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LITEMAX

SSD3805-I V3
Sunlight Readable 37.6” LED B/L LCD

User Manual

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Record of Revision

Version and Date	Page	Old Description	New Description	Remark
May/27/2016	all		Initial release	
June/19/2020	P4		Modify General Specifications	

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1 General Description

The SSD3805-I is a 37.6 inch color TFT-LCD display with special aspect ratio 16:4.5 and wide resolution 1920 x 540. It is Litemax's Spanpixel series product which designed for high brightness 1000 nits with power efficiency LED backlight. It provides LCD panel with specific aspect ratios and sunlight readable for digital signage, public transportation, exhibition hall, department store, and vending machine.

1.1 Features

- Resizing LCD
- Ultra-Wide Screen (16:4.5)
- High Brightness 1000 nits
- Sunlight Readable
- LED Backlight
- Low Power Consumption
- Slim Bezel
- BL MTBF: 100,000 hours

1.2 General Specifications

Model Name	SSD3805-I V3
Description	37.6" Resizing LCD, 1000 nits LED backlight, 1920x540
Screen Size	37.6"
Display Area (mm)	919.296(H) x 258.5(V)
Brightness	1000 cd/m²
Resolution	1920x540
Aspect Ratio	16 : 4.5
Contrast Ratio	8000 : 1
Pixel Pitch (mm)	0.4788(H) x 0.4788(V)
Pixel Per Inch (PPI)	52
Viewing Angle	178°(H),178°(V)
Color Saturation (NTSC)	82%
Display Colors	16.7M
Response Time (Typical)	9.5ms
Video Interface	VGA,DVI-D,HDMI
Input Power	DC12V
Power Consumption	36.4W
Dimensions (mm)	962.6x304.9x54.2
Bezel Size(U/B/L/R)	16.4/25/19.1/19.1 mm
Weight (Net)	8.8kg
Mounting	VESA 400X100 mm
OSD Key	4 Keys (Power Switch, Menu, +, -)
OSD Control	Brightness, Color, Contrast, Auto Turing, H/V Position…etc
Operating Temperature	0 ˚C ~ 50 ˚C
Storage Temperature	-20 ˚C ~ 60 ˚C

SSD= Panel+ LED Driving Board +Control Board+ Housing

1.3 Absolute Maximum Ratings

Permanent damage may occur if exceeding the following maximum rating.

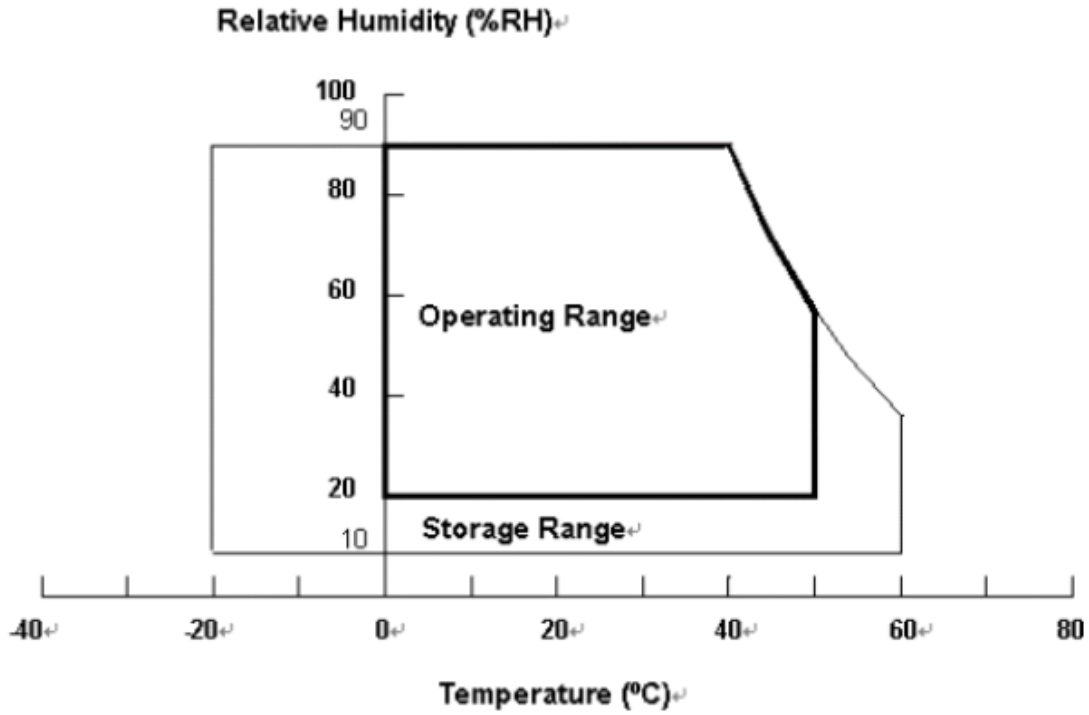
Symbol	Description	Min	Max	Unit	Remark
TST	Storage Temperature	-20	60	°C	Note 1-1
TOP	Operating Ambient Temperature	0	50	°C	Note 1-1 Note 1-2

Note 1-1: Temperature and relative humidity range is shown as the below figure.

(1) 90% RH Max. (Ta ≤ 40°C)

(2) Wet-bulb temperature should be 39°C Max. (Ta > 40°C).

Note 1-2: Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 65 ºC. The range of operating temperature may degrade in case of improper thermal management in final product design.



2 Electrical Characteristics

2.1 Absolute Maximum Rating

Permanent damage may occur if exceeding the following maximum rating.

Item	Symbol	Min	Max	Unit	Remark
Power Supply Voltage	VCC	-0.3	13.5	V	1
Logic Input Voltage	VIN	-0.3	3.6	V	

Note 1：Permanent damage to the device may occur if maximum values are exceeded. Function operation should be restricted to the conditions described under Normal Operating Conditions.

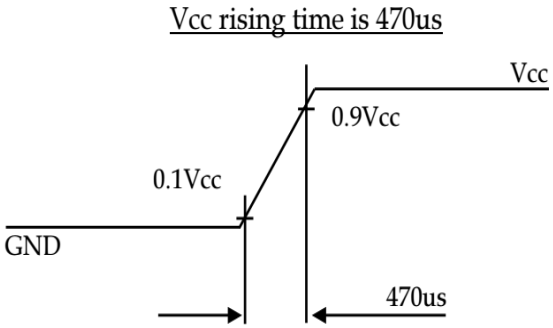
2.2 DC Characteristcs

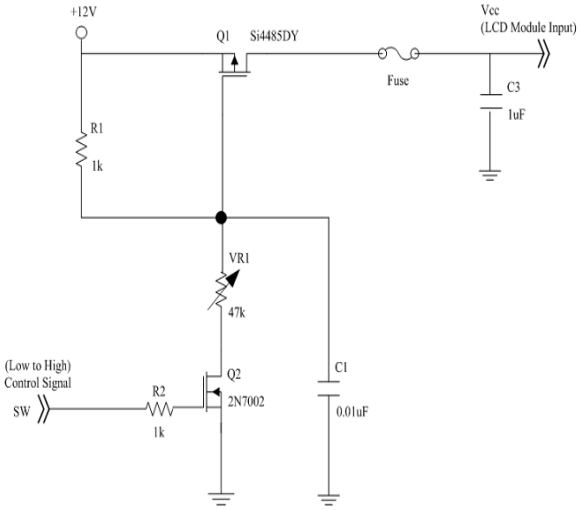
Description		Symbol	Min	Typ	Max	Unit	Note
Power Supply Input Voltage		V_{CC}	10.8	12	13.2	V	1
Inrush Current		I_{RUSH}	-	-	3.5	A	2
Power consumption	White Pattern	P_T	-	4.2	5.8	W	3
	Black Pattern	P_T	-	4	5.5		
	Horizontal Stripe	P_T	-	7.68	10.3		
Power Supply Current	White Pattern	P_T	-	0.35	0.44	A	
	Black Pattern	P_T	-	0.33	0.42		
	Horizontal Stripe	P_T	-	0.64	0.78		
LVDS Interface	Differential Input High Threshold Voltage	V_{LVTH}	+100	-	-	mV	4
	Differential Input Low Threshold Voltage	V_{LVTL}	-	-	-100	mV	
	Common Input Voltage	V_{CM}	1.0	1.2	1.4	V	
	Differential Input voltage	$\lvert V_{ID} \rvert$	200	-	600	mV	
	Terminating Resistor	R_T	-	100	-	ohm	
CMOS Interface	Input High Threshold Voltage	V_{IH}	2.7	-	3.3	V	
	Input Low Threshold Voltage	V_{IL}	0	-	0.7	V	

Note 1. The module should be always operated within the above ranges.

The ripple voltage should controlled under 10% of V_{CC}(Typ.)

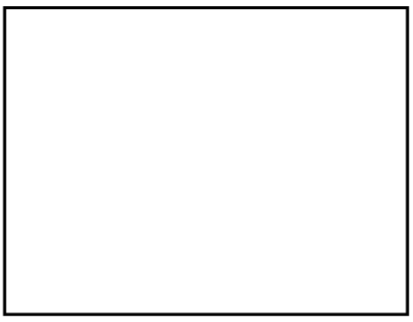
Note 2. Measurement Condition





Note 3. The specified power supply current is under the conditions at V_{CC}=12V, Ta=25±2 ℃,f_v=60Hz,whereas a power dissipation check pattern below is displayed

a. White Pattern

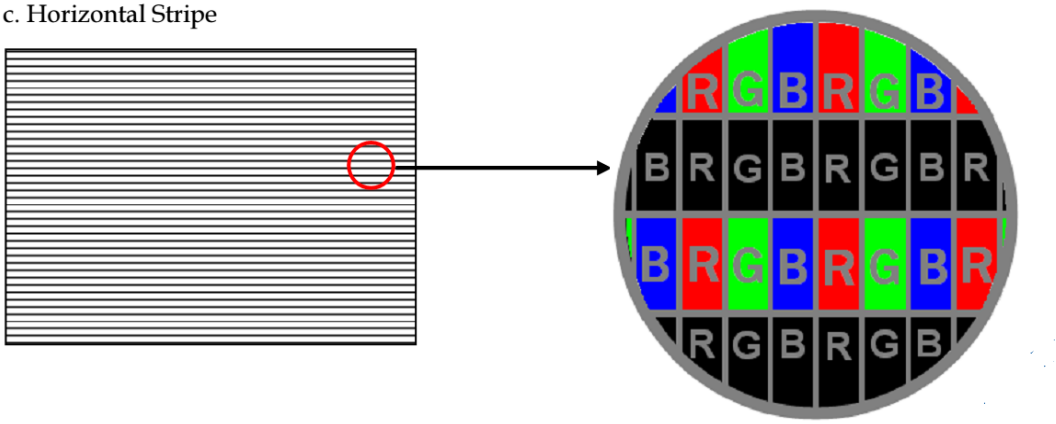


Active Area

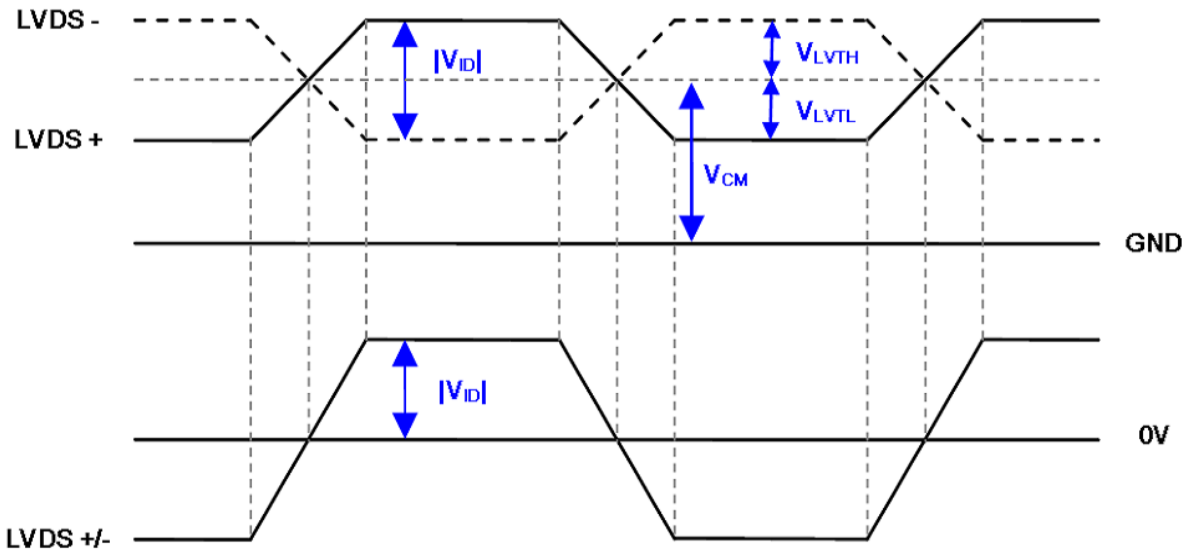
b. Black Pattern

Active Area

c. Horizontal Stripe



Note 4. The LVDS input characteristics is shown as below:



3 INPUT TERMINAL ASSIGNMENT

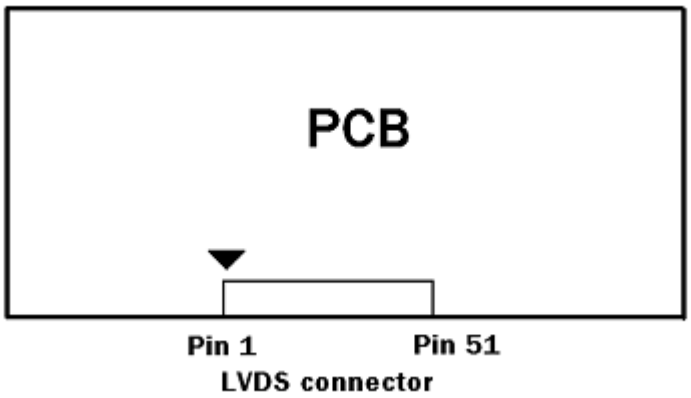
3.1 LVDS INPUT

CNF1 Connector Pin Assignment (FCN WF23-402-5133 OR P-TWO 187059-51221)
Matting connector: FI-RE51HL (JAE)

PIN	Symbol	Description	Note
1	GND	Ground	2
2	SCL	I2C clock (For Vcom tunning)	
3	SDA	I2C clock (For Vcom tunning)	
4	NC	No connection	2
5	NC	No connection	
6	NC	No connection	
7	SELLVDS	LVDS data format Selection	3,4
8	NC	No connection	2
9	NC	No connection	
10	NC	No connection	
11	GND	Ground	
12	ERX0-	Even pixel Negative LVDS differential data input. Channel 0	5
13	ERX0+	Even pixel Positive LVDS differential data input. Channel 0	
14	ERX1-	Even pixel Negative LVDS differential data input. Channel 1	
15	ERX1+	Even pixel Positive LVDS differential data input. Channel 1	
16	ERX2-	Even pixel Negative LVDS differential data input. Channel 2	
17	ERX2+	Even pixel Positive LVDS differential data input. Channel 2	
18	GND	Ground	
19	ECLK-	Even pixel Negative LVDS differential clock input.	5
20	ECLK+	Even pixel Positive LVDS differential clock input.	
21	GND		
22	ERX3-	Even pixel Negative LVDS differential data input. Channel 3	5
23	ERX3+	Even pixel Positive LVDS differential data input. Channel 3	
24	NC	No connection	2
25	NC	No connection	
26	GND	Ground	
27	GND	Ground	
28	ORX0-	Odd pixel Negative LVDS differential data input. Channel 0	5
29	ORX0+	Odd pixel Positive LVDS differential data input. Channel 0	
30	ORX1-	Odd pixel Negative LVDS differential data input. Channel 1	
31	ORX1+	Odd pixel Positive LVDS differential data input. Channel 1	
32	ORX2-	Odd pixel Negative LVDS differential data input. Channel 2	
33	ORX2+	Odd pixel Positive LVDS differential data input. Channel 2	
34	GND	Ground	
35	OCLK-	Odd pixel Negative LVDS differential clock input.	5

36	OCLK+	Odd pixel Positive LVDS differential clock input.	5
37	GND	Ground	
38	ORX3-	Odd pixel Negative LVDS differential data input. Channel 3	5
39	ORX3+	Odd pixel Positive LVDS differential data input. Channel 3	
40	NC	No connection	2
41	NC	No connection	2
42	GND	Ground	
43	GND	Ground	
44	GND	Ground	
45	GND	Ground	
46	GND	Ground	
47	NC	No connection	2
48	VCC	Power input (+12V)	
49	VCC	Power input (+12V)	
50	VCC	Power input (+12V)	
51	VCC	Power input (+12V)	

Note 1. LVDS connector pin orderdefined below

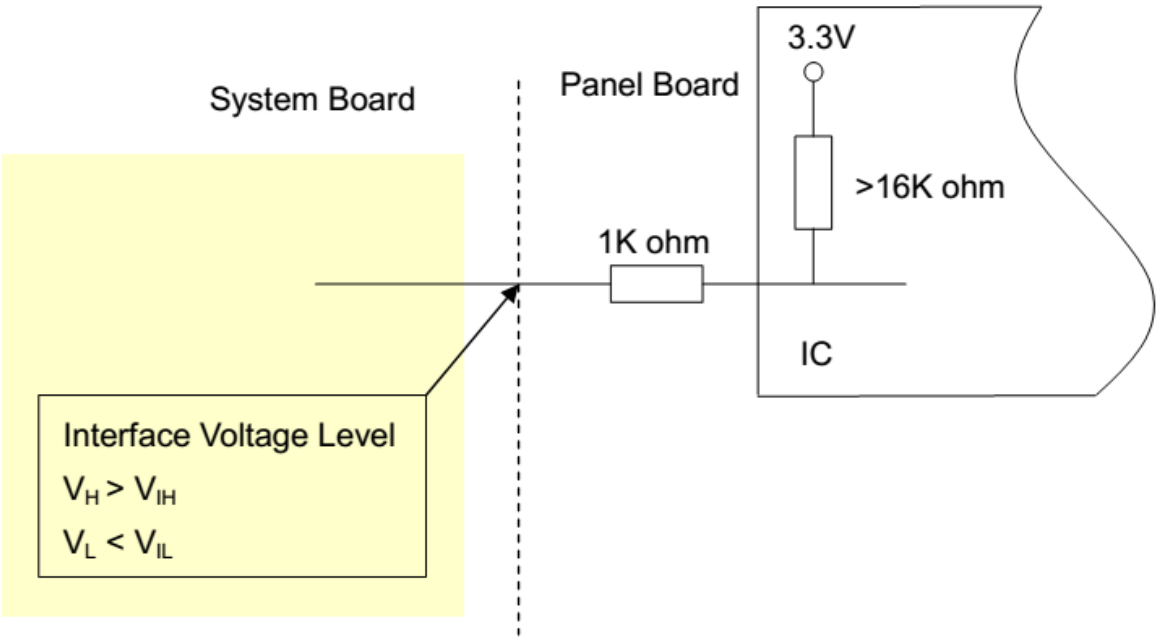


Note 2. Receiver for internal use. Please leave it open.

Note 3.LVDS format selection. Connect to Open or +3.3V: VESA Format, connect to GND:JEDIA Format.

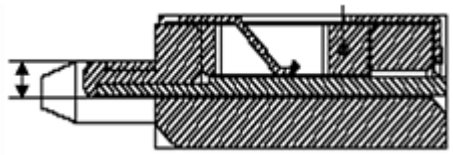
SELLVDS	Mode
H(default)	VESA
L	JEIDA

Note 4. Interface optional pin has internal scheme as following diagram.Customer should keep the interface voltage level requirment which including Panel board loading as below.



Note 5. Two pixel data send into the module for every clock cycle. The firstpixel of the frame is odd pixel and second pixel is even pixel.

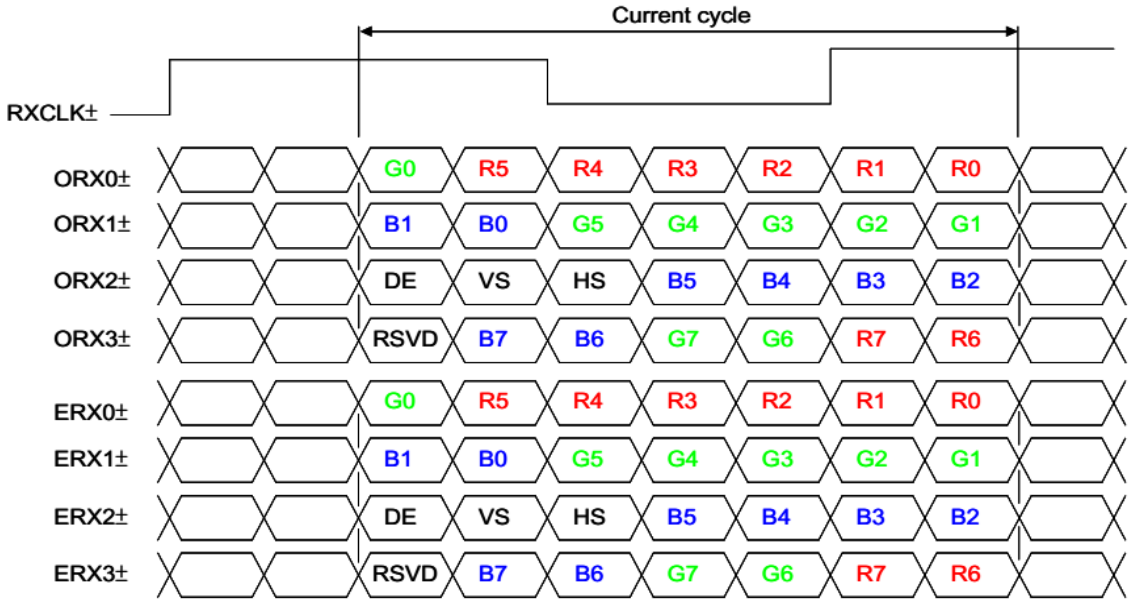
Note 6. LVDS connector mating dimension rang is 0.93mm~1.0mm as below.



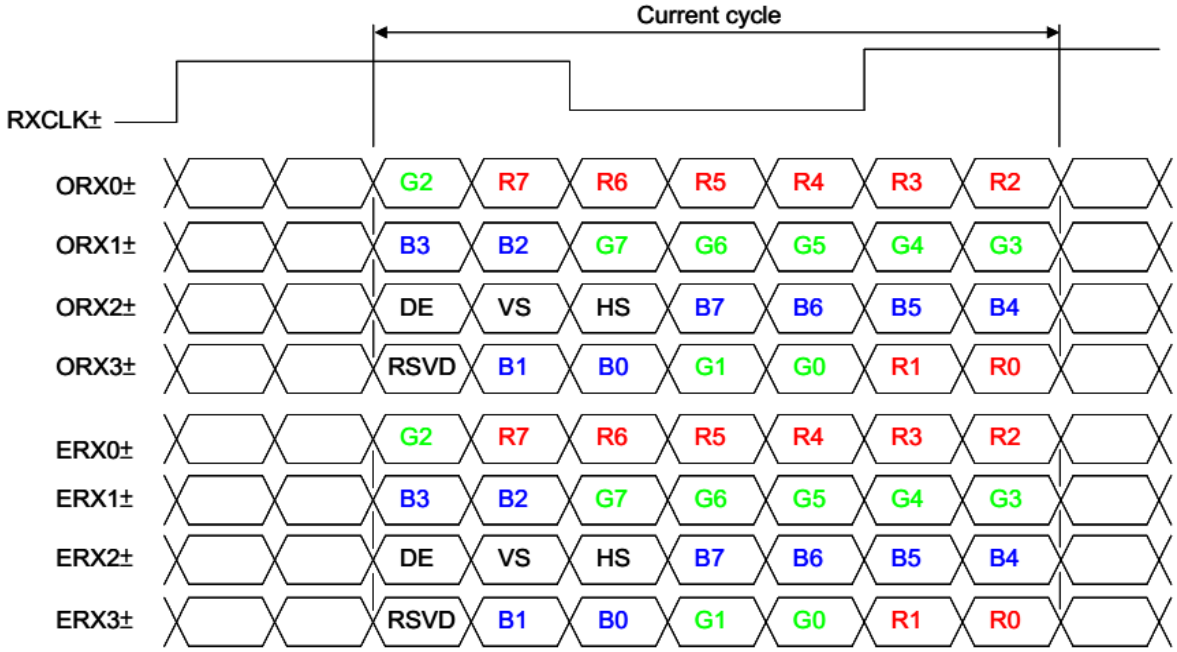
3.2 LVDS INTERFACE

JEDIA Format : SELLVDS=L
VESA Format : SELLVDS=H or Open

VESA LVDS Format



JEDIA LVDS Format



R0~R7	Pixel R Data (7; MSB, 0; LSB)	DE	Data enable signal
G0~G7	Pixel G Data (7; MSB, 0; LSB)	DCLK	Data clock signal
B0~B7	Pixel B Data (7; MSB, 0; LSB)		

Note 1. RSVD (reserved) pins on the transmitter shall be H or L

3.3 COLOR DATA INPUT ASSIGMENT

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

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	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
Gray Scale Of Red	Red (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red (253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green (253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green (254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green (255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue (0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue (1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue (253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue (254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue (255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Note 1: 0: Low Level Voltage, 1: High Level Voltage.

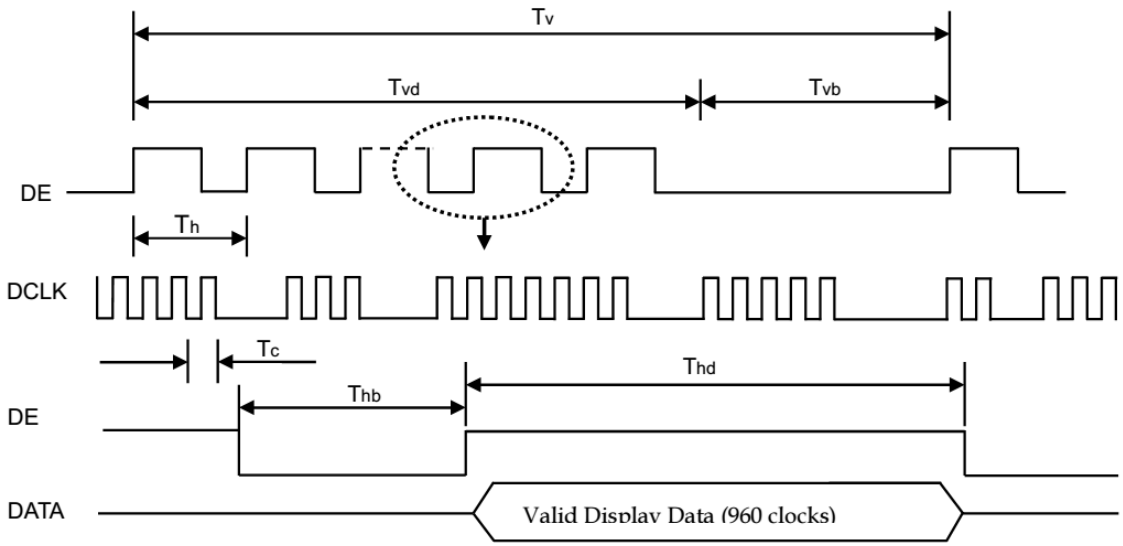
4 INTERFACE TIMING

4.1 INPUT SIGNAL TIMING SPECIFICATIONS

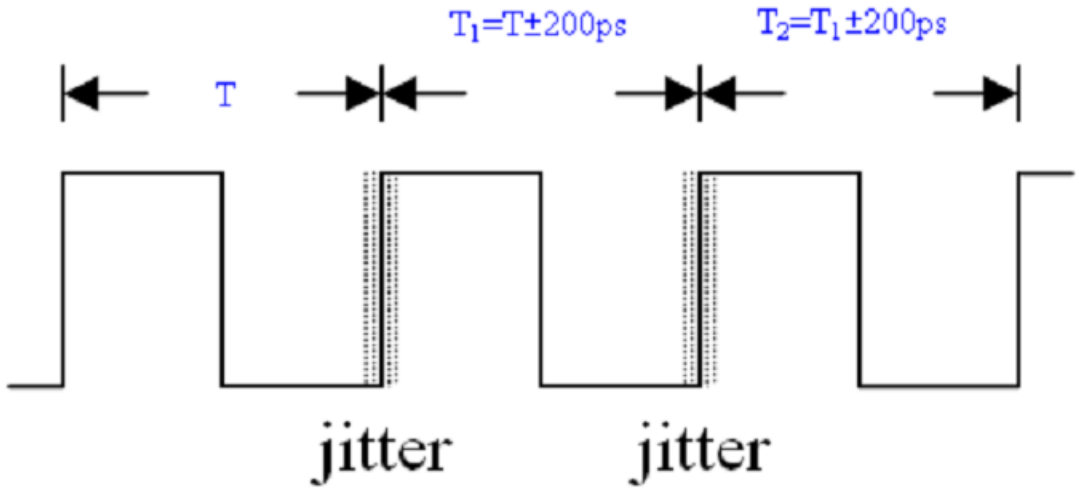
The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	F_{clkin} (=1/TC)	60	74.25	80	MHz	
	Input cycle to cycle jitter	T_{rcl}	-	—	200	ps	(3)
	Spread spectrum modulation range	F_{clkin_mod}	F_{clkin}-2%	—	F_{clkin}+2%	MHz	(4)
	Spread spectrum modulation frequency	F_{SSM}	—	—	200	KHz	
LVDS Receiver Data	Receiver Skew Margin	T_{RSKM}	-400	—	400	ps	(5)
Vertical Active Display Term	Frame Rate	F_{r5}	47	50	53	Hz	(6)
		F_{r6}	57	60	63	Hz	
	Total	Tv	1090	1125	1480	Th	Tv=Tvd+Tvb
	Display	Tvd	1080	1080	1080	Th	—
	Blank	Tvb	10	45	400	Th	—
Horizontal Active Display Term	Total	Th	1030	1100	1325	Tc	Th=Thd+Thb
	Display	Thd	960	960	960	Tc	—
	Blank	Thb	70	140	365	Tc	—

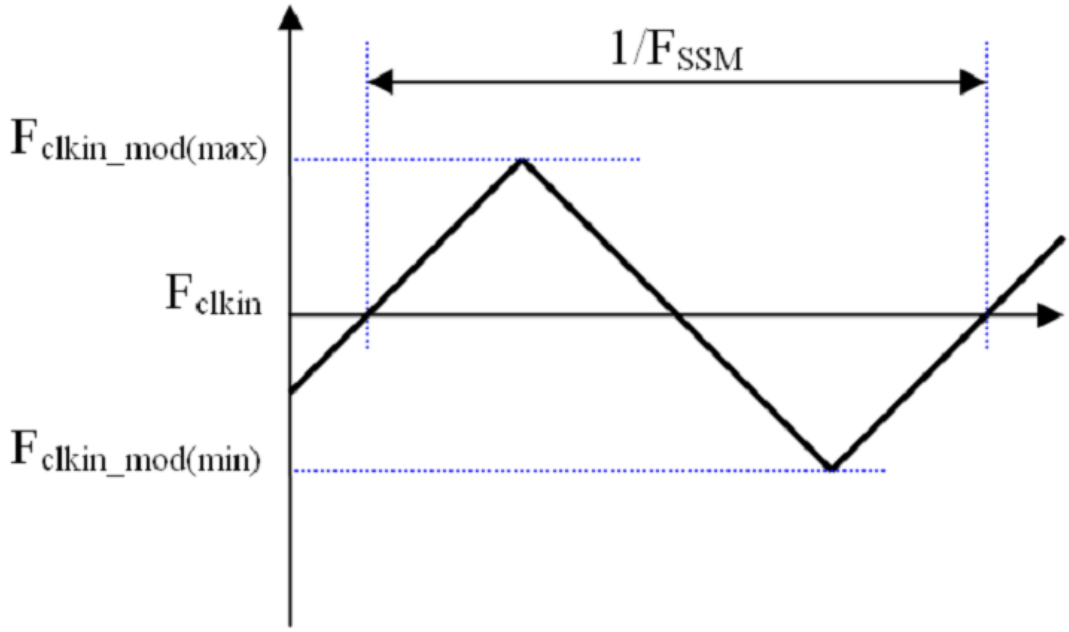
Note (1) Please make sure the range of pixel clock has followthe below equation :
Fclkin(max) ≧Fr6 ╳Tv ╳Th
Fr5 ╳Tv ╳Th ≧Fclkin (min)
Note (2) This module is operated in DE only mode and please follow the input signal timing diagram below :



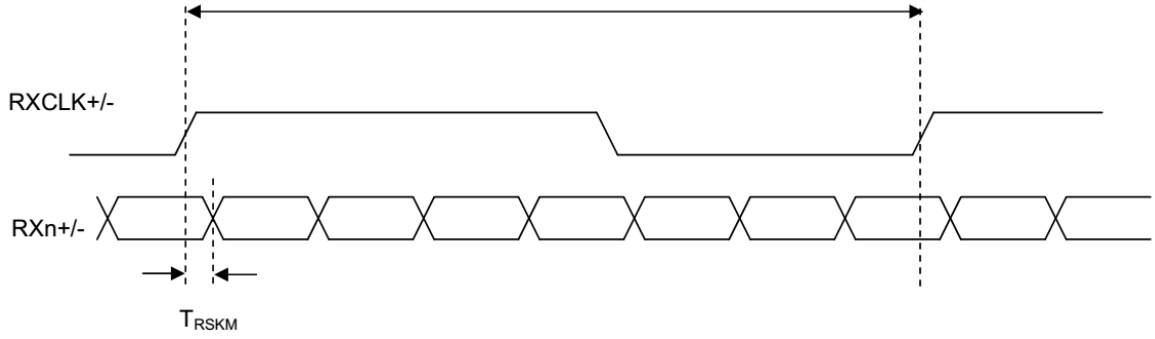
Note (3) The input clock cycle-to-cycle jitter is defined as below figures. Trcl = | T1– T|



Note (4) The SSCG (Spread spectrum clock generator) is defined as below figures.

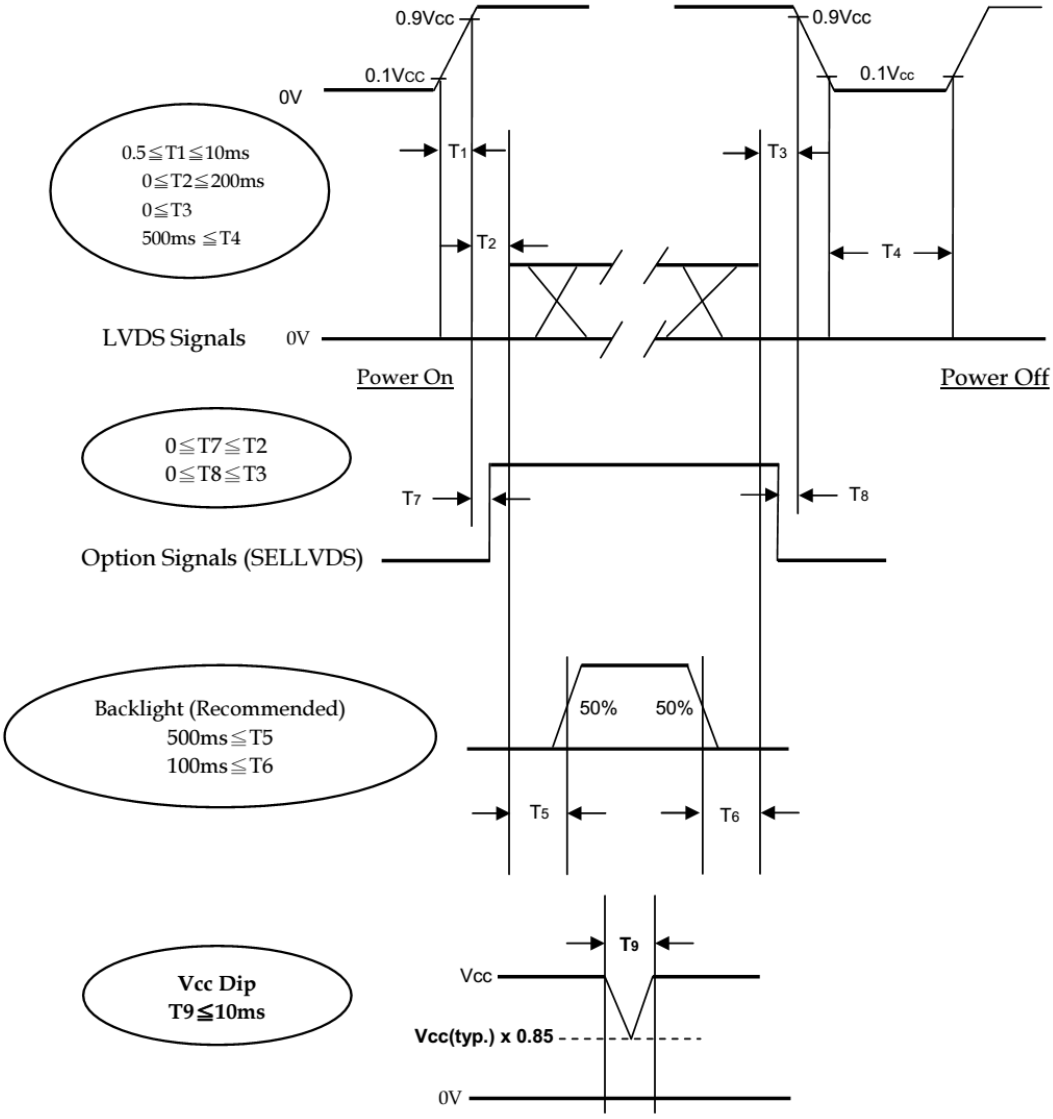


Note (5) The LVDS timing diagram and the receiver skew margin is defined and shown in following figure.



4.2 POWER ON/OFF SEQUENCE

To prevent a latch-up or DC operation of LCD module, the power on/off sequence should be as the diagram below.



Note (1) The supply voltage of the external system for the module input should follow the definition of Vcc.

Note (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.

Note (3) In case of VCC is in off level, please keep the level of input signals on the low or high impedance. If T2<0,that maybe cause electrical overstress failure.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on

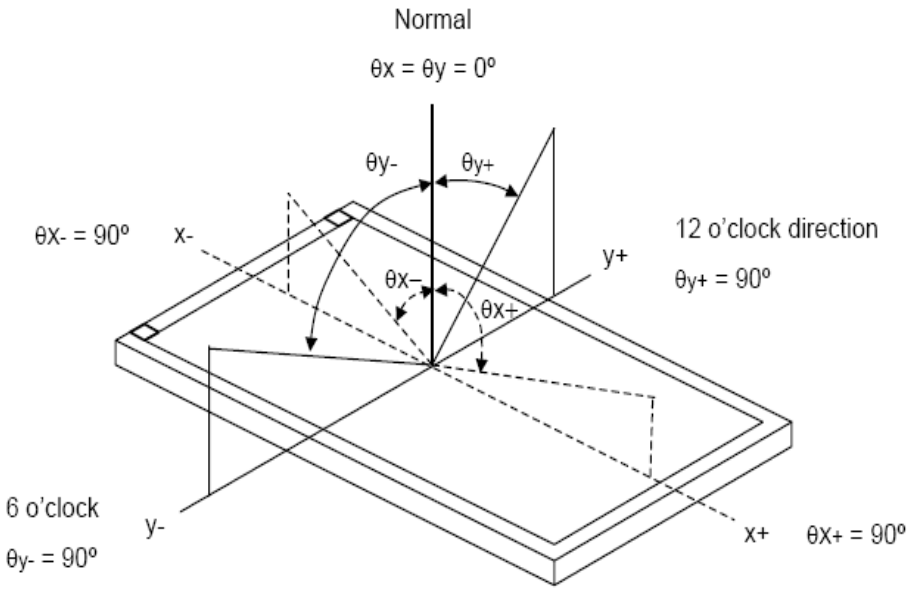
Note (6) Vcc must decay smoothly when power-off.

5 Optical Specification

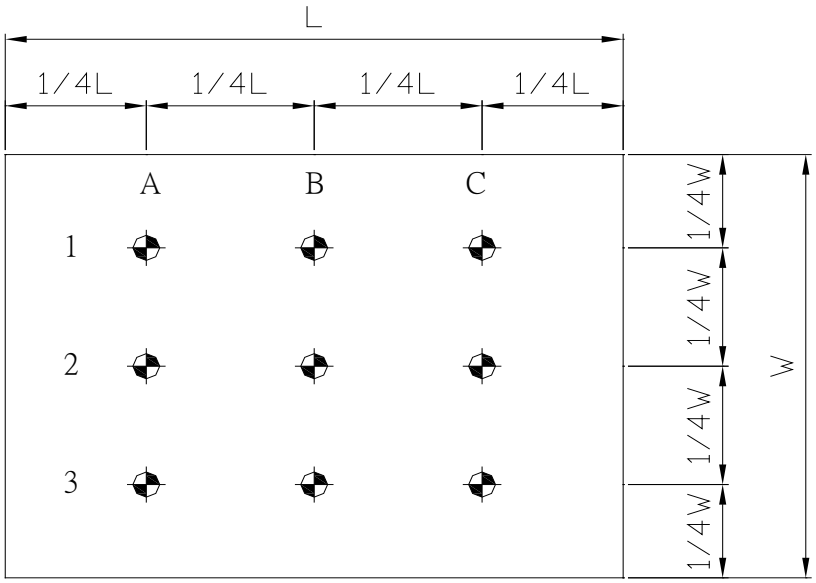
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color chromaticity	Red	Rx	θx=0 θy=0 BM-7	0.616	0.646	0.676	-	Test Mode: (1) (2) (3)
		Ry		0.307	0.337	0.367	-	
	Green	Gx		0.263	0.293	0.323	-	
		Gy		0.596	0.626	0.656	-	
	Blue	Bx		0.114	0.144	0.174	-	
		By		0.037	0.067	0.097	-	
	White	Wx		0.261	0.291	0.321	-	
		Wy		0.304	0.334	0.364	-	
Center Luminance of White		Lc			1000		cd/m^2	
Uniform		Lu			87		%	
Contrast Ratio		CR	θx=0 θy=0 Klein K-10		8000		-	Test Mode: (1) (4)
Color Saturation		NTSC			82		%	
Viewing Angle	Horizontal	θx+	CR ≥ 10		89		Deg	Test Mode: (1) (3)
		θx-			89			
	Vertical	θy+			89			
		θy-			89			

Test Mode：

(1) Definition of Viewing Angle (θx , θy):

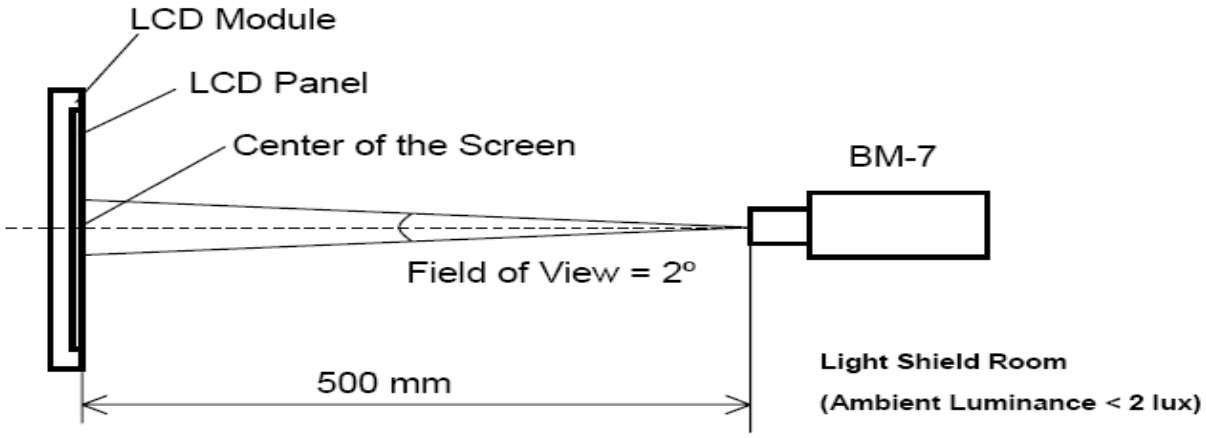


(2) Definition of Test Point:

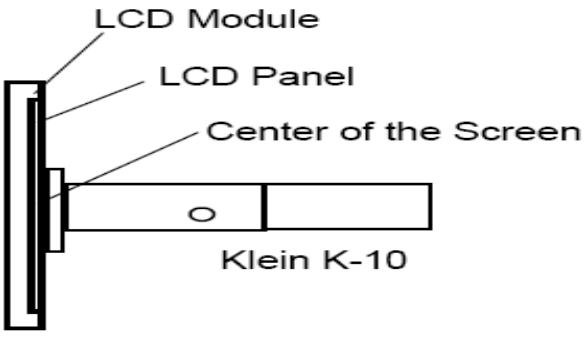


Active Area

(3) BM-7 Measurement Setup:



(4) Klein K-10 Measurement Setup:



6 LED Driving Board Specifications

This specification is applied to LED converter unit for LED backlight.

6.1 Operating Characteristics

Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remark
Input Voltage	Vin		10.0	12.0	14.0	V	
Input Current (Low Brightness)	IinL	VIN=12V,Vadj=5V	0.0	-	-	mA	
Input Current (High Brightness)	IinH	VIN=12V,Vadj=0V	3.1	2.70	2.41	A	
LED Current (Low Brightness)	IoutL	VIN=12V,Vadj=5V	0.0	-	-	Arms	
LED Current (High Brightness)	IoutH	VIN=12V,Vadj=0V	1.26	1.31	1.36	A	
Working Frequency	Freq	VIN=12V,Vadj=0V	350	400	450	KHz	
Brightness Control	Vadj	Connect to Voltage	0.2		4.8	V	
ON/OFF Control	Von	Normal Operation	2	-	5	V	
	Voff	Normal Operation	0	-	0.8	V	
Output Voltage	Vout	VIN=12V,Vadj=0V	21.8	22.3	22.8	V	
Efficiency	η	VIN=12V,Vadj=0V	88.7	90.2	92.1	%	

Note 1:Efficiency＝[(IoutH＊ Vout)/(IinH＊ Vin)] ＊ 100%,Tolerance ±0.5%

6.2 Connector Socket Input Connector:

J1(JST S8B-PH-SM3-TB 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
8	Control	ON/OFF Control

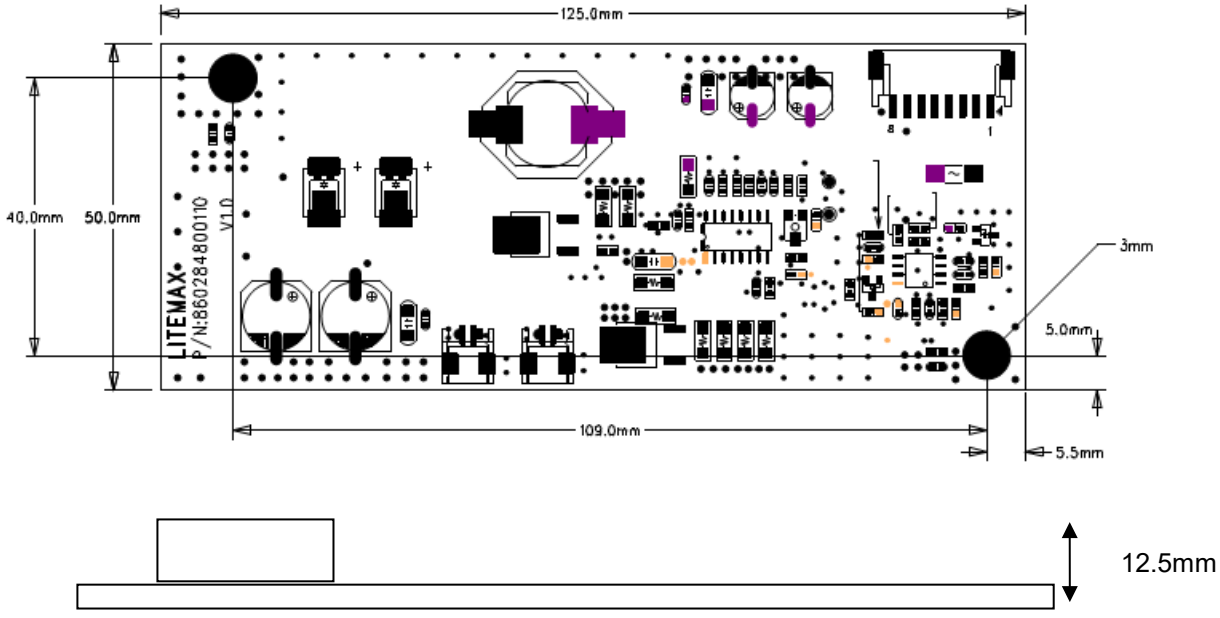
6.3 Output Connector:

J2,J3 (JST S2B-EH or Compatible)

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

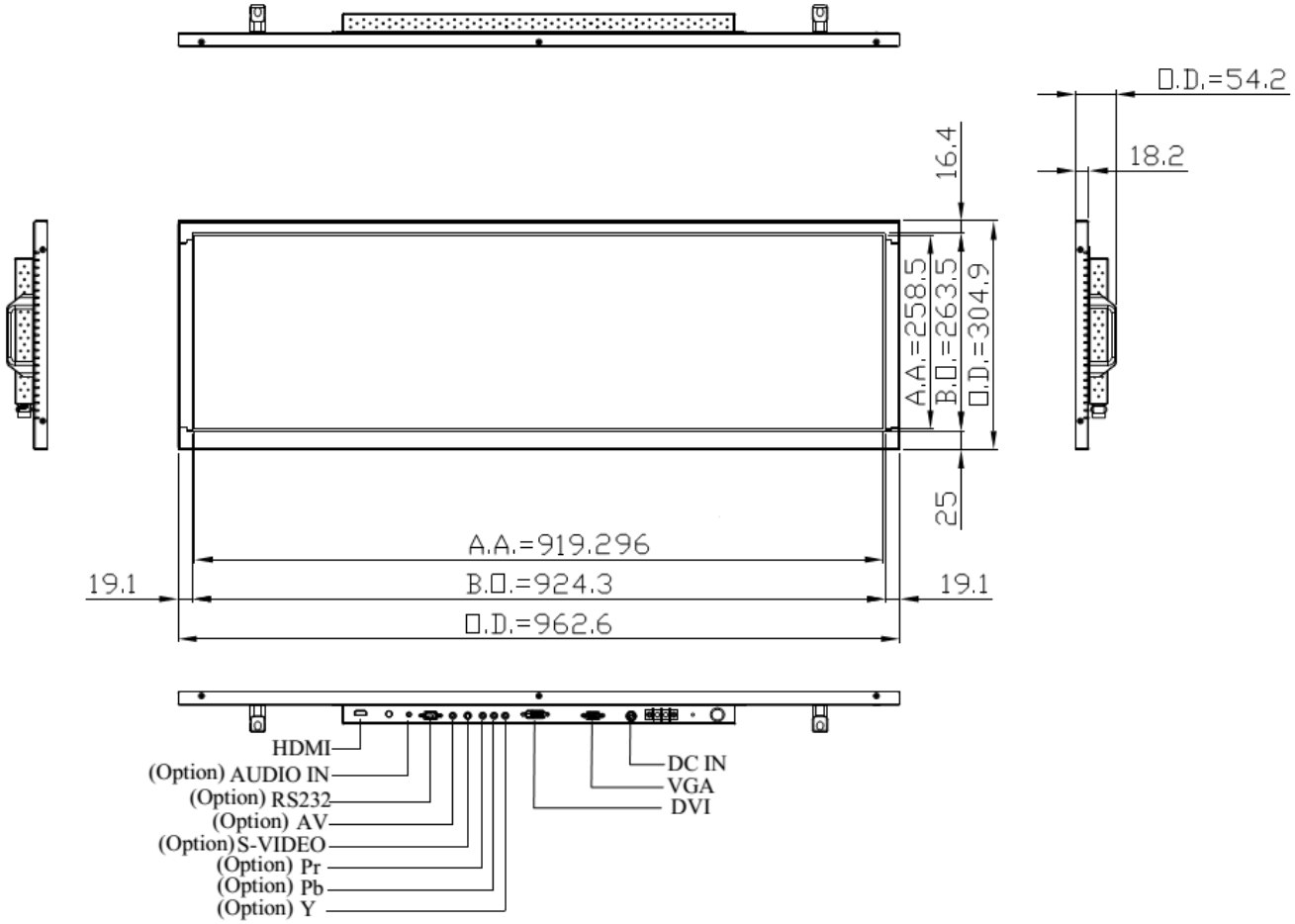
6.4 Mechanical Characteristics

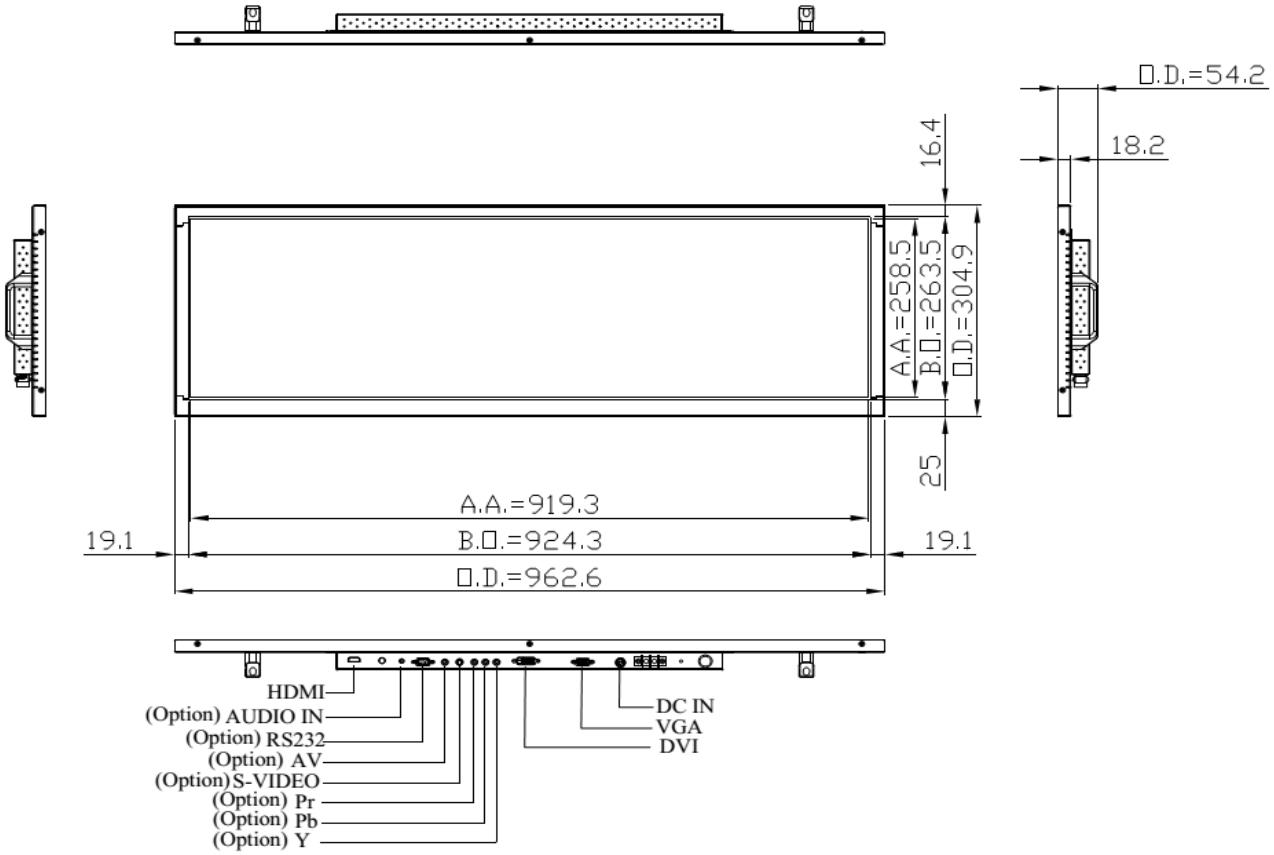
Dimension: 125mm*50mm*12.5mm

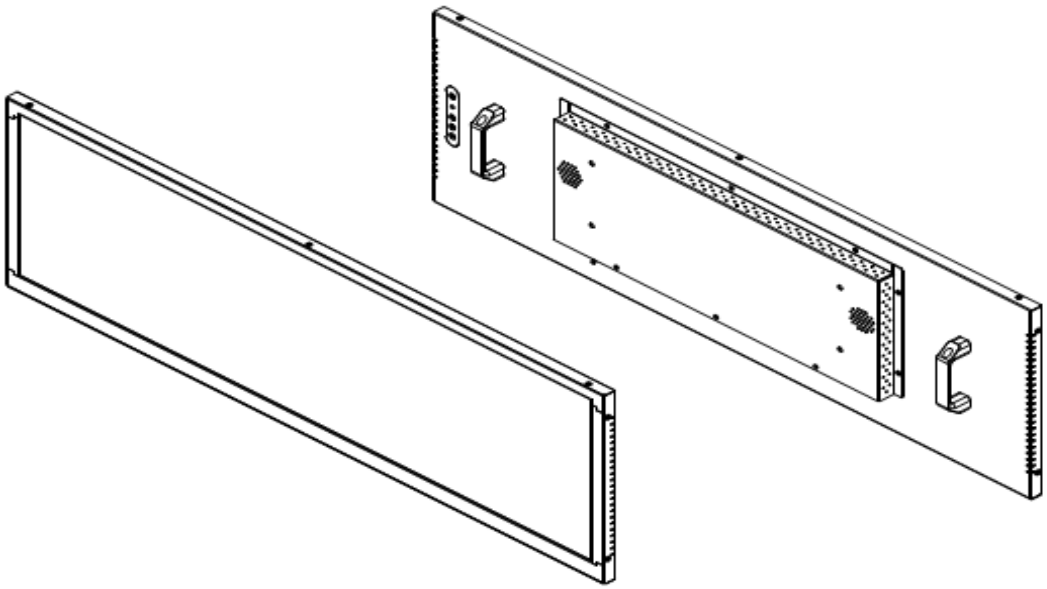


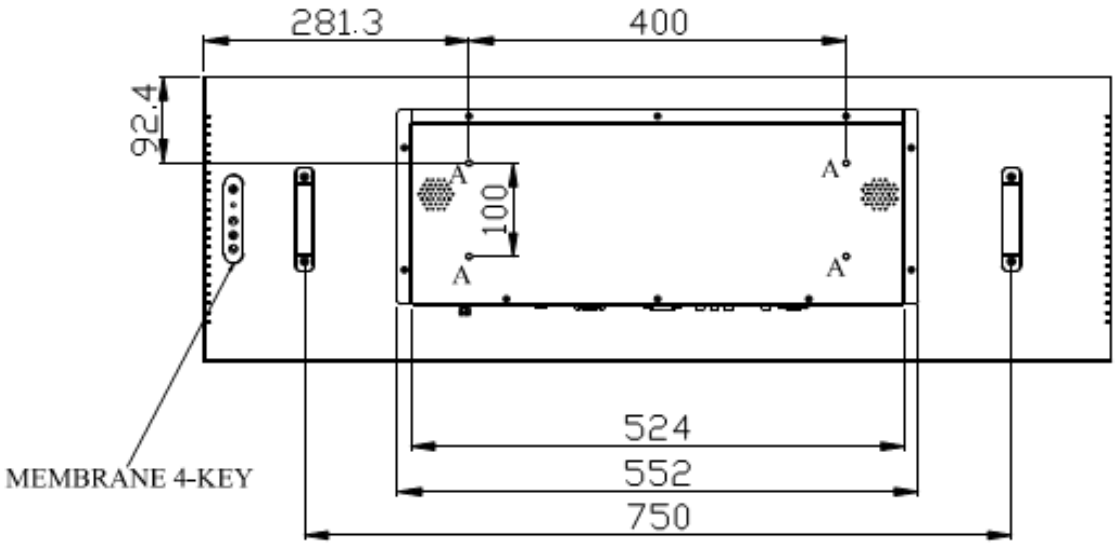
7 Mechanical Drawing

Note：
O.D : Outline Dimension
B.O : Bezel Opening
A.A : LCD Active Area
A:4-M6_USER_HOLE_MAX_DEPTH=11mm




D.D.=54.2
18.2
16.4
A.A.=258.5
B.D.=263.5
D.D.=304.9
25
A.A.=919.3
19.1
B.D.=924.3
19.1
D.D.=962.6
HDMI
(Option) AUDIO IN
(Option) RS232
(Option) AV
(Option) S-VIDEO
(Option) Pr
(Option) Pb
(Option) Y
DC IN
VGA
DVI



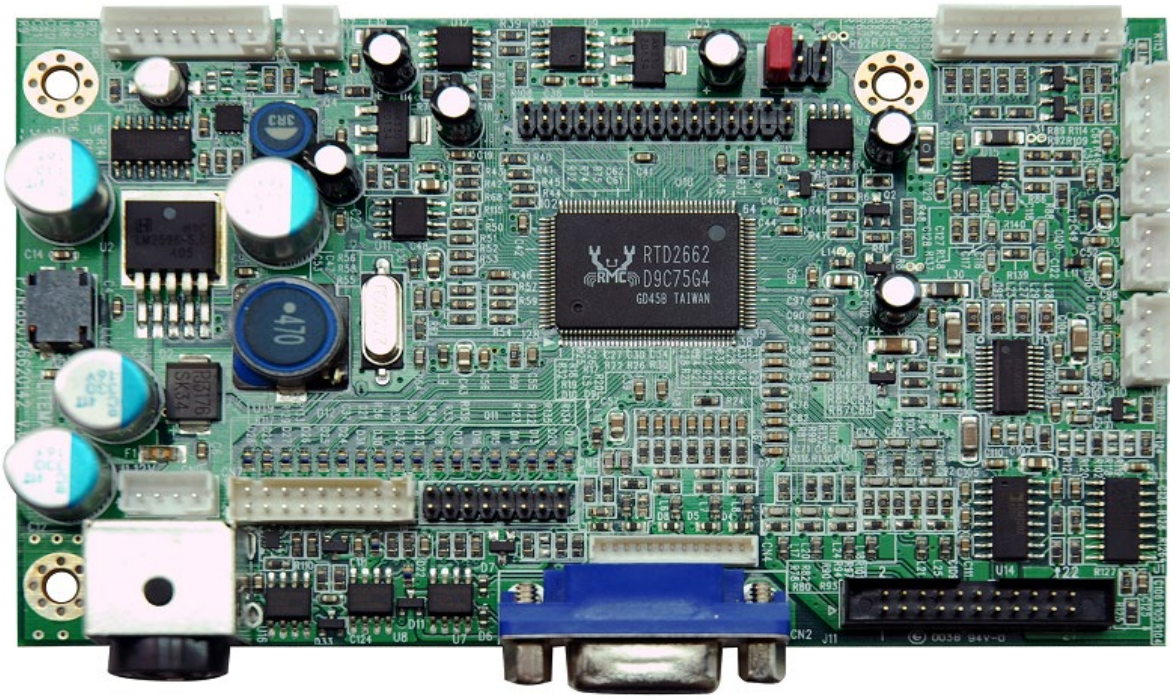


8 AD2662GDHMVAR & OSD Functions

8.1 General Description

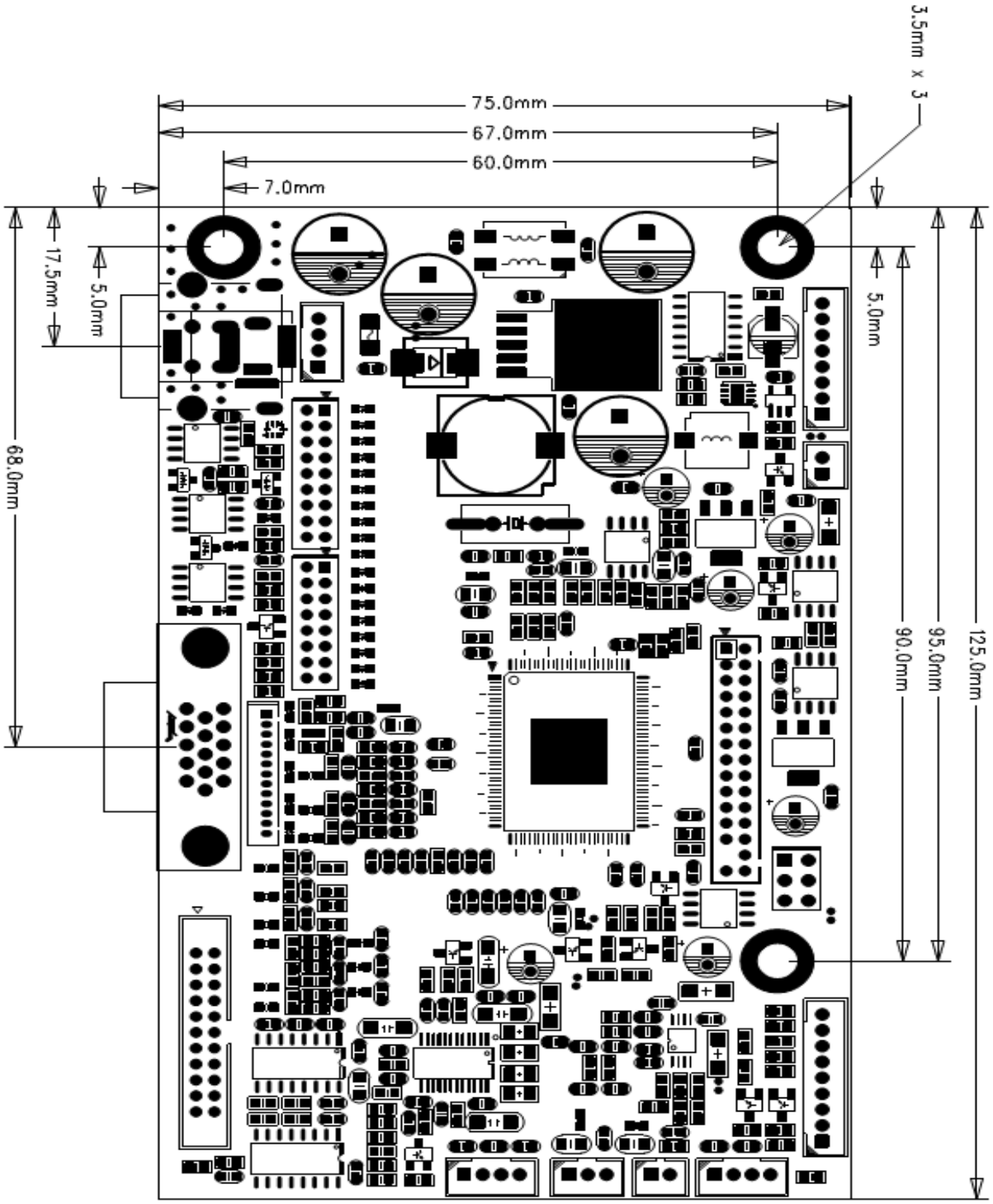
- Max resolution up to WUXGA
- Analog RGB input up to 205MHz
- Ultra-reliable DVI input

- HDMI input
- Dual/single LVDS interface
- Support panel DC 5V or 3.3V, 12V output
- External fan control by software
- OSD control
- Inverter analog or PWM dimming control
- *External V.R. brightness control (optional)
- *External light sensor brightness control (optional)
- *External RS232 control (optional)
- Input power 12V (DC)
- CBVS, S-VIDEO, *YCbCr (optional) input
- Audio in and 2Wx2 Audio Out (optional)

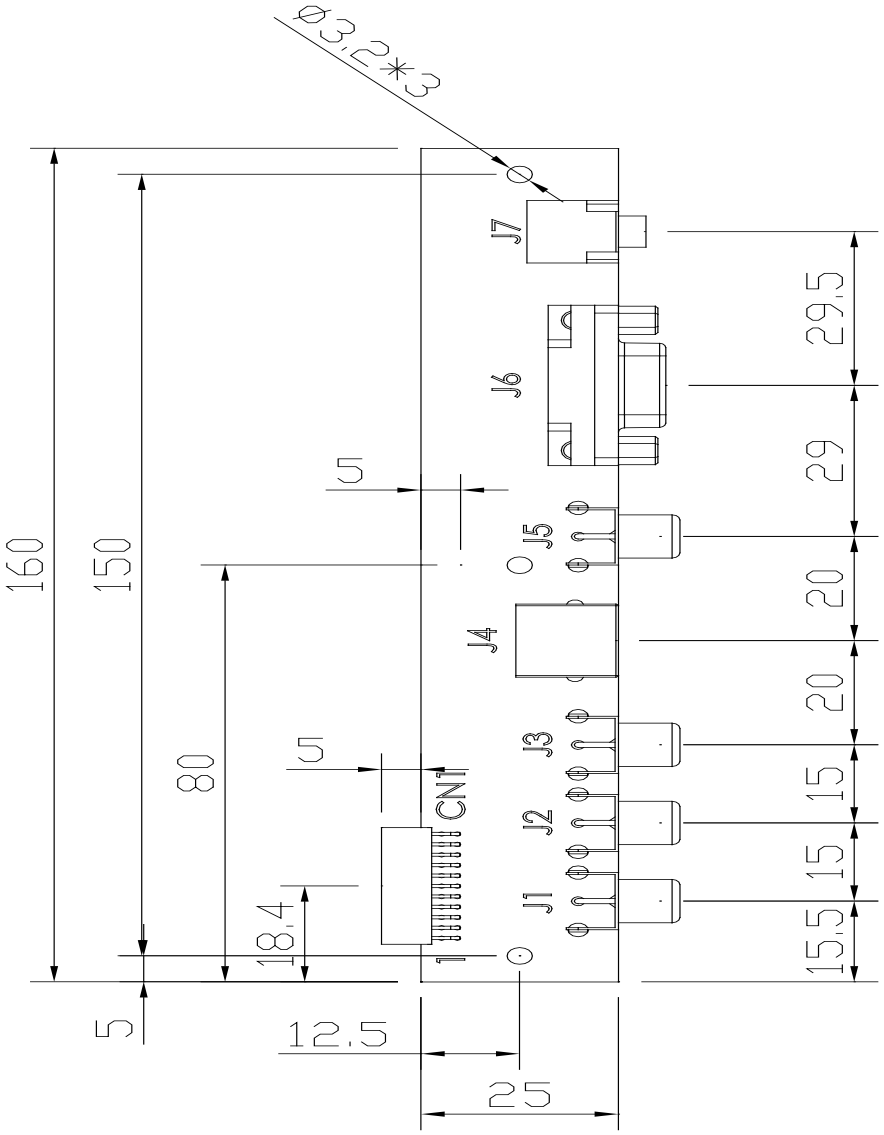


8.2 Outline Dimensions

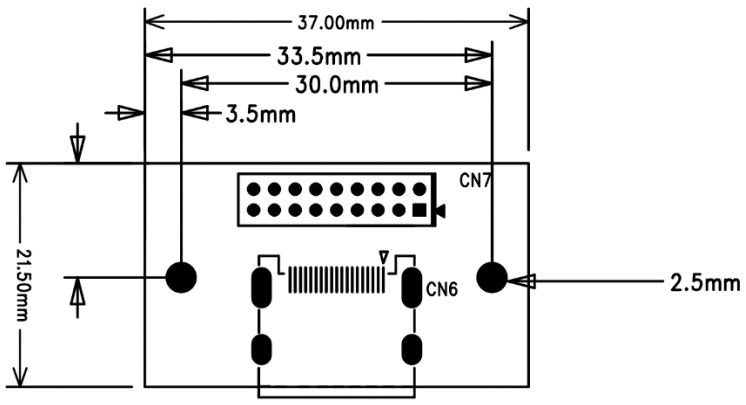
AD2662 125mmX75mm



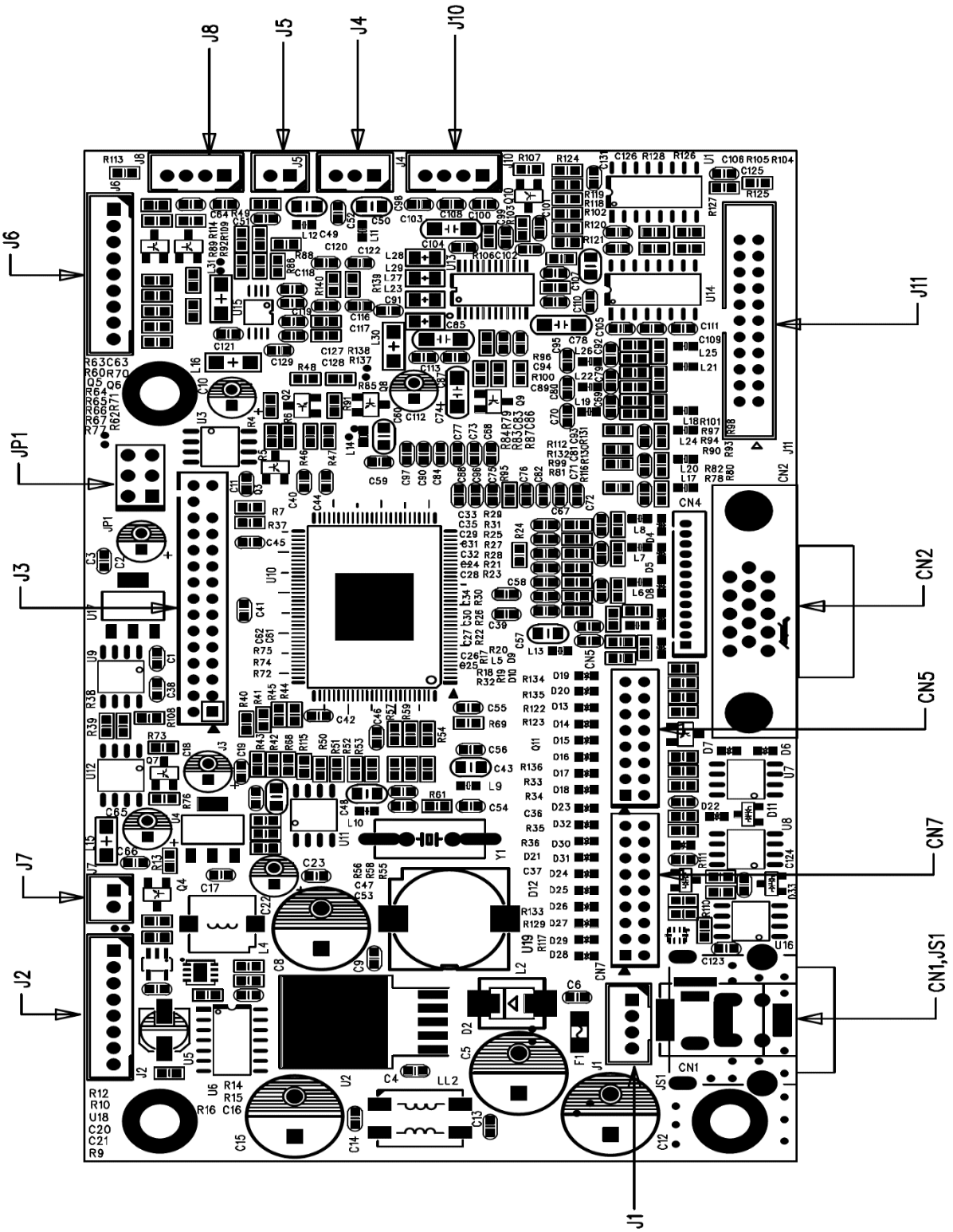
I/O Board 160mmX25mmX15mm



HDMI Board 37mmX21.5mmX6.5mm



8.3 AD2662GDHMVAR Pin Definition



8.3.1 J3: Panel (LVDS) 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+	21	RxE3-
7	RxOC-	22	RxE3+
8	RxOC+	23	GND
9	RxO3-	24	GND
10	RxO3+	25	GND
11	GND	26	GND
12	GND	27	NC
13	RxE0-	28	PANEL-VCC
14	RxE0+	29	PANEL-VCC
15	RxE1-	30	PANEL-VCC

8.3.2 CN7: HDMI Connector (18pin 2.0mm)

Pin No.	Function	Pin No.	Function	Pin No.	Function
1	T.M.D.S. Data2+	9	T.M.D.S. Data0+	17	HDMI_SCL
2	T.M.D.S. Data2-	10	T.M.D.S. Data0-	18	HDMI_SDA
3	Shield	11	Shield		
4	Shield	12	CEC		
5	T.M.D.S. Data1+	13	T.M.D.S. Clock+		
6	T.M.D.S. Data1-	14	T.M.D.S. Clock-		
7	Shield	15	HDMI 5V		
8	Shield	16	Hot Plug Detect		

8.3.3 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+		

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

Pin	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			

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

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

8.3.6 JS1: Power DIN (12V)

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

8.3.7 CN1: Power Jack (12V)

Pin No.	Function	Pin No.	Function
1	12VDC	2	GND
3	GND		

8.3.8 J1: Power connector (12V) (4PIN 2.0mm)

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

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

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

8.3.10 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

8.3.11 J7: FAN (2PIN 2.0mm)

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

8.3.12 J6: Key Pad (9PIN 2.0mm)

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

8.3.13 J10: Speaker Connector (4PIN 2.0mm)

Pin No.	Function	Pin No.	Function
1	SPK_R+	2	SPK_R-
3	SPK_L-	4	SPK_L+

8.3.14 J11 Extern Function 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-R	20	Audio-L
21	GND	22	GND

8.3.15 J5: Ambient (2PIN 2.0mm)

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

8.3.16 J4: VR connector (3PIN 2.0mm)

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

8.3.17 JP1: PANEL VCC (3PIN 2.54mm)

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

8.3.18 (I/O Board) J1: Component Y

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

8.3.19 (I/O Board) J2: Component Cb

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

8.3.20 (I/O Board) J3: Component Cr

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

8.3.21 (I/O Board) J4: S-Video

Pin No.	Description	Pin No.	Description
1	GND	2	GND
3	Luminance	4	Chrominance

8.3.22 (I/O Board) J5: Composite

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

8.3.23 (I/O Board) J6: D-SUB9 (RS232)

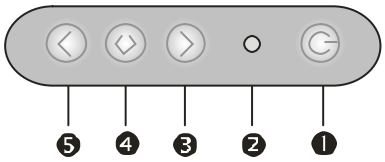
Pin No.	Function	Pin No.	Function
1	NC	2	TXD
3	RXD	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

8.3.24 (I/O Board) 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(R)	20	Audio IN(L)
21	GND	22	GND

8.4 OSD Functions

MEMBRANE CONTROL BUTTOM



❶ **POWER SWITCH:**

Pushing the power switch will turn the monitor on. Pushing it again to turn the monitor off.

❷ **Power LED:**

Power ON-Green / Power off-No.

❸ **Up Key :**

Increase item number or value of the selected item.

❹ **Menu Key:**

Enter to the OSD adjustment menu. It also used for go back to previous menu for sub-menu, and the change data don't save to memory.

❺ **Down Key :**

Decrease item number or item value when OSD is on. When OSD is off, it is hot key for input switch between VGA, AV, and S-video.

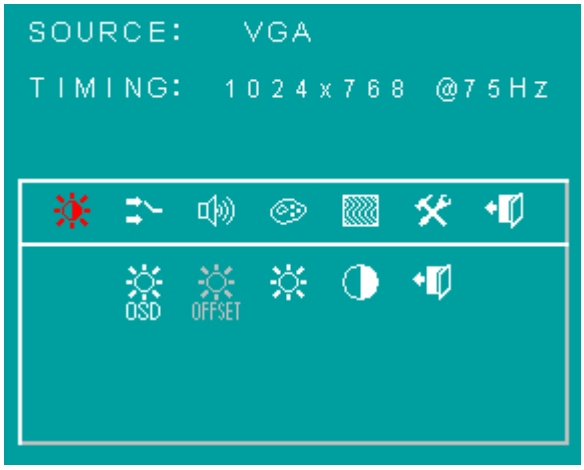
Screen Adjustment Operation Procedure

1. **Entering the screen adjustment**
   The setting switches are normally at stand-by. Push the Menu Key once to display the main menu of the screen adjustment. The adjustable items will be displayed in the main menu.
2. **Entering the settings**
   Use the Down Key < and Up Key > buttons to select the desired setting icon and push the SELECT button to enter sub-menu.
3. **Change the settings**
   After the sub-menu appears, use the Down Key < and Up Key > buttons to change the setting values.
4. **Save**
   After finishing the adjustment, push the SELECT button to memorize the setting.
5. **Return & Exit the main menu**
   Exit the screen adjustment; push the "MENU" button. When no operation is done around 30 sec (default OSD timeout), it goes back to the stand-by mode and no more switching is accepted except MENU to restart the setting.

OSD FUNCTIONS

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 subpages inside the OSD manual, Brightness, Signal select, Sound, Color, Image, Tools, and Exit. When you press “menu” button, you enter the “Brightness” subpage. 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)

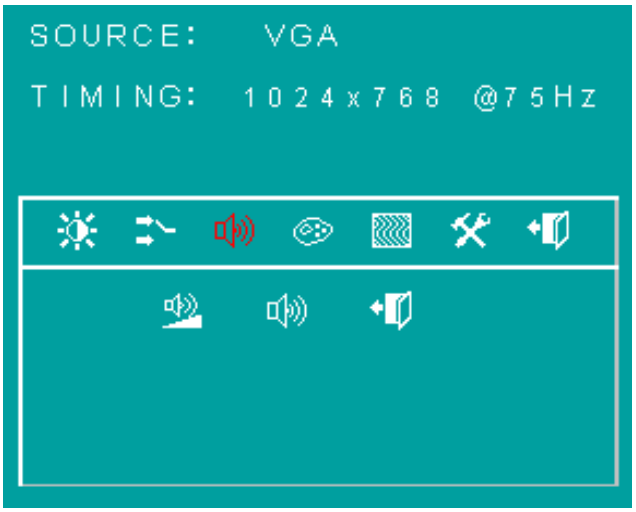

Contrast: Press “menu” and “right” you can adjust the contrast from “0” to “100” by pressing the “left” and “right”.


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

Source:

There are 6 options for “Source ”subpage.
There have VGA, DVI, HDMI, AV, S-VIDEO, YPBPR source input.

Sound:



There are 3 options for “Sound” subpage.

Audio Volume: Audio volume adjustment.

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

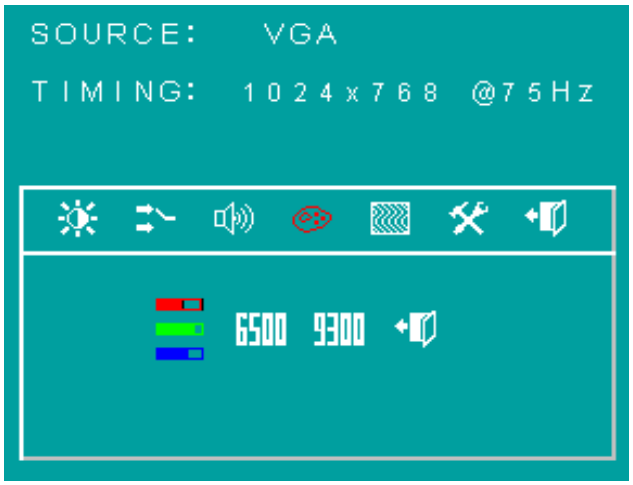
Exit: back to the normal screen.

Color:

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

SRGB: Windows standard color setting.

Color Temperature: You can have 3 options in this selection , have User/6500/9300



Color Temperature User

Color Temperature_6500K

Color Temerapture_9300K

Exit: back to the normal screen.

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

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

Auto just: Pressing this option, the AD5621 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 Auto tune 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:

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

Osd_time: You can selection the time of OSD from 2 sec. to 16 sec. Default is 6 sec.

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.

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.

9 Precautions

9.1 Handling Precautions

(1) The module should be assembled into the system firmly by using every mounting hole. Be careful not to twist or bend the module.
(2) While assembling or installing modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.
(3) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.
(4) Do not press or scratch the surface harder than a HB pencil lead on the panel
(5) because the polarizer is very soft and easily scratched.
(6) If the surface of the polarizer is dirty, please clean it by some absorbent cotton or soft cloth. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanently damage the polarizer due to chemical reaction.
(7) Wipe off water droplets or oil immediately. Staining and discoloration may occur if
(8) they left on panel for a long time.
(9) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contacting with hands, legs or clothes, it must be washed away thoroughly with soap.
(10) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.
(11) Do not disassemble the module.
(12) Do not pull or fold the lamp wire.
(13) Pins of I/F connector should not be touched directly with bare hands.

9.2 Storage Precautions

(1) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
(2) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.
(3) It may reduce the display quality if the ambient temperature is lower than 10 ºC. For example, the response time will become slowly, and the starting voltage of lamp will be higher than the room temperature.

9.3 Operation Precautions

(1) Do not pull the I/F connector in or out while the module is operating.
(2) Always follow the correct power on/off sequence when LCD module is connecting and operating. This can prevent the CMOS LSI chips from damage during latch-up.

10 Disclaimer

All information in this document are subject to change, please constant LiteMax for any new design.