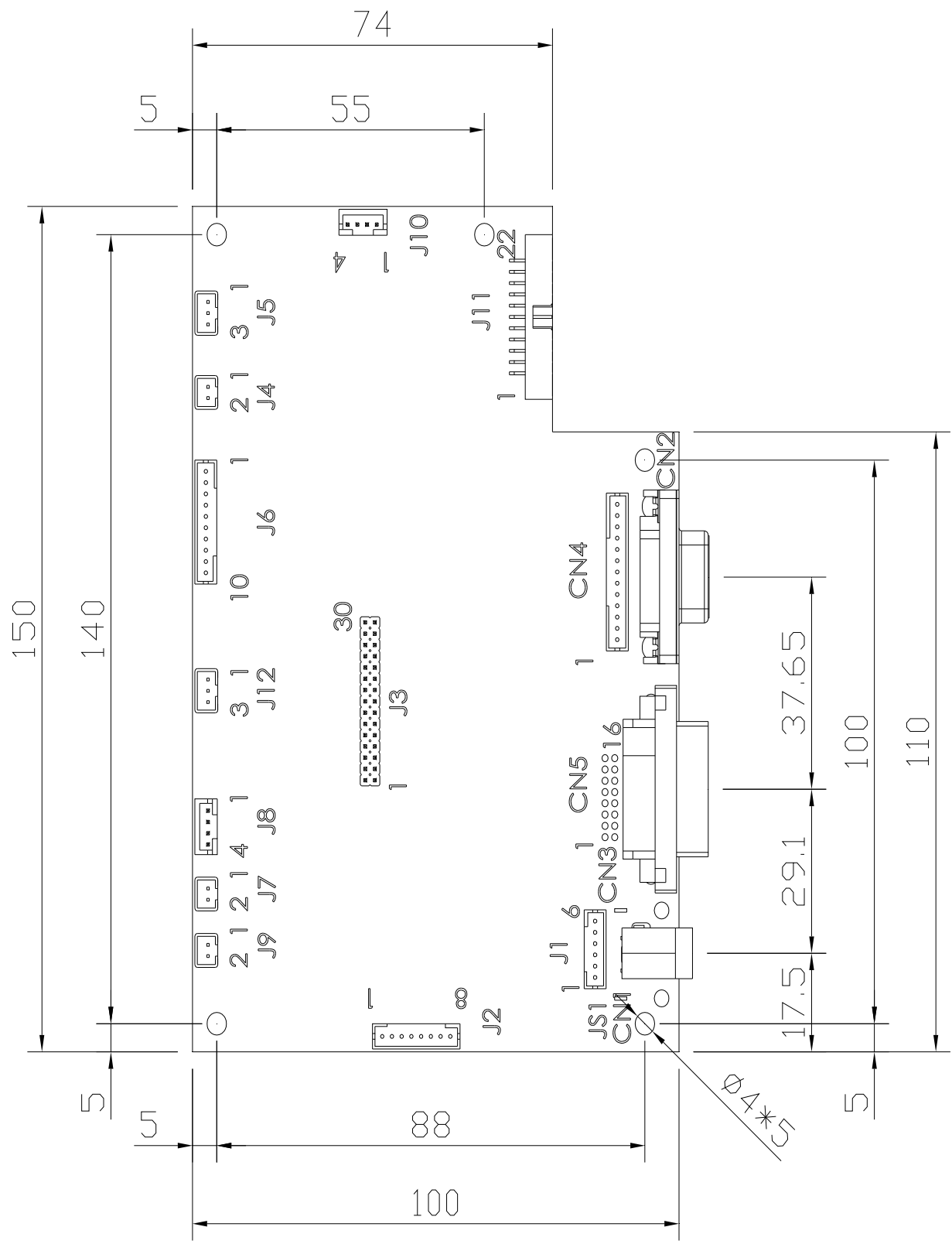
PIN1:VIN  
PIN2:VIN  
PIN3:VIN  
PIN4:GND  
PIN5:GND  
PIN6:GND  
PIN7:BRIGHTNESS  
PIN8:ON/OFF



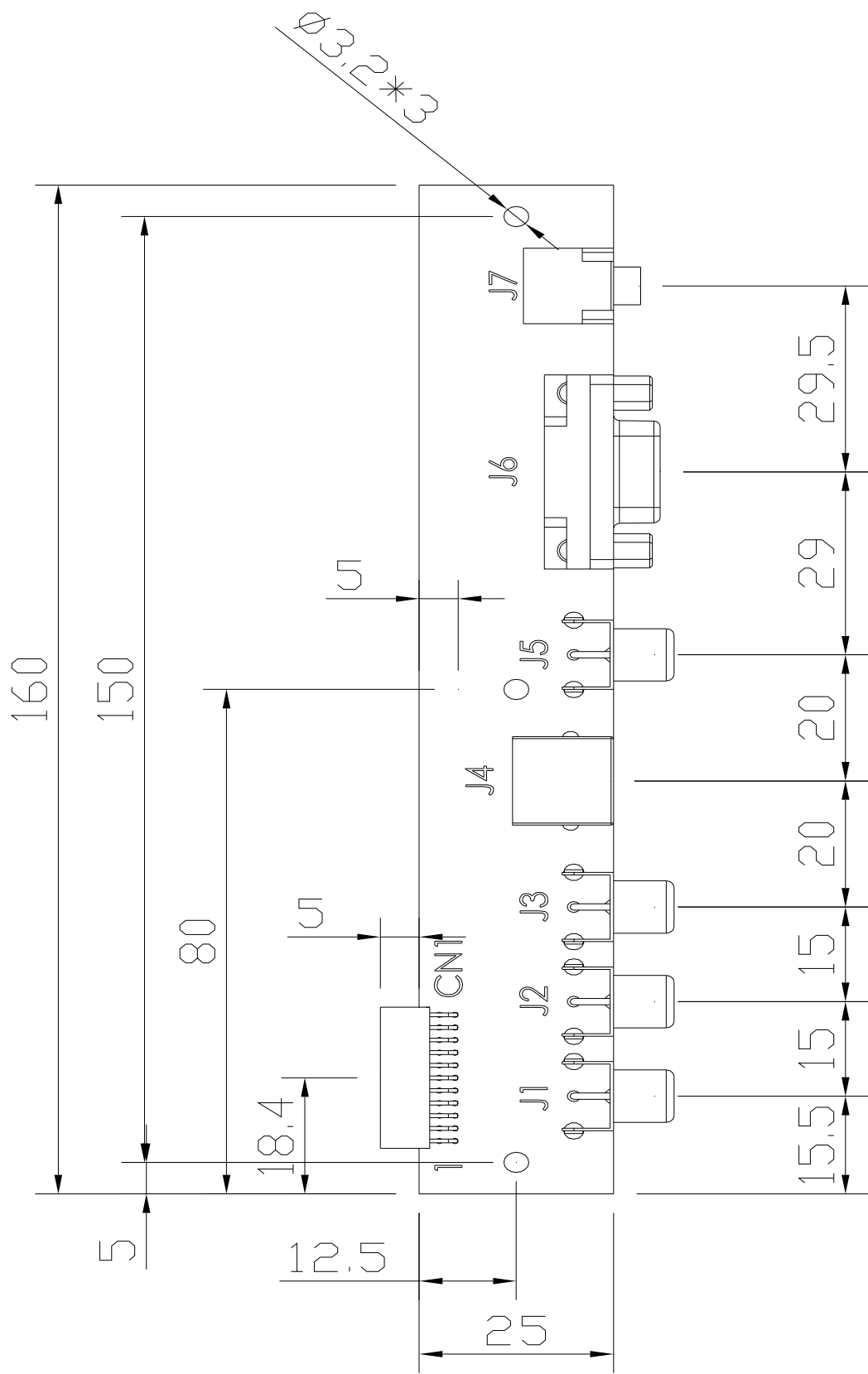


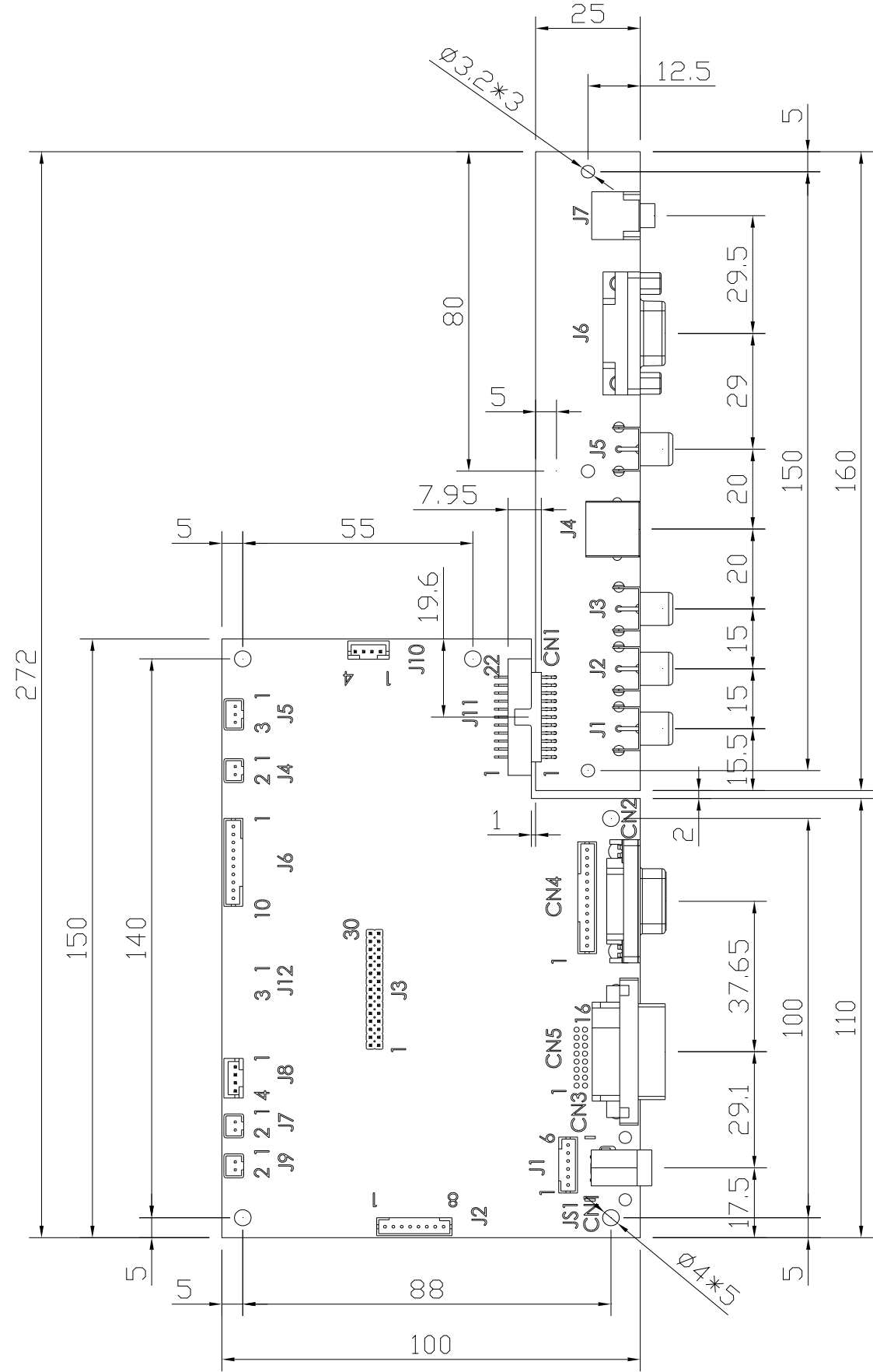
Outline Dimensions

AD2662GD 150mmX100mmX20mm



I/O BOARD 160mmX25mmX15mm





## AD2662 Board Pin Define

### J3: Panel connector

| Pin No. | Function | Pin No. | Function  |
|---------|----------|---------|-----------|
| 1       | RxO0+    | 16      | RxE1-     |
| 2       | RxO0-    | 17      | RxE2+     |
| 3       | RxO1+    | 18      | RxE2-     |
| 4       | RxO1-    | 19      | RxEC+     |
| 5       | RxO2+    | 20      | RxEC-     |
| 6       | RxO2-    | 24      | RxE3+     |
| 7       | RxOC+    | 22      | RxE3-     |
| 8       | RxOC-    | 23      | GND       |
| 9       | RxO3+    | 24      | GND       |
| 10      | RxO3-    | 25      | GND       |
| 11      | GND      | 26      | GND       |
| 12      | GND      | 27      | GND       |
| 13      | RxE0+    | 28      | PANEL-VCC |
| 14      | RxE0-    | 29      | PANEL-VCC |
| 15      | RxE1+    | 30      | PANEL-VCC |

### CN3: DVI-D INPUT Connector

| Pin No. | Function                | Pin No. | Function                | Pin No. | Function                |
|---------|-------------------------|---------|-------------------------|---------|-------------------------|
| 1       | T.M.D.S. Data2-         | 9       | T.M.D.S. Data1-         | 17      | T.M.D.S. Data0-         |
| 2       | T.M.D.S. Data2+         | 10      | T.M.D.S. Data1+         | 18      | T.M.D.S. Data0+         |
| 3       | T.M.D.S. Data2/4 Shield | 11      | T.M.D.S. Data1/3 Shield | 19      | T.M.D.S. Data0/5 Shield |
| 4       | T.M.D.S. Data4-         | 12      | T.M.D.S. Data3-         | 20      | T.M.D.S. Data5-         |
| 5       | T.M.D.S. Data4+         | 13      | T.M.D.S. Data3+         | 24      | T.M.D.S. Data5+         |
| 6       | DDC Clock               | 14      | +5V Power               | 22      | T.M.D.S. Clock Shield   |
| 7       | DDC Data                | 15      | Ground (for +5V)        | 23      | T.M.D.S. Clock+         |
| 8       | Not Connected           | 16      | Hot Plug Detect         | 24      | T.M.D.S. Clock-         |

**CN5: DVI-D Connector (16pin 2.0mm)**

| Pin No. | Function | Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|---------|----------|
| 1       | RX2-     | 7       | DDC_SDA  | 13      | GND      |
| 2       | RX2+     | 8       | DDC_SCL  | 14      | GND      |
| 3       | RX1-     | 9       | GND      | 15      | DVI HP   |
| 4       | RX1+     | 10      | GND      | 16      | DVI_5V   |
| 5       | RX0-     | 11      | RXC-     |         |          |
| 6       | RX0+     | 12      | RXC+     |         |          |

**CN2: Analog RGB Input connector (D-SUB 15Pin)**

| Pin No. | Symbol    | Description  | Pin No. | Symbol | Description     |
|---------|-----------|--------------|---------|--------|-----------------|
| 1       | RED       | Analog Red   | 9       | +5V    | +5VDDC          |
| 2       | GREEN     | Analog Green | 10      | SGND   | Sync GND        |
| 3       | BLUE      | Analog Blue  | 11      | NCD    | Reserved        |
| 4       | GND       | Reserved     | 12      | SDA    | DDC Serial Data |
| 5       | NC        | VGA_CAB      | 13      | HSYNC  | Horizontal Sync |
| 6       | RED_RTN   | Red Return   | 14      | VSYNC  | Vertical Sync   |
| 7       | GREEN_RTN | Green Return | 15      | SCL    | DDC Data Clock  |
| 8       | BLUE_RTN  | Blue Return  |         |        |                 |

**CN4: Analog RGB Input connector (13pin connector)**

| Pin No. | Symbol | Description     | Pin No. | Symbol | Description  |
|---------|--------|-----------------|---------|--------|--------------|
| 1       | SCL    | DDC Data Clock  | 8       | BGND   | Blue Return  |
| 2       | SDA    | DDC Serial Data | 9       | BLUE   | Analog Blue  |
| 3       | GND    | Reserved        | 10      | GGND   | Green Return |
| 4       | +5V    | +5VDDC          | 11      | GREEN  | Analog Green |
| 5       | GND    | Reserved        | 12      | RGND   | Red Return   |
| 6       | VSYNC  | Vertical Sync   | 13      | RED    | Analog Red   |
| 7       | HSYNC  | Horizontal Sync |         |        |              |

**JS1: Power DIN(12V)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | 12VDC    | 2       | 12VDC    |
| 3       | GND      | 4       | GND      |

**JS1: Power Jack (12V)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | 12VDC    | 2       | 12VDC    |

**J1: Power connector (12V) (6PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | 12VDC    | 4       | GND      |
| 2       | 12VDC    | 5       | GND      |
| 3       | 12VDC    | 6       | GND      |

**J8: Power connector (5V/12v)(4PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | 5VDC     | 2       | GND      |
| 3       | 12VDC    | 4       | GND      |

**J2: Inverter Connector(8PIN 2.0mm)**

| Pin No. | Symbol | Description      | Pin No. | Symbol | Description |
|---------|--------|------------------|---------|--------|-------------|
| 1       | ON/OFF | Backlight ON/OFF | 5       | GND    | GND         |
| 2       | BRIGHT | Dimming adjust   | 6       | 12VDC  | Input 12VDC |
| 3       | GND    | GND              | 7       | 12VDC  | Input 12VDC |
| 4       | GND    | GND              | 8       | 12VDC  | Input 12VDC |

**J7, J9: FAN (2PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | FAN(+)   | 2       | GND      |

**J6: Key Pad (9PIN 2.0mm)**

| Pin No. | Function  | Pin No. | Function |
|---------|-----------|---------|----------|
| 1       | POWER KEY | 6       | MENU KEY |
| 2       | GREEN LED | 7       | AUTO KEY |
| 3       | RED LED   | 8       | GND      |
| 4       | DOWN KEY  | 9       | GND      |
| 5       | UP KEY    |         |          |

**J10: Speaker Connector (4PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | SPK-R    | 2       | GND      |
| 3       | GND      | 4       | SPK-L    |

**J11 Extern Funtion Connector (11P X 2PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | Pb       | 2       | Y        |
| 3       | GND      | 4       | Pr       |
| 5       | GND      | 6       | SY       |
| 7       | GND      | 8       | SC       |
| 9       | GND      | 10      | AV       |
| 11      | GND      | 12      | GND      |
| 13      | TXD      | 14      | RXD      |
| 15      | GND      | 16      | GND      |
| 17      | GND      | 18      | GND      |
| 19      | Audio-L  | 20      | Audio-R  |
| 24      | GND      | 22      | GND      |

**J5: Ambient (3PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function   |
|---------|----------|---------|------------|
| 1       | 3.3VDC   | 2       | Sensor Out |

**J4: VR connector (3PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | 3,3VDC   | 2       | VR Out   |
| 3       | GND      |         |          |

**J12: IR Connector(3PIN 2.0mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | IR Out   | 3       | 3.3VDC   |
| 2       | GND      | 4       |          |

**JP1: PANEL VCC (3PIN 2.54mm)**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1-2     | 12V      | 5-6     | 3.3V     |
| 3-4     | 5V       |         |          |

## I/O BOARD Pin Define

### J1:Component Y

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | Y        | 2       | GND      |

### J2:Component Cb

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | Cb       | 2       | GND      |

### J3:Component Cr

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | Cr       | 2       | GND      |

### J4:S-Video

| Pin No. | Function  | Pin No. | Function    |
|---------|-----------|---------|-------------|
| 1       | GND       | 2       | GND         |
| 3       | Luminance | 4       | Chrominance |

### J5:Composite

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | Y        | 2       | GND      |

### J6:D-SUB9(RS232)

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | NC       | 2       | TXD      |
| 3       | RXD      | 4       | NC       |
| 5       | GND      | 6       | NC       |
| 7       | NC       | 8       | NC       |
| 9       | NC       |         |          |

### CN1:11P X 2 Connector

| Pin No. | Function     | Pin No. | Function     |
|---------|--------------|---------|--------------|
| 1       | Component Cb | 2       | Component Y  |
| 3       | GND          | 4       | Component Cr |
| 5       | GND          | 6       | S-Video Y    |
| 7       | GND          | 8       | S-Video C    |
| 9       | GND          | 10      | Composite    |
| 11      | GND          | 12      | GND          |
| 13      | TXD          | 14      | RXD          |
| 15      | GND          | 16      | GND          |
| 17      | GND          | 18      | GND          |
| 19      | Audio IN(L)  | 20      | Audio IN(R)  |

## IR Receive Board Pin Define

### **J1: IR Connector**

| Pin No. | Function | Pin No. | Function |
|---------|----------|---------|----------|
| 1       | DATA OUT | 2       | GND      |
| 3       | VCC      | 4       | NC       |

### DC Characteristics.

|                       |        |       |
|-----------------------|--------|-------|
| Power Consumption     | 10W    | Note1 |
| Operation Temperature | 0~70   | ℃     |
| Storage Temperature   | -20~85 | ℃     |

Note: These values are for the A/D board body.

## OSD menu

Here are some instructions for you to use the OSD (On Screen Display). By pressing the “menu”, you will see the below picture.

Timing shows resolution, H-frequency, and V-frequency of the panel. Version shows the firmware control version. This 2 information is not changeable by user.



There are 7 sub pages inside the OSD manual, Brightness, Signal select, Sound, Color, Image, Tools, and Exit. When you press “menu” button, you enter the “Brightness” sub page. You will see 5 selections:



press “menu”



press “menu”



press “menu”



### OSD Brightness:



press “right” key



press “menu” once, you can go into adjust the brightness. Press “left” you can dim down the brightness to “0”, while press “right” you can increase the brightness to “100”.



**Ambient light sensor:** press this Icon, must to accompany with Litemax ambient light sensor to auto dimming.(OPTION)



**Potentiometer:** press this icon, adjust VR function.(OPTION)



**Ambient light sensor with OSD offset:** press this Icon



Press ‘menu’ once, you can adjust min. luminance to fit your application (OPTION)

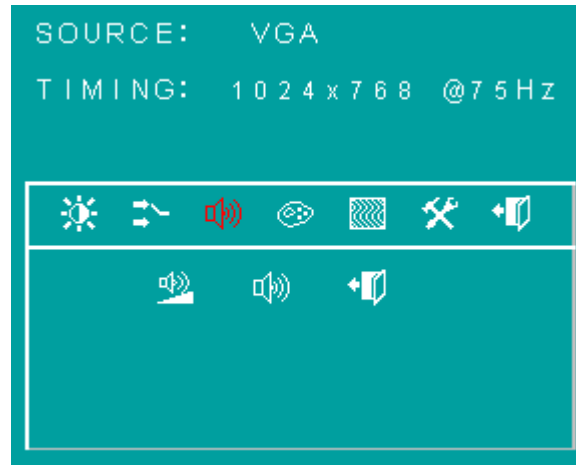


**Contrast:** Press “menu” and “right” you can adjust the contrast from “0” to “100” by pressing the “left” and “right”.



**Exit:** You can exit this sub menu back to normal screen.

## Sound:



There are 3 options for “Sound” sub page.



**Audio Volume:** Audio volume adjustment.



**Mute:** You can mute the speaker by pressing this option.



**Exit:** back to the normal screen.



**Auto Color:** by press this “Auto Color” option, you can get the optimal color performance.



**sRGB:** Windows standard color setting.



**Color Tempture:** You can have 3 options in this selection.



**Color Tempture User**



**Color Tempture\_6500K**



**Color Tempture\_9300K**

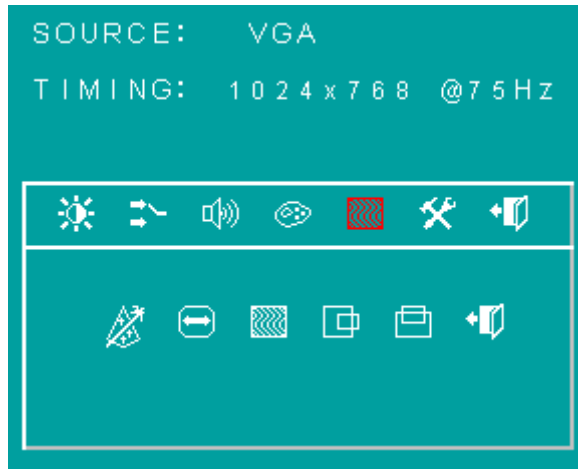
“user mode”, “6500K” (Warm color scheme), “9300K (Cold color scheme).  
Def ault is “user”, and inside all “R”, “G”, and “B” are set “100”



**Exit:** back to the normal screen.

**Image :**

Go into the “Image” page, you can see below picture.



**Auto just:** Pressing this option, the AD2662 will adjust the optimal frequency of horizontal and vertical. You will see “Auto tune....” On the screen for around 3 seconds.



**Clock:** If you are not satisfied about the Autotune result, you can adjust manually by “Clock”.

The screen will be “wider” if you adjust this function.



**Phase:** If you see “double image” on characters, you can adjust “Phase” to make it perfect image.



**HPos:** You can shift the screen horizontally by this function.



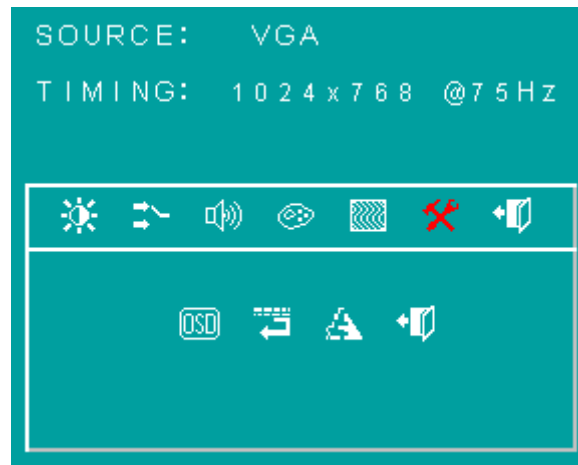
**Vpos:** You can shift the screen vertically by this function.



**Exit:** Back to normal screen.

## TOOLS :

On the “Tools” sub menu, you will see 4 icons.



**Osd Control:** Select this option, you will see 4 more options:



**Osd\_time:** You can selection the time of OSD from 2 sec. to 16 sec.

D



**Osd\_HPos:** You can move the OSD horizontally over the screen.



**Osd\_VPos:** You can move the OSD Vertically over the screen.



**Exit:** back to main menu.



**Factory\_Reset:** By pressing this, the screen will be back to the factory setting on very beginning and lost all the personal settings.



**Sharpness:** You can make the characters looks sharper.



**Exit**

**BURNIN MODE :**

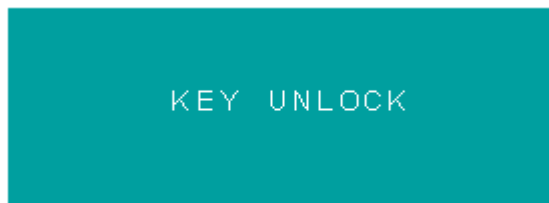
Factory Burn-in mode: While your VGA cable is connected on the monitor, press “Menu” and Left and Right “<” simultaneously, you will see “BURN IN MODE” on the center of the screen for 3 sec. Then unplug the VGA cable, the screen will show Red, Green, Blue, White, and Black in sequence automatically. You can plug in the VGA signal cable, and re-plug the power connector to exit the burn-in mode.

## KEY LOCK MODE :

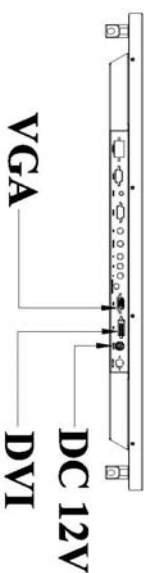
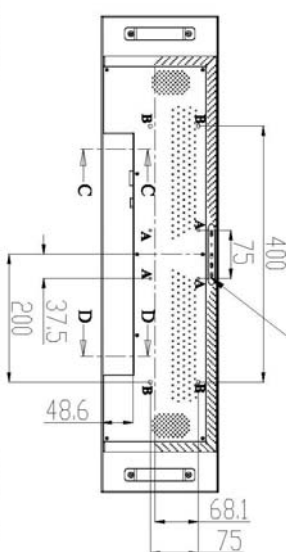
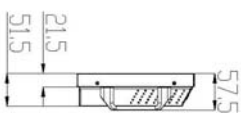
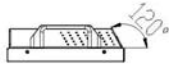
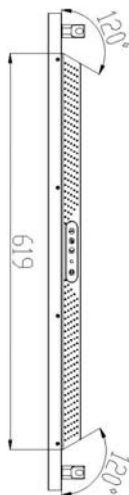
OSD Lock Function: It is possible to lock all the OSD buttons to prevent unauthorized changes to occur by pressing “Menu” and “right >” buttons simultaneously. You will see the “lock” icon below on the center of the screen for 3 seconds. If any button is pushed after the lock function is initiated, the below icon will appear on the screen.'



To release the OSD lock, press “Menu” and “Right >”. The below icon will appear on the center of the screen for 3 seconds. Now all OSD keys are active again.



**O.D. : Outline Dimension**  
**B.O. : Bezel Opening**  
**A.A. : LCD Active Area**  
**A : 4-M4\_SCREW\_Max Depth=5 mm**  
**B : 4-M6\_SCREW\_Max Depth=7 mm**



# MEMBRANE 4-KEY

**剖視圖 C-C**  
**Scale 2:1**

**剖視圖 D-D**  
**Scale 2:1**

## HANDLING PRECAUTIONS

(1) The module should be ass

- ## STORAGE PRECAUTIONS

## STORAGE PRECAUTIONS

- ## OPERATION PRECAUTIONS

## OPERATION PRECAUTIONS

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