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SSD3205-A

Sunlight Readable

32” LED B/L Triangle Display

User Manual

Approved by	Checked by	Prepared by

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Record of Revision

Date	Page	Old Description	New Description	Remark
Sep. /15 /2025	all		Initial release	

Contents

1 General Description

The SSD3205-A is a 32 inch color TFT-LCD display with special Triangular Display and resolution 1920 x 1080. 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 Triangular Display and sunlight readable for digital signage, public transportation, exhibition hall, department store, and vending machine.

1.1 Features

- Triangle Display
- Brightness 1000 nits
- High Color Saturation 94%
- Viewing Angle of 178°(H), 178°(V)
- LED Backlight
- Low Power Consumption
- BL MTBF: 100,000 hours

1.2 General Specifications

Model Name	SSD3205-A
Description	32" TFT LCD, 1000nits LED Backlight, 1920x1080, MaxRGB, Triangle Display
Screen Size	32"
Display Area (mm)	676.53(H) x 390.59(V)
Brightness	1000 cd/m²
Resolution	1920x1080
Aspect Ratio	16:9
Contrast Ratio	4700:1
Pixel Pitch (mm)	0.36375(H) x 0.36375 (V)
Pixel Per Inch (PPI)	69
Viewing Angle	178°(H),178°(V)
Color Saturation (NTSC)	94%
Display Colors	16.7M
Response Time (Typical)	8ms
Panel Interface	LVDS
Input Interface	HDMI, DP
Input Power	DC12V
Power Consumption	42W
OSD Key	4 Keys (Power Switch, Menu, +, -)
OSD Control	Brightness, Color, Contrast, Auto Tuning, H/V Position…etc
Dimensions (mm)	753.72 x 437.86 x 48.2
Bezel Size(U/B/L/R)	15.82/18.14/18.14
Mounting	100x100 mm
Weight (Net)	3.7 kg
Operating Temperature	0 ˚C ~ 50 ˚C
Storage Temperature	-20 ˚C ~ 60 ˚C

SSD= Panel + LED Driving Board + AD Control Board + Chassis

1.3 Absolute Maximum Ratings

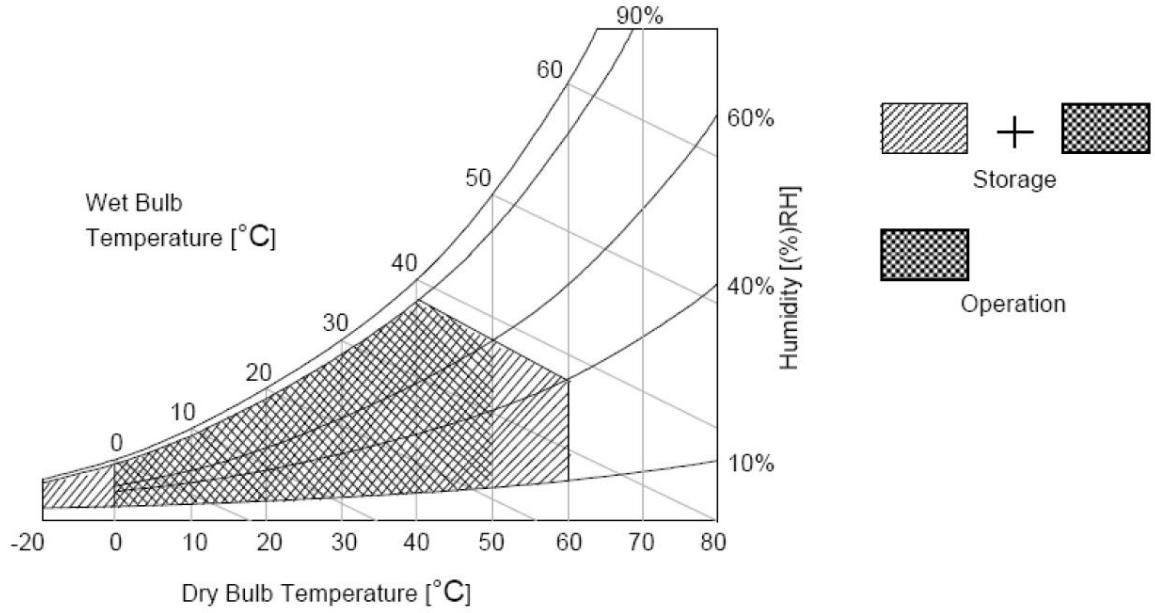
The followings are maximum values whitch, if exceeded, may cause faulty operation or damage to the unit or the unrecoverable damage on the device.

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	V_{DD}	-0.3	14	[Volt] $_{DC}$	Note 1
Input Voltage of Signal	Vin	-0.3	4	[Volt]$_{DC}$	Note 1
Operating Temperature	TOP	0	+50	[°C]	Note 2
Operating Humidity	HOP	10	90	[%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°Cor 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 Electrical Specifications

2.1 Input Power

Item		Symbol	Min.	Typ.	Max	Unit	Note
Power Supply Input Voltage		V_{DD}	10.8	12	13.2	V	1
Power Supply Input Current	Black pattern	I_{DD}	-	0.34	0.41	A	2
	White pattern		-	0.36	0.43	A	
	H-strip pattern		-	0.5	0.6	A	
Power Consumption	Black pattern	P_C	-	4.08	4.92	Watt	
	White pattern		-	4.32	5.16	Watt	
	H-strip pattern		-	6	7.2	Watt	
Inrush Current		I_{RUSH}	--	--	4	A	3

Note1. The ripple voltage should be fewer than 10% of V_{DD} and min. V_{DD} (including ripple min.) must be over 10.8V at any time.

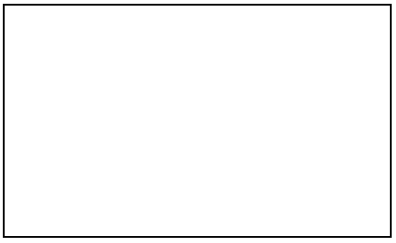
Note2. Test Condition:

(1)VDD=12V,(2)Fv=60Hz,(3) Fclk=74.25MHz,(4)Temperature=25℃

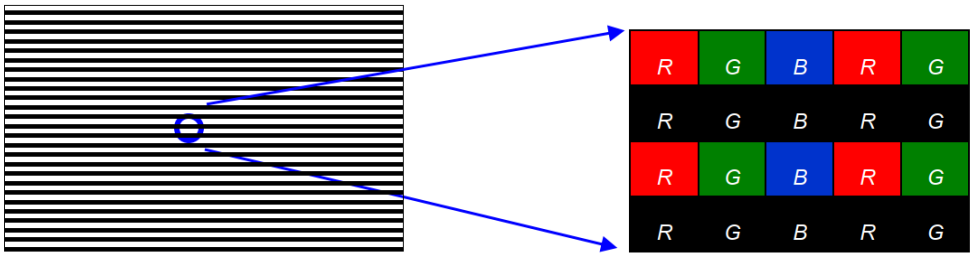
(5) Power dissipation check pattern. (Only for power design)

a. Black pattern

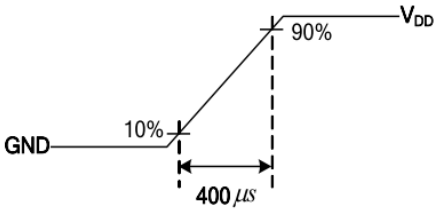
b. White pattern



c. H-Strip pattern



Note3. Measurement condition: Rising time = 400us

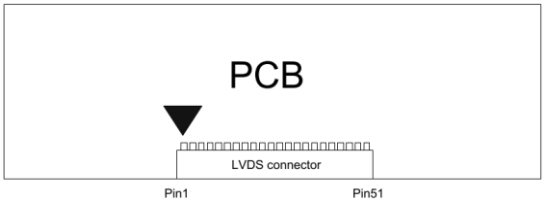


2.2 Input Connector

LCD Connector: JAE FI-RTE51SZ-HF,Starconn 115E51-0000RA-M3-R

PIN	Symbol	Description	Note	PIN	Symbol	Description	Note
1	N.C.	No Connection	2	26	GND or N.C.	Ground or No Connection	7
2	SCL	I2C Clock	3,4	27	N.C.	No Connection	2
3	WP	Write Protection	3,5	28	CH2_0-	LVDS Channel 2, Signal 0-	
4	SDA	I2C Data	3,4	29	CH2_0+	LVDS Channel 2, Signal 0+	
5	N.C.	No Connection	2	30	CH2_1-	LVDS Channel 2, Signal 1-	
6	N.C.	No Connection	2	31	CH2_1+	LVDS Channel 2, Signal 1+	
7	LVDS_SEL	LVDS data format selection	3,6	32	CH2_2-	LVDS Channel 2, Signal 2-	
8	N.C.	No Connection	2	33	CH2_2+	LVDS Channel 2, Signal 2+	
9	N.C.	No Connection	2	34	GND	Ground	
10	N.C.	No Connection	2	35	CH2_CLK-	LVDS Channel 2, Clock -	
11	GND	Ground		36	CH2_CLK+	LVDS Channel 2, Clock +	
12	CH1_0-	LVDS Channel 1, Signal 0-		37	GND	Ground	
13	CH1_0+	LVDS Channel 1, Signal 0+		38	CH2_3-	LVDS Channel 2, Signal 3-	
14	CH1_1-	LVDS Channel 1, Signal 1-		39	CH2_3+	LVDS Channel 2, Signal 3+	
15	CH1_1+	LVDS Channel 1, Signal 1+		40	N.C.	No Connection	2
16	CH1_2-	LVDS Channel 1, Signal 2-		41	N.C.	No Connection	2
17	CH1_2+	LVDS Channel 1, Signal 2+		42	GND	Ground	
18	GND	Ground		43	GND	Ground	
19	CH1_CLK-	LVDS Channel 1, Clock -		44	GND	Ground	
20	CH1_CLK+	LVDS Channel 1, Clock +		45	GND	Ground	
21	GND.	Ground		46	GND	Ground	
22	CH1_3-	LVDS Channel 1, Signal 3-		47	N.C.	No Connection	2
23	CH1_3+	LVDS Channel 1, Signal 3+		48	V_{DD}	Power Supply Input Voltage	
24	N.C.	No Connection	2	49	V_{DD}	Power Supply Input Voltage	
25	N.C.	No Connection	2	50	V_{DD}	Power Supply Input Voltage	
				51	V_{DD}	Power Supply Input Voltage	

Note1. Pin number start from the left side as the following figure.



Note2.Please leave this pin unoccupied. It can not be connected by any signal (Low/GND/High).

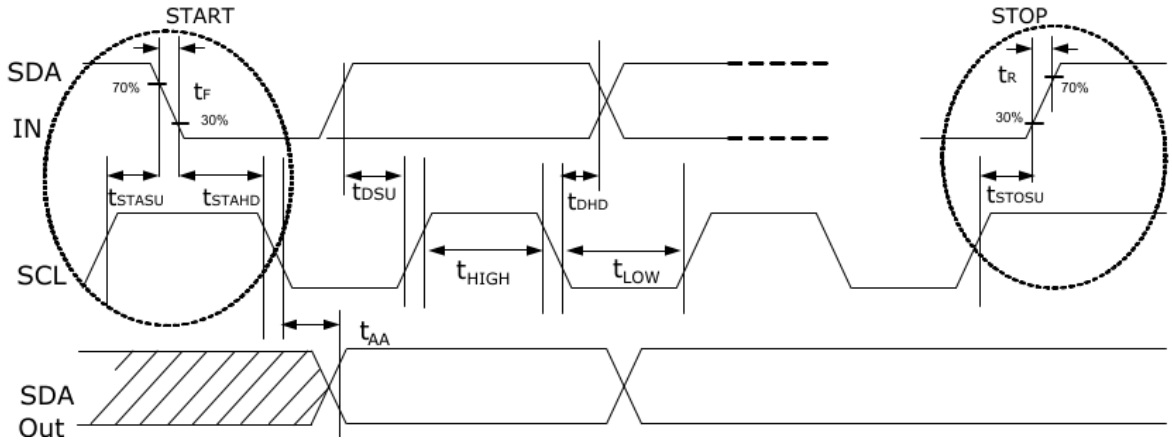
Note3.Input control signal threshold voltage definition

Item	Symbol	Min.	Typ.	Max.	Unit
Input High Threshold Voltage	VIH	2.7	-	3.6	V
Input Low Threshold Voltage	VIL	0	-	0.6	V

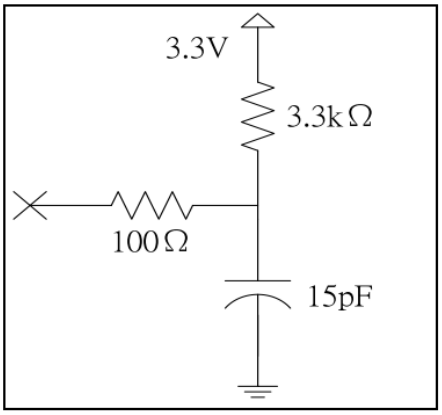
Note4. I2C Data and Clock

I2C Data and Clock timing

Parameter		Symbol	Min.	Typ.	Max	Unit
I2C	**SCL clock frequency**	**fSCL**	**-**	**-**	**350**	**kHz**
	Clock Pulse Width Low	**tLOW**	**1.85**	**-**	**-**	**us**
	Clock Pulse Width High	**tHIGH**	**0.4**	**-**	**-**	**us**
	Clock Low to Data Output Valid	**tAA**	**1.76**	**-**	**-**	**us**
	Start Setup Time	**tSTASU**	**0.6**	**-**	**-**	**us**
	Start Hold Time	**tSTAHD**	**0.6**	**-**	**-**	**us**
	Stop Setup Time	**tSTOSU**	**0.6**	**-**	**-**	**us**
	Data In Setup Time	**tDSU**	**0.1**	**-**	**-**	**us**
	Data In Hold Time	**tDHD**	**0**	**-**	**-**	**us**
	SCL/SDA Rise Time	**tR**	**-**	**-**	**0.3**	**us**
	SCL/SDA Fall Time	**tF**	**-**	**-**	**0.3**	**us**



Input equivalent impedance of SDA/SCL pin

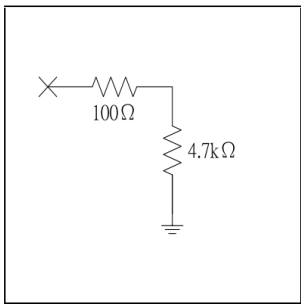


Note5.Write Protection

Mode selection

WP	Note
L or OPEN	Protection
H	Writable

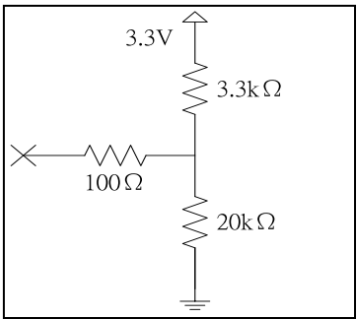
Input equivalent impedance of WP pin



Note6. LVDS data format selection

LVDS_SEL	Mode
H or OPEN	NS
L	Jeida

Input equivalent impedance of LVDE_SEL pin

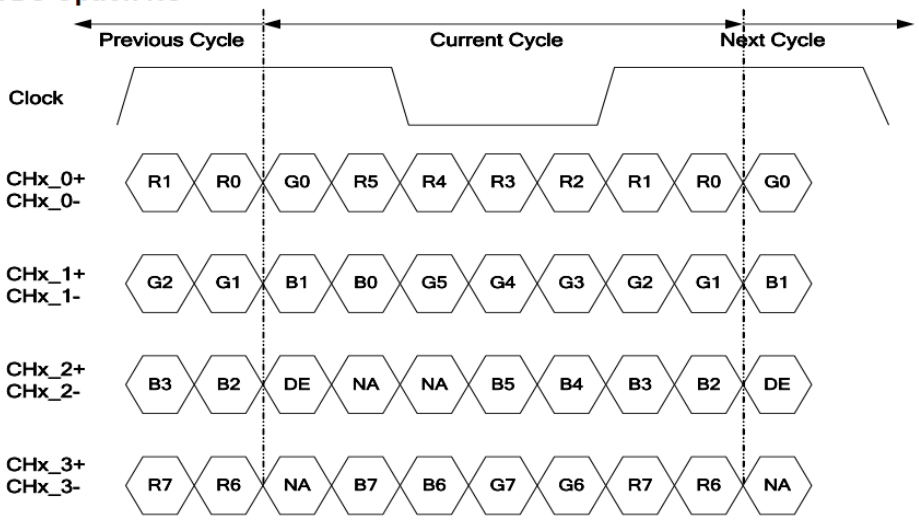


Note7.Please leave this pin unoccupied or connect to ground. It can not be connected by any signal (Low/High).

2.3 Input Data Format

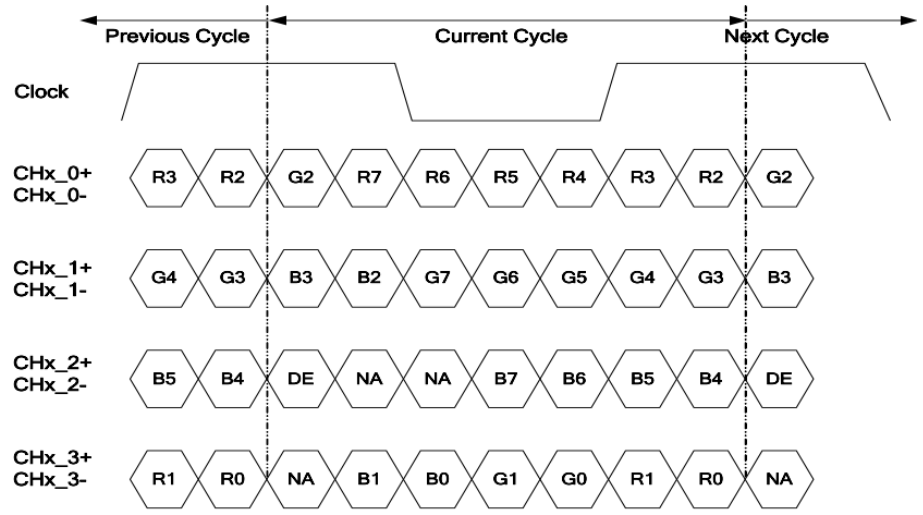
Data mapping

■ **LVDS Option NS**



Note: x = 1, 2, 3, 4…

■ **LVDS Option JEIDA**



Note: x = 1, 2, 3, 4…

2.4 Color Input Data Reference

The brightness of each primary color (red,green and blue) is based on the 8bit gray scale data input for the color,the higher the binary input, the brighter the coloe. 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	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
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	0	1

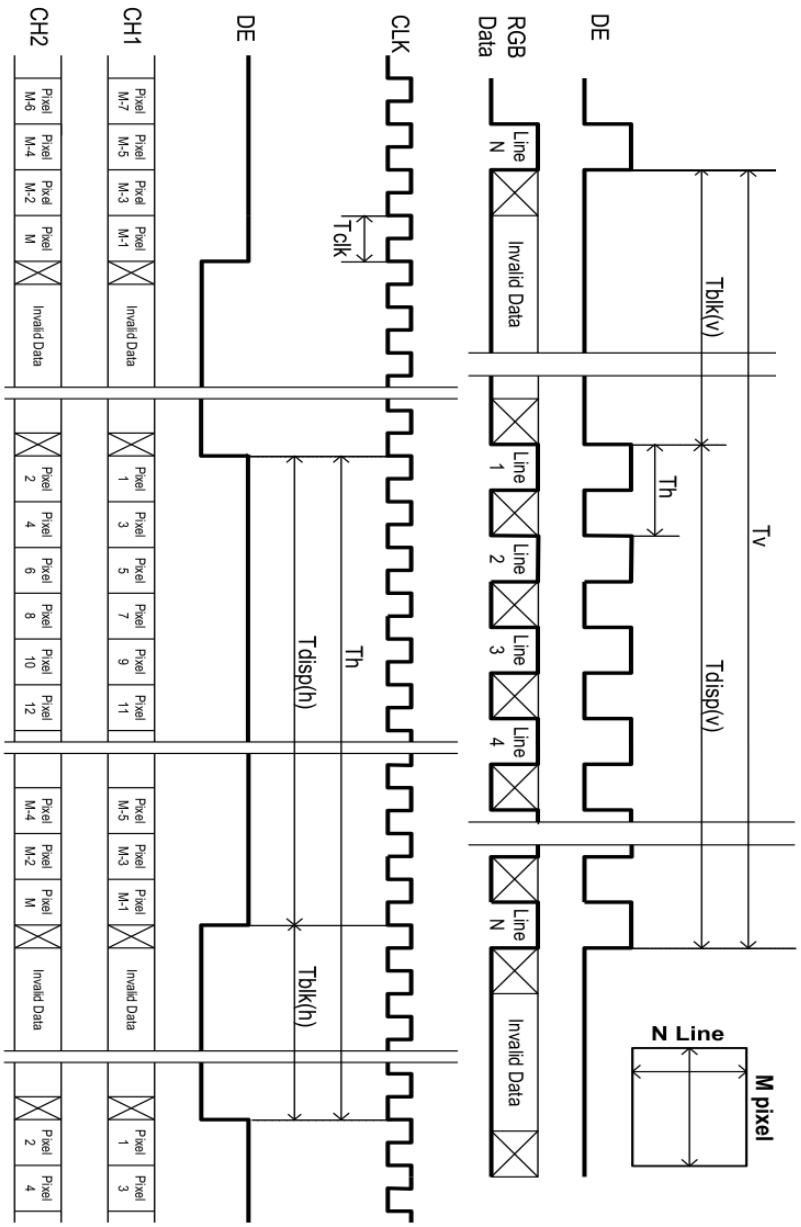
	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

2.5 Signal Timing Specification

Timing Table (DE only Mode)

Signal	Item	Symbol	Min.	Typ.	Max	Unit
Vertical Section	Period	Tv	1100	1125	1480	Th
	Active	Tdisp (v)		1080		
	Blanking	Tblk (v)	20	45	400	Th
Horizontal Section	Period	Th	1030	1100	1325	Tclk
	Active	Tdisp (h)		960		
	Blanking	Tblk (h)	70	140	365	Tclk
Clock	Frequency	Fclk=1/Tclk	53	74.25	82	MHz
Vertical Frequency	Frequency	Fv	47	60	63	Hz
Horizontal Frequency	Frequency	Fh	60	67.5	73	KHz

The Timing Diagrams Of The Input Timing



Note1. Display position is specific by the rise of DE signal only.
Horizontal display position is specified by the rising edge of 1st DCLK after the rise of 1st DE, is displayed on the left edge of the screen.

Note2. Vertical display position is specified by the rise of DE after a “Low” level period equivalent to eight times of horizontal period. The 1st data corresponding to one horizontal line after the rise of 1st DE is displayed at the top line of screen

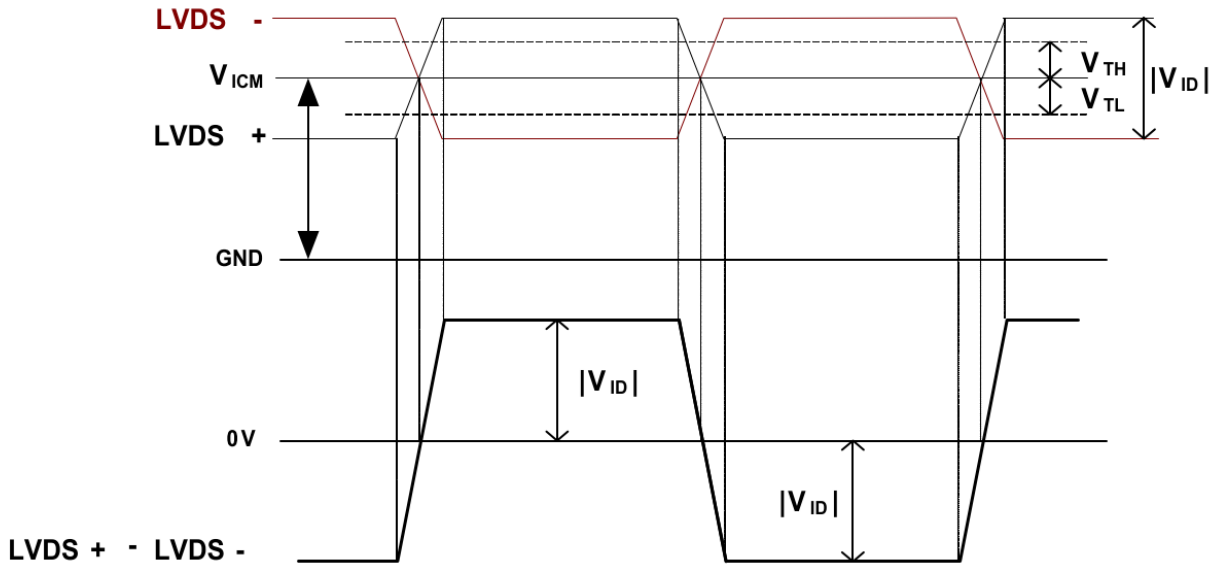
Note3. If a period of DE “High” is less than 1920 DCLK or less than 1080 lines, the rest of the screen displays black.

Note4. 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.

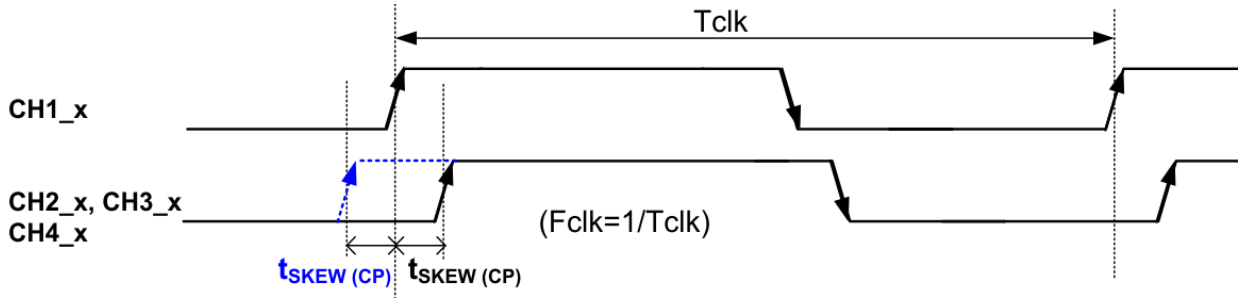
LVDS Spec

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LVDS Interface	Input Differential Voltage	$\lvert V_{ID} \rvert$	200	400	600	mV_{DC}	1
	Differential Input High Threshold Voltage	V_{TH}	+100	--	+300	mV_{DC}	1
	Differential Input Low Threshold Voltage	V_{TL}	-300	--	-100	mV_{DC}	1
	Input Common Mode Voltage	V_{ICM}	1.1	1.25	1.4	V_{DC}	1
	Input Channel Pair Skew Margin	$t_{SKEW\ (CP)}$	-500	--	+500	ps	2
	Receiver Clock : Spread Spectrum Modulation range	Fclk_ss	Fclk -3%	--	Fclk +3%	MHz	3
	Receiver Clock : Spread Spectrum Modulation frequency	Fss	30	--	200	KHz	3
	Receiver Data Input Margin Fclk = 85 MHz Fclk = 65 MHz	tRMG	 -0.4 -0.5	 -- --	 0.4 0.5	ns	4

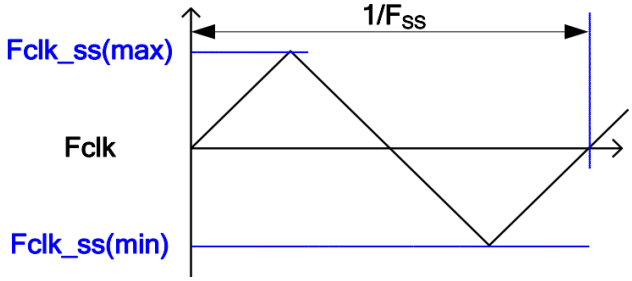
Note1. VICM=1.25V



Note2. Input Channel Pair Skew Margin

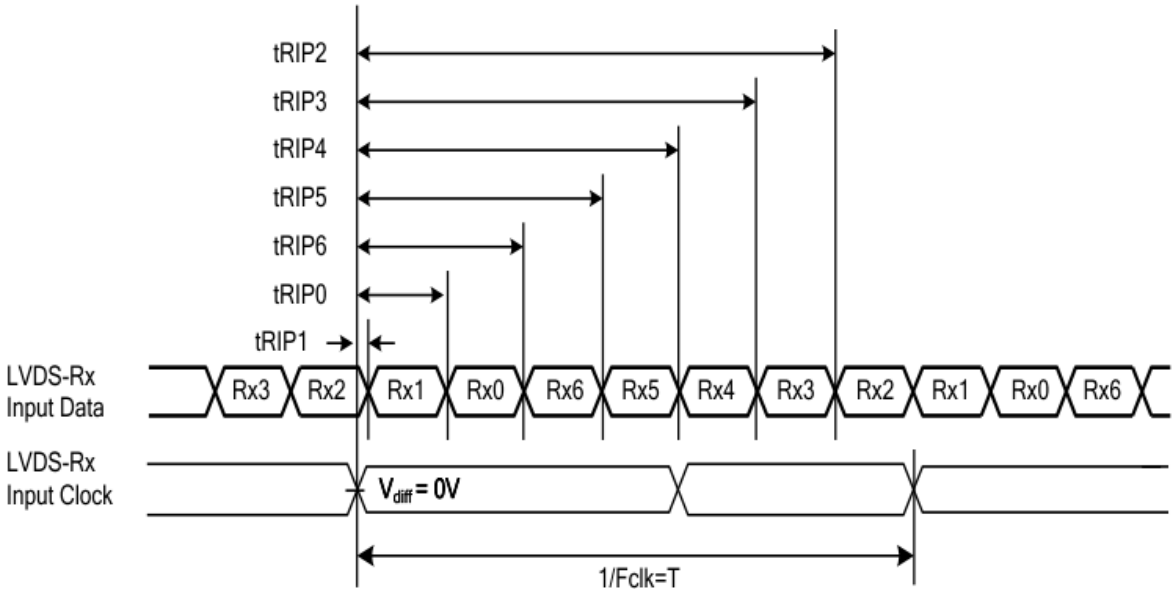


Note3. LVDS Receiver Clock SSCG (Spread spectrum clock generator) is defined as below figures.

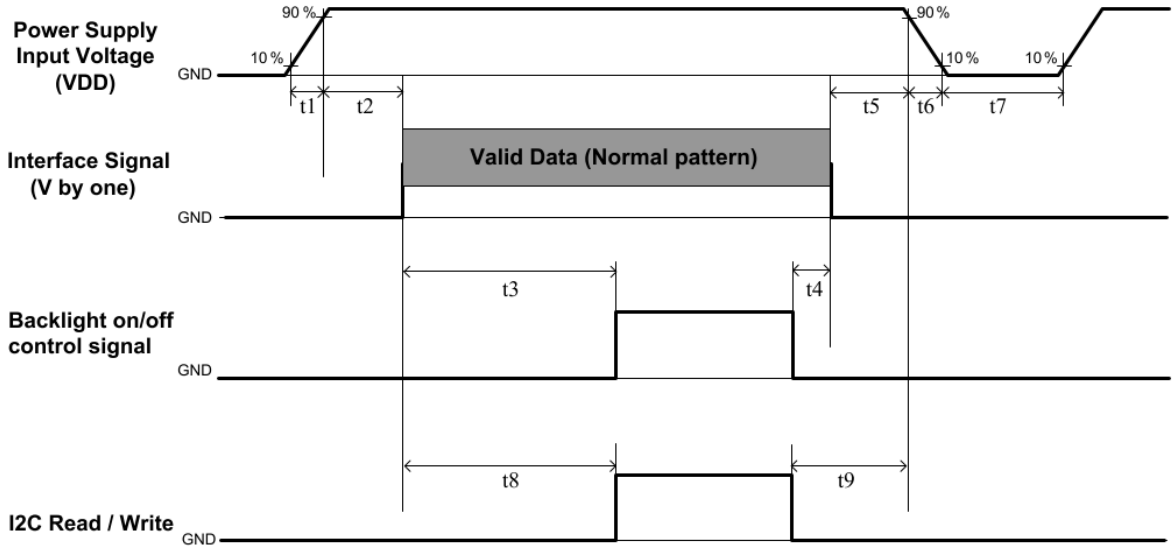


Note4. Receiver Data Input Margin

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	



2.6 Power Sequence For LCD



Parameter	Min.	Typ.	Max	Unit
t1	0.4	---	30	ms
t2	40	---	---	ms
t3	640	---	---	ms
t4	0*1	---	---	ms
t5	0	---	---	ms
t6	---	---	---*2	ms
t7	1000*3	---	---	ms
T8	640	---	---	ms
T9	150	---	---	ms

Note :

(1) t4=0 : concern for residual pattern before BLU turn off.

(2) t6 : voltage of VDD must decay smoothly after power-off. (customer system decide this value)

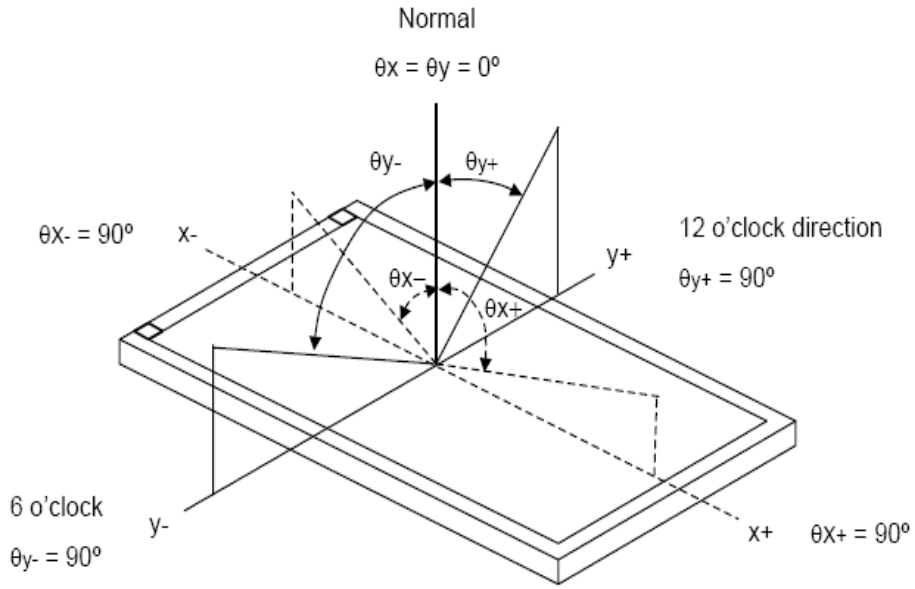
(3) When the power supply input voltage(VDD) is off, be sure to pull down the valid and the invalid data to 0V.

3 Optical Specification

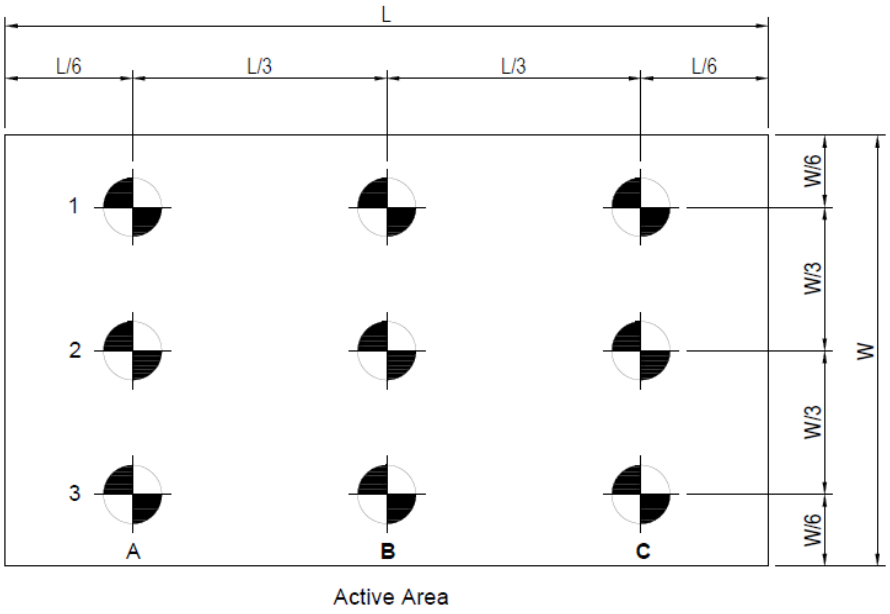
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color Chromaticity	Red	Rx	θx=0 θy=0 CA-410	0.654	0.684	0.714	-	Test Mode: (2) (3)
		Ry		0.279	0.309	0.339	-	
	Green	Gx		0.231	0.261	0.291	-	
		Gy		0.637	0.667	0.697	-	
	Blue	Bx		0.120	0.150	0.180	-	
		By		0.028	0.058	0.088	-	
	White	Wx		0.250	0.280	0.310	-	
		Wy		0.260	0.290	0.320	-	
Center Luminance of White		Lc	θx=0 θy=0 CA-410	900	1000	1300	cd/m^2	
Uniform		Lu			81		%	
Contrast Ratio		CR	θx=0 θy=0 Klein K-10	4230:1	4700:1		-	Test Mode: (4)
Color Saturation		NTSC			94		%	
Viewing Angle	Horizontal	θx+	CR ≥ 10		89		Deg	Test Mode: (1)
		θx-			89			
	Vertical	θy+			89			
		θy-			89			

Test Mode：

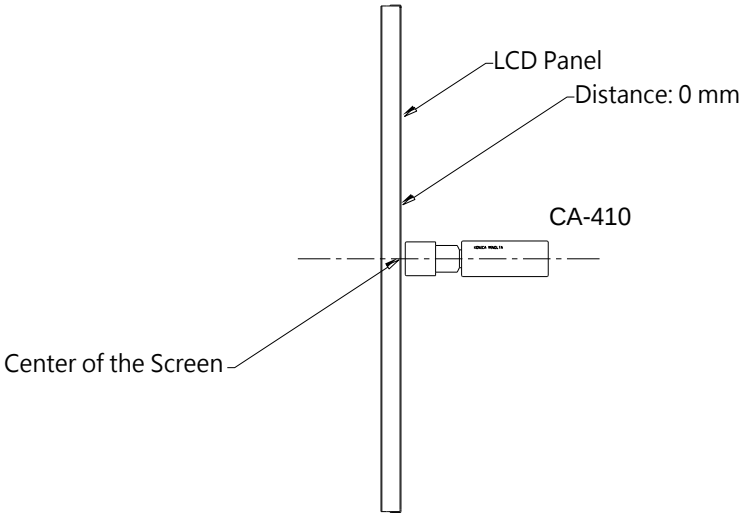
(1) Definition of Viewing Angle (θx , θy):



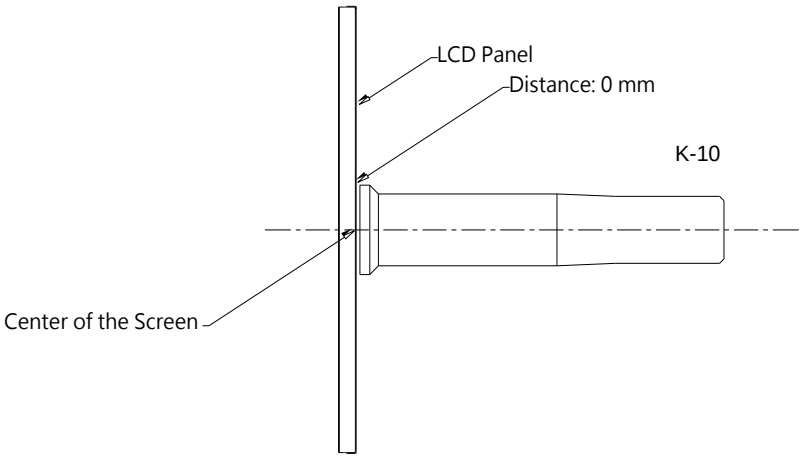
(2) Definition of Test Point:



(3) CA-410 Measurement Setup:



(4) Klein K-10 Measurement Setup:



4 LED Driving Board Specifications

This specification is applied to LED converter unit for SSD3205 1000nits LED backlight.

4.1 Operating Characteristics

Item	Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remark
Input Voltage	Vin		10.0	12.0	14.0	V	
Input Current (High Brightness)	IinH	Brightness = 100%	3.66	3.05	2.61	A	(1)
Input Power Consumption	Pin	Brightness = 100%	-----	36.60	-----	W	
LED Current (High Brightness)	IoutH	Brightness = 100%	-----	1.14	-----	A	
Working Frequency	W_Freq	Brightness = 100%	-----	400	-----	KHZ	
Brightness Control	DC mode						
	Vadj	Connection of Voltage	0.2	-----	4.8	V	(2)
	PWM mode						
	PWM	Connect to PWM	0	-----	100	%	(3)
	Freq		-----	200	-----	Hz	(4)
ON/OFF Control	Von	Normal Operation	2	-----	5	V	
	Voff		0	-----	0.8	V	
Output Voltage	Vout	Brightness = 100%	-----	28.94	-----	V	
Efficiency	η	Brightness = 100%	-----	90.1	-----	%	(5)

Remark:

(1) This data is based on the testing result of practical input voltage, Iin is measured by related Vin. (min, typ, max). If the voltage is increased, the current will decrease. If the voltage is decrease, the current will increase.

(2) Max brightness at V_{adj}=0.2V. Min brightness at V_{adj}=4.8V.

(3) Max dimming ratio = 1:100.

(4) Frequency can be adjusted in accordance with demand (120Hz minimum, or lights will be flickering)

(5) $\eta_{max} = V_{out(max)} * I_{outH(max)} / V_{in(max)} * I_{inH(min)}$

$\eta_{min} = V_{out(min)} * I_{outH\ (min)} / V_{in(min)} * I_{inH(max)}$

4.2 Connector Socket

Input Connector: J3 (JST S9B-PH-SM3-TB or Compatible)

PIN No	Symbol	Description
1	Vin	DC+
2	Vin	DC+
3	Vin	DC+
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	Brightness	Brightness Control
8	Control	ON/OFF Control
9	CL	PWM or DC selection

Note: Pin9 is dimming method control pin, Low → DC dimming, High → PWM dimming.
If pin9 is be used, please NC JP1.

Output Connector: J1, J2(JST S2B-EH or Compatible)

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

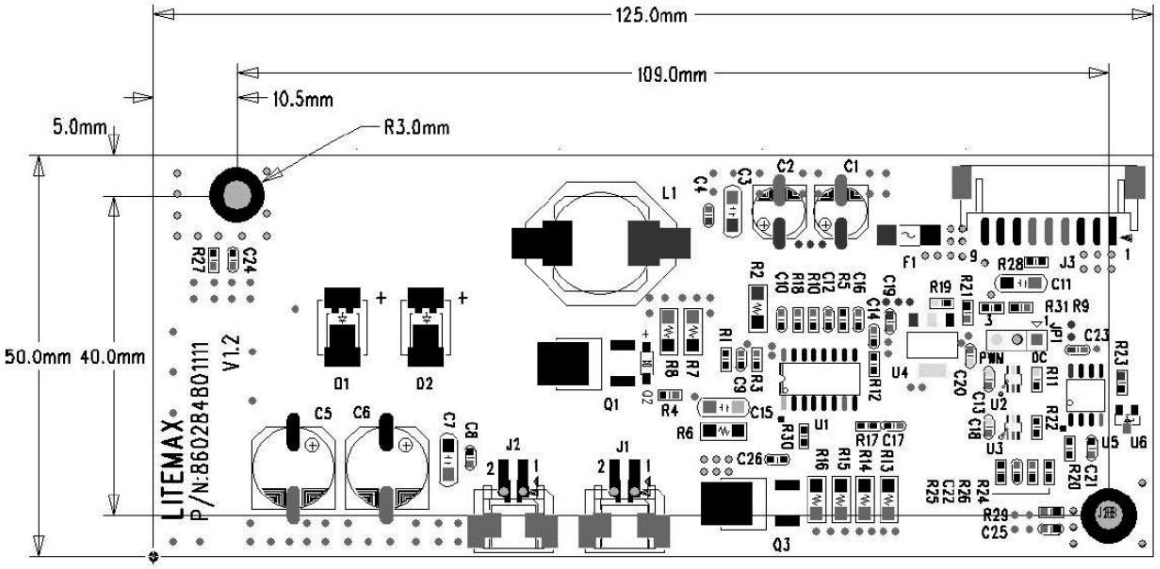
DC or PWM Connector: JP1

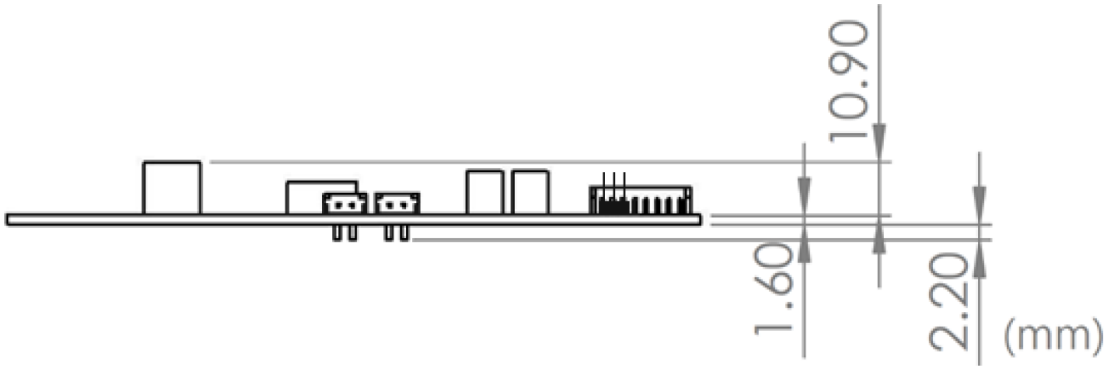
PIN NO	Symbol	Description
1	DC	Clsoe pin 1,2 LED driver is DC dimming
2	GND	
3	PWM	Close pin 2,3 LED driver is PWM dimming

Note: If you use JP1 to set DC/PWM, please NC the pin9 of J3.

4.3 Mechanical Characteristics

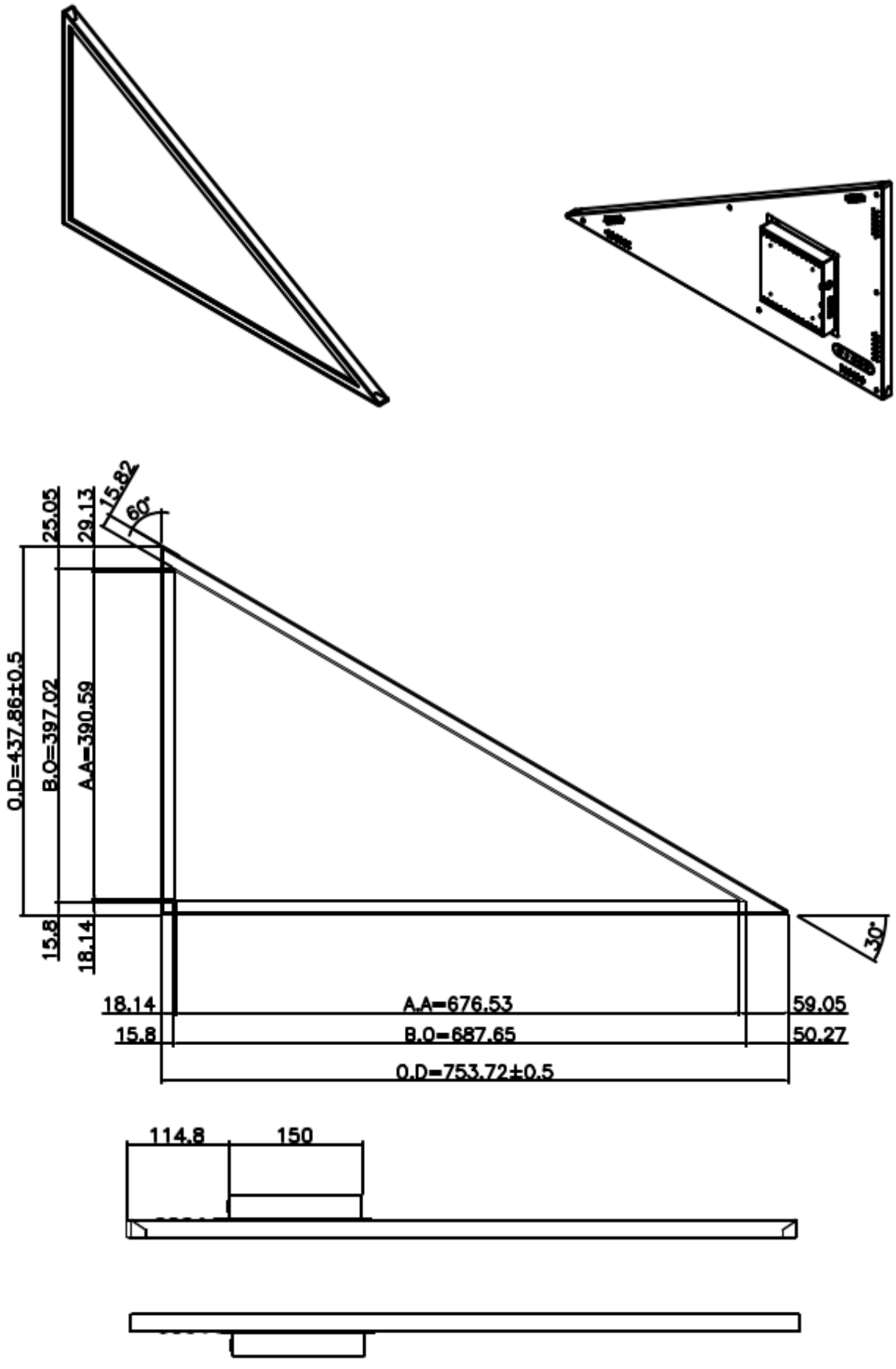
Dimension: 125 x 50 x 12.5mm

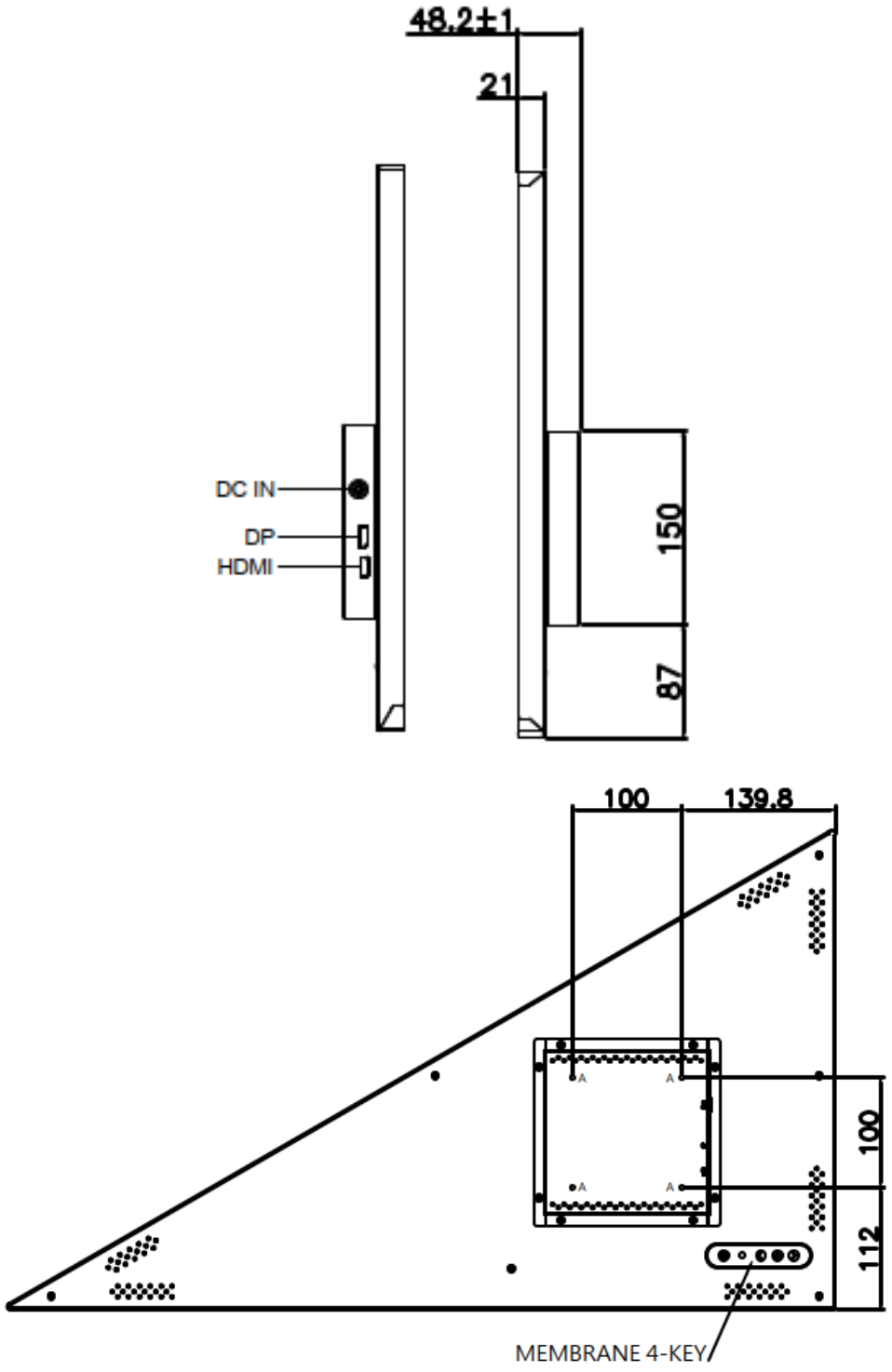




5 Mechanical Drawing

Unit:mm





Note：
O.D : Outline Dimension
B.O : Bezel Opening
A.A : LCD Active Area
A:4-M4_USER_HOLE_MAX_DEPTH=6mm

6 AD68862HP Board & OSD Functions

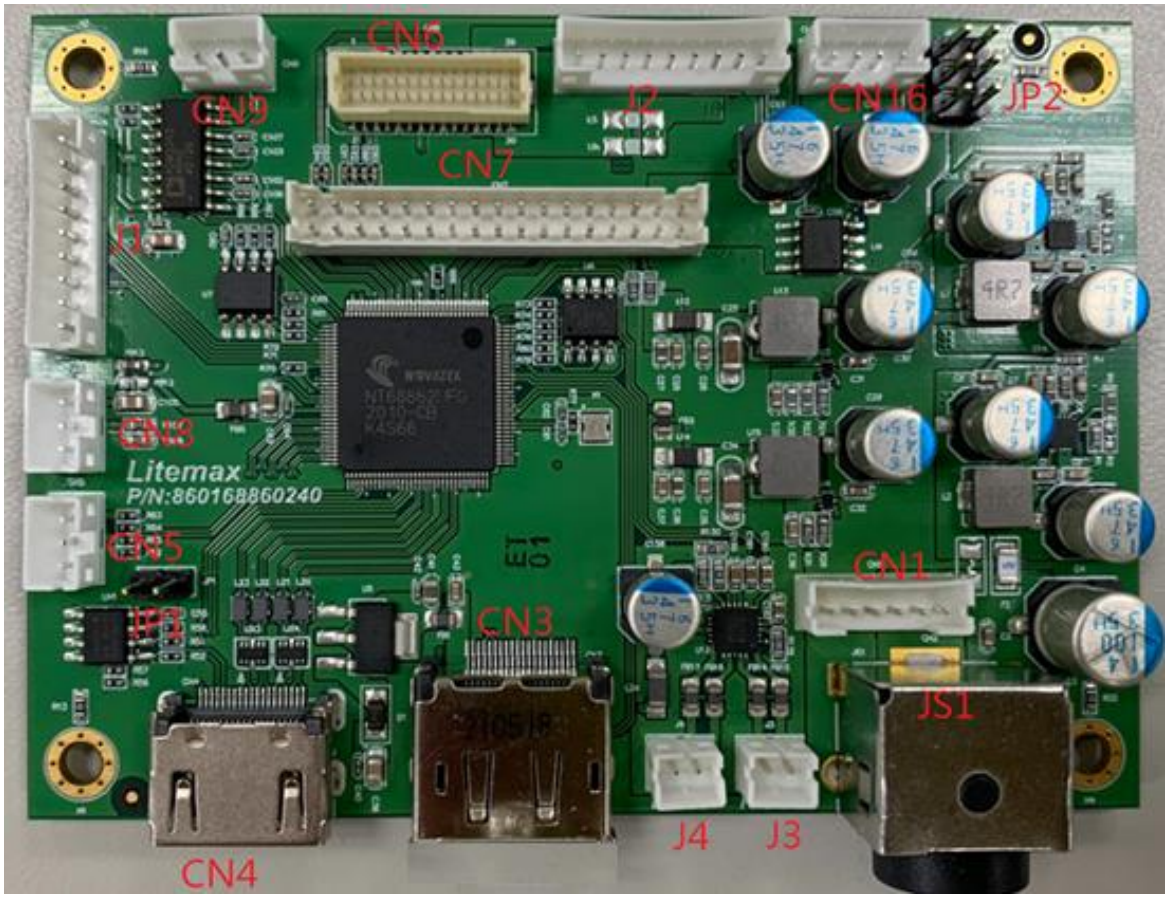
AD68862HP is a good performance AD board for Litemax FHD resolution display product. Input interface supports DP, HDMI. Output support eDP, LVDS panel. Max resolution up to 1920 x 1080.

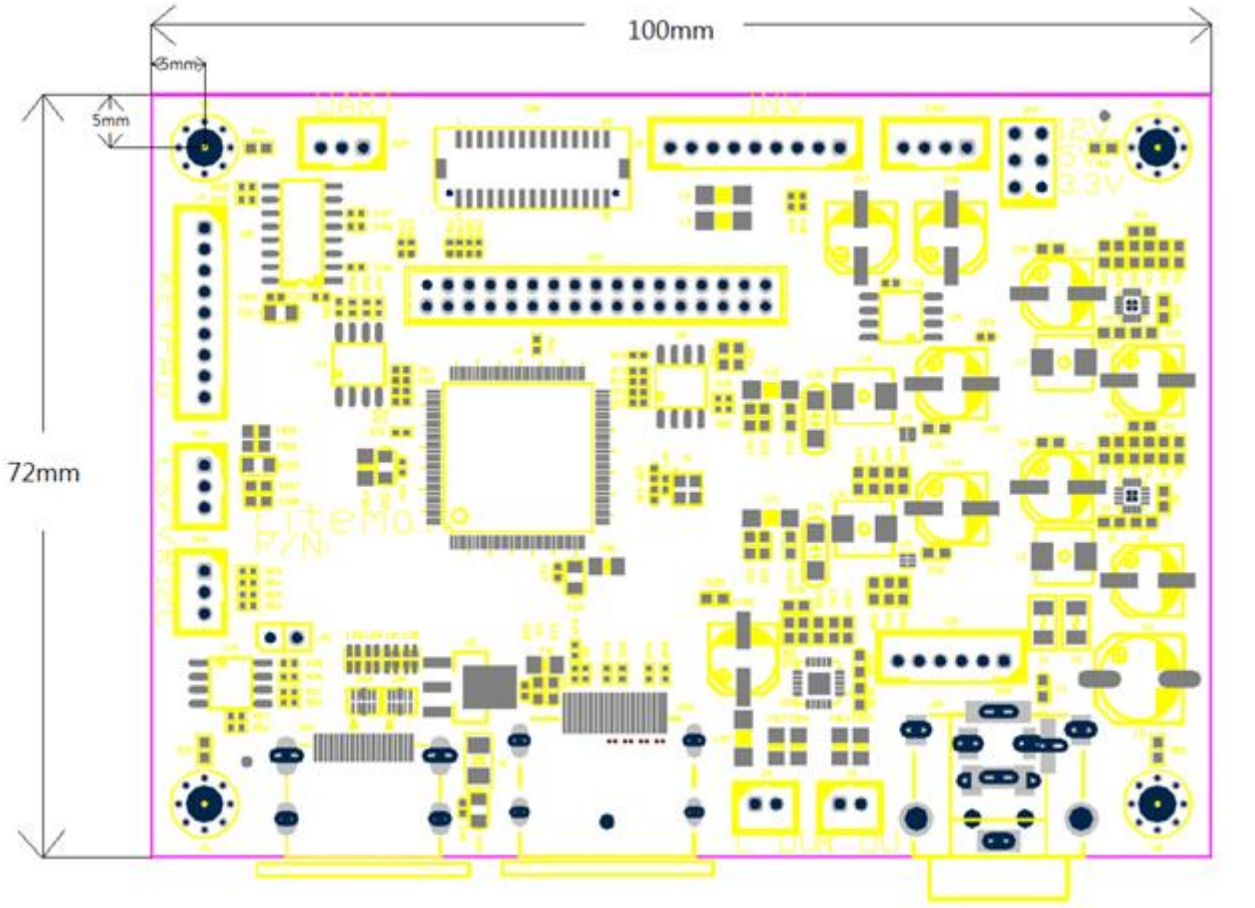
General Description

- **Max resolution 1920 x 1080 60Hz**
- **One DP 1.2, supports 1920 x 1080 60Hz**
- **One HDMI 1.4, supports 1920 x 1080 60Hz**
- **Embedded MCU with ADC port for VR, Light sensor application.**
- **Embedded OSD.**
- **Support eDP panel.**
- **Support Dual/Single LVDS**
- **Size 100mm x 72mm**
- **Support output voltage 12V(1A) or 5V(1A)**

Outline Dimensions

AD68862 100mm x 72mm




100mm
5mm
5mm
72mm


16mm

AD68862HP Board Pin Define

CN6: eDP output(Wafer 1.0mm, 15*2P)

Pin	Function	Pin	Function
1	TX0P	16	TXAUX-
2	TX0N	17	TX_HPD
3	TX1P	18	GND
4	TX1N	19	VCC
5	GND	20	VCC
6	GND	21	DIM_EDP
7	NC	22	ON/OFF_EDP
8	NC	23	INVGND
9	GND	24	INVGND
10	GND	25	INVGND
11	NC	26	GND
12	NC	27	12INV
13	GND	28	12INV
14	GND	29	12INV
15	TXAUX+	30	12INV

CN7: LVDS output (Wafer 2.0mm,17x2P)

Pin	Function	Pin	Function
1	RXO0-	18	RXE1+
2	RXO0+	19	RXE2-
3	RXO1-	20	RXE2+
4	RXO1+	21	RXEC-
5	RXO2-	22	RXEC+
6	RXO2+	23	RXE3-
7	RXOC-	24	RXE3+
8	RXOC+	25	NC
9	RXO3-	26	NC
10	RXO3+	27	GND
11	NC	28	GND
12	NC	29	+3.3V
13	GND	30	GND
14	GND	31	VCC
15	RXE0-	32	VCC
16	RXE0+	33	VCC
17	RXE1-	34	VCC

CN3: DP input

Pin	Function	Pin	Function
1	ML_Lane3(n)	11	GND
2	GND	12	ML_Lane0(p)
3	ML_Lane3(p)	13	CONFIG1
4	ML_Lane2(n)	14	CONFIG2
5	GND	15	AUX_CH(p)
6	ML_Lane2(p)	16	GND
7	ML_Lane1(n)	17	AUX_CH(n)
8	GND	18	Hot_Plug
9	ML_Lane1(p)	19	Return
10	ML_Lane0(n)	20	DP_PWR

CN4: HDMI input

Pin	Function	Pin	Function	Pin	Function
1	RX2+	9	RX0-	17	GND
2	GND	10	TMDS Clock+	18	HDMI +5V
3	RX2-	11	HDMI DET	19	HPD
4	RX1+	12	TMDS Clock-		
5	GND	13	NC		
6	RX1-	14	NC		
7	RX0+	15	HDMI_SCL		
8	GND	16	HDMI_SDA		

CN1: Power input (Wafer 2.0mm pitch 6 pin)

Pin	Function	Pin	Function
1	Power Input	4	GND
2	Power Input	5	GND
3	Power Input	6	GND

JS1: Power input (Power Din 4 pin)

Pin	Function	Pin	Function
1	Power Input	3	GND
2	Power Input	4	GND

CN2: Power input (Power Jack 3 pin)

Pin	Function	Pin	Function
1	Power Input	3	GND
2	GND		

CN16: Power output (Wafer 2.0mm pitch 4 pin)

Pin	Function	Pin	Function
1	+5V(1A)	3	+12V(1A)
2	GND	4	GND

J2: Backlight Power and Control (Wafer 2.0mm pitch 9 pin)

Pin	Function	Pin	Function
1	DC/PWM SEL	6	GND
2	Enable	7	12V (Note3)
3	Dimming	8	12V (Note3)
4	GND	9	12V (Note3)
5	GND		

Note3: Pin 7,8,9 are for 12V version only. If you choose 24V version, these 3 pin are NC.

J1: Keypad (Wafer 2.0mm pitch 9 pin)

Pin	Function	Pin	Function
1	POWER KEY	6	MENU KEY
2	GREEN LED	7	NC
3	RED LED	8	GND
4	DOWN KEY	9	NC
5	UP KEY		

CN8: Light sensor (Wafer 2.0mm pitch 2 pin)

Pin	Function	Pin	Function
1	3.3V	3.	GND
2	Sensor Out		

JP2: Panel power selection (2.54mm pitch 2x3 jump)

Pin	Function	Pin	Function
1-2 close	3.3V	5-6 close	12V
3-4 close	5V		

CN9: UART (Wafer 2.0mm pitch 3 pin)

Pin	Function	Pin	Function
1	TX	3	GND
2	RX		

CN5: I2C (Wafer 2.0mm pitch 3 pin)

Pin	Function	Pin	Function
1	SDA	3	GND
2	SCL		

J3: Audio out R (Wafer 2.0mm pitch 2 pin)(2.8W 4ΩLoad)

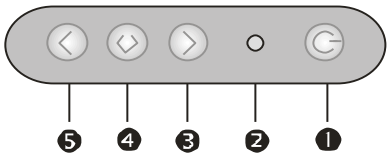
Pin	Function	Pin	Function
1	ROUTP	2	ROUTN

J4: Audio out L (Wafer 2.0mm pitch 2 pin) (2.8W 4ΩLoad)

Pin	Function	Pin	Function
1	LOUTP	2	LOUTN

6.1 OSD Function

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.

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 10 sec (default OSD timeout), it goes back to the stand-by mode and no more switching is accepted except MENU to restart the setting.

6.2 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 and V-frequency of the panel. This 2 information is not changeable by user.

There are 6 sub menus within the OSD user interface:
Brightness, **Signal Select**, **Sound**, **Color**, **Tools**, and **Exit**.

Brightness

When you press the “menu” button, you enter the “Brightness” sub directory. In this directory, you will see 6 selections: **Brightness Mode**, **OSD Brightness**, **Contrast**, **Sharpness**, **Auto Tune**, **Exit**.

Brightness Mode：
press “menu” once, you can go into the Brightness Mode.

VR: (OPTION)
press this Icon to activate the VR control of brightness.

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

OSD Brightness：

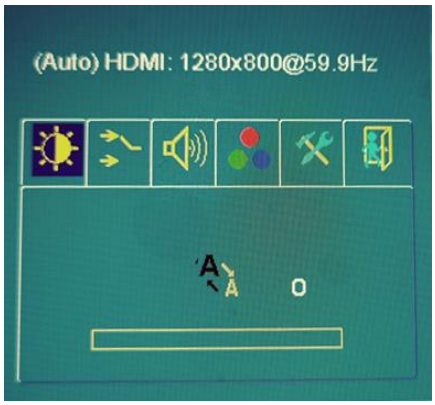
Press the “menu” once, to adjust the brightness. Press “left” to dim down the brightness to “0”, press “right” to increase the brightness to “100”

Contrast：

Press “Menu” once, you can adjust the contrast from“0” to “100” by pressing the “Left” and “Right”.

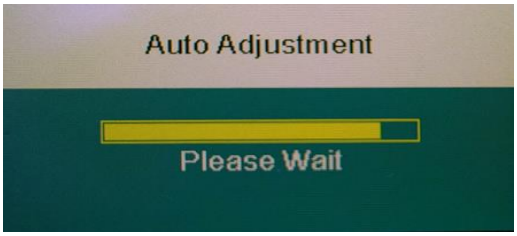
Sharpness：

Press “Menu” once, you can adjust the Sharpness from“0” to “4” by pressing the “Left” and “Right”.



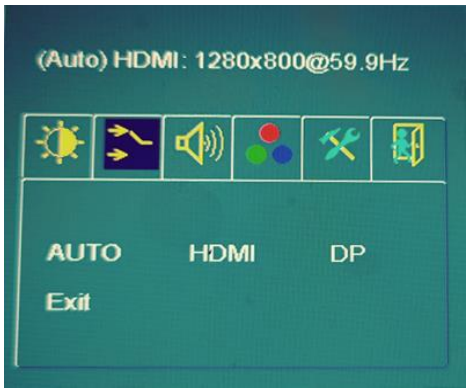
Auto Tune： (VGA only)

Press “Menu” once, you can activate the Auto Tune.



Exit: back to the beginning menu.

Input Signal: (default auto detect)



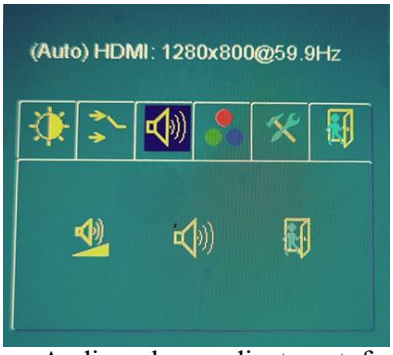
AUTO: auto detect

HDMI: HDMI input

DP: DisplayPort input

Exit: back to the beginning menu.

Audio:

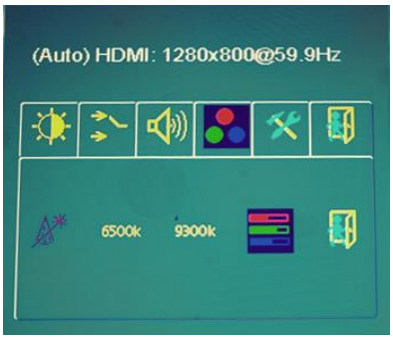


Audio Volume: Audio volume adjustment, from“0” to “100”.

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

Exit: back to the beginning menu.

Color:



Auto Color (VGA only)：

By navigating over to the “Auto Color” option, optimal color performance is invoked.

Color Tempture_6500K: Warm color scheme.

Color Tempture_9300K: Cold color scheme.

Color Temperature User Define: Default is 100 for “R”, “G”, and “B”. Range is“0” to “255”.

Exit: back to the beginning menu.

Other Setting:

HPos: You can shift the screen horizontally using this function.

VPos: You can shift the screen vertically using this function.

Rotation: You can rotate the screen to 0° (No)、270° (Yes).

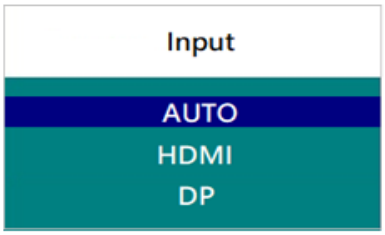
Load Default: You can load the default data using this function.

Exit: back to the beginning menu.

< **Hot Key** >

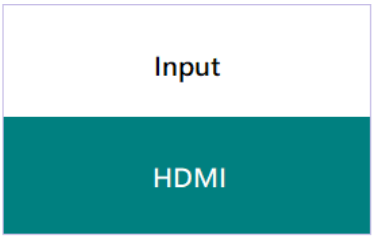
Left click to display brightness adjustment.

Right click to display Input Source Menu.



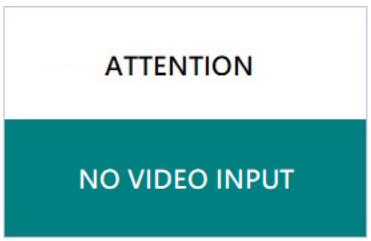
<Others>

Signal Information will be displayed after powering on or switching the signal.



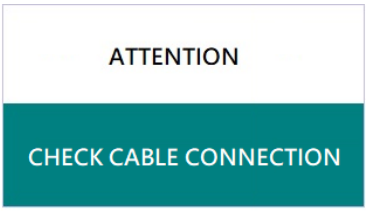
(Signal Information)

NO VIDEO INPUT will be displayed when there is no signal input.



(No Video Input)

CHECK CABLE CONNECTION will be displayed when the signal cable is not connected.



(Check Cable Connection)

7 Precautions

7.1 Handling and Mounting Precautions

(1) The module should be assembled into the system firmly by using every mounting hole. Do not apply rough force such as bending or twisting to the LCD during assembly.
(2) You should consider the mounting structure so that uneven force (ex. Twisted stress, Concentrated stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the LCD module.
(3) While assembling or installing LCD modules, it can only be in the clean area. The dust and oil may cause electrical short or damage the polarizer.
(4) Use fingerstalls or soft gloves in order to keep display clean during the incoming inspection and assembly process.
(5) Do not press or scratch the surface harder than a HB pencil lead on the panel because the polarizer is very soft and easily be scratched.
(6) Please attach the surface transparent protection film to the surface in order to protect the polarizer. Transparent protection film should have sufficient strength in order to the resist external force.
(7) When the transparent protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
(8) 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.
(9) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.
(10) 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.
(11) Protect the LCD module from static electricity, it may cause damage to the C-MOS Gate Array IC.
(12) Do not disassemble the module.
(13) Do not pull or fold the lamp wire.
(14) Pins of I/F connector should not be touched directly with bare hands.

7.2 Storage Precautions

(1) High temperature or humidity may reduce the performance of LCD module. Please store LCD module within the specified storage conditions.
(2) If possible store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
(3) It is dangerous that moisture come into or contacted the LCD module, because the moisture may damage LCD module when it is operating.
(4) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

7.3 Operation Precautions

(1) Do not pull the I/F connector in or out while the LCD 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.
(3) Response time depends on the temperature. (In lower temperature, it becomes longer.)
(4) Brightness depends on the temperature. (In lower temperature, it becomes lower.)
(5) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
(6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods are very important to minimize the interference.
(7) Please do not give any mechanical and/or acoustical impact to module. Otherwise, module can't be operated its full characteristics perfectly.
(8) Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly.
(9) Do not display the fixed pattern for a long time because it may cause image sticking.
(10) In order to prevent image sticking, periodical power-off or screen save is needed after fixed pattern long time display.
(11) Black image or moving image is strongly recommended as a screen save.
(12) Static information display recommended to use with moving image. Cycling display between 10 minutes' information (static) display and 10 seconds' moving image.
(13) Background and character (image) color change is recommended. Use different colors for background and character, respectively. And change colors themselves periodically.
(14) LCD system is required to place in well-ventilated environment. Adapting active cooling system is highly recommended.
(15) Product reliability and functions are only guaranteed when the product is used under right operation usages.
(16) If product will be used in extreme conditions, such as high temperature/ humidity, shock and vibration it is strongly recommended to contact Litemax for filed application engineering advice. Otherwise, its reliability and function may not be guaranteed. Extreme conditions are commonly found at airports, transit stations, taxi-top, in vehicle and controlling systems.

8 Disclaimer

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