



LITEMAX

DLF/DLH5501-C
55" LED B/L LCD

User Manual

Approved by	Checked by	Prepared by

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Record of Revision

Version and Date	Page	Old Description	New Description	Remark
May/7/2026	all		Initial release	

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1 General Description

The DLF/DLH5501-C is a 55 inch industrial grade sunlight readable LCD, with high brightness 4000 nits, it produce sharp images, crisp text and lifelike colors. The Durapixel LED backlight technology ensures high reliability and low power consumption, suitable for outdoor application, kiosk, factory automation, military, transportation and gaming application.

1.1 Key Features

- High Brightness 4000 nits
- Sunlight Readable
- Wide Viewing Angle of 178°(H), 178°(V)
- LED Backlight
- Low Power Consumption
- LCD Blackening Defect Free (Hi-Tni 110°C)
- BL MTBF: 100,000 hours

1.2 General Specifications

Model Name	DLF/DLH5501-C
Description	55" TFT LCD, 4000nits LED Backlight, 1920x1080
Screen Size	55"
Display Area (mm)	1209.6(H) x 680.4(V)
Brightness	4000 cd/m ²
Resolution	1920x1080
Aspect Ratio	16:9
Contrast Ratio	1300:1
Pixel Pitch (mm)	0.63(H) x 0.63 (V)
Pixel Pre Inch (PPI)	40
Viewing Angle	178°(H),178°(V)
Color Saturation (NTSC)	83%
Display Colors	1.07G
Response Time (Typical)	8ms
Panel Interface	LVDS
Input Interface	HDMI, DP
Input Power	AC100~240V
Power Consumption	229W (232W with AD board)
OSD Key	4 Keys (Power Switch, Menu, +, -,Exit)
OSD Control	Brightness, Color, Contrast, Auto Tuning, H/V Position...etc
Dimensions (mm)	1236.5(W) x 707.5(H) x 56.14(D)
Bezel Size(U/B/L/R)	13.551/13.551/13.45/13.45 mm
Weight (Net)	18.5kg
Operating Temperature	-20 °C ~ 60 °C
Storage Temperature	-30 °C ~ 80 °C

DLF= Panel + LED Driving Board

DLH= Panel + LED Driving Board + AD Control Board

2 Electrical Specifications

2.1 Absolute Maximum Ratings ($T_A = 25 \pm 2^\circ\text{C}$)

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

Item	Symbol	Value		Unit
		Min.	Max.	
Power Supply Voltage	V_{CC}	-0.3	13.5	V
Input Signal Voltage	V_{IN}	-0.3	3.6	V

2.2 Environment Requirement

- (1) Temperature and relative humidity range are shown as below.

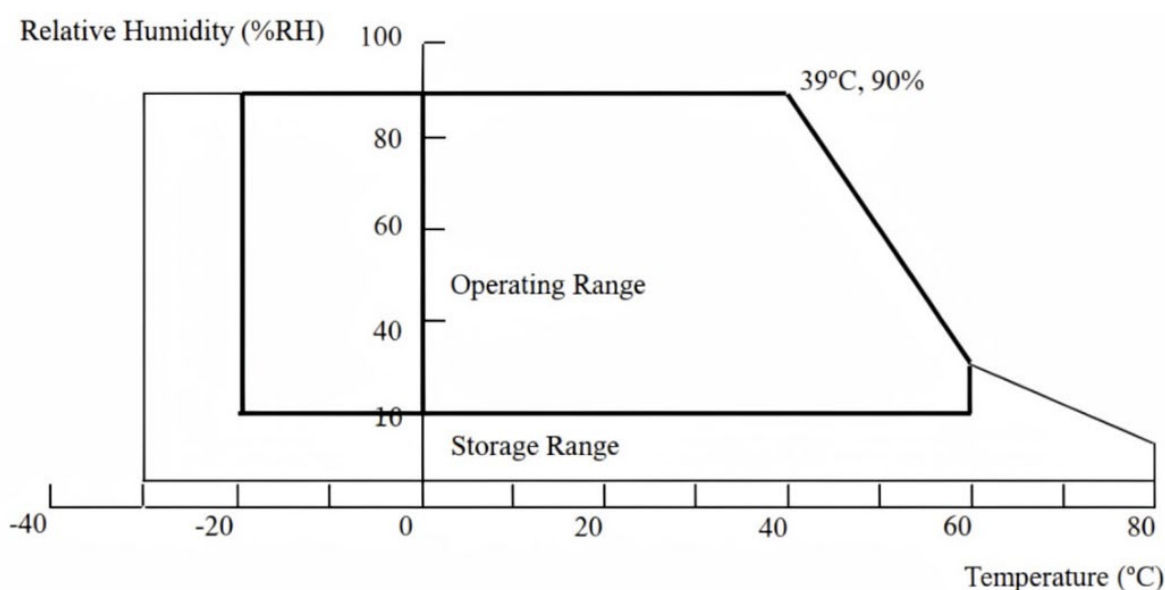


Fig. Operating and storage environment

- (a) 90%RH maximum ($T_A \leq 39^\circ\text{C}$).
(b) Wet-bulb temperature should be 39°C maximum ($T_A > 39^\circ\text{C}$).
(c) No condensation.
- (2) The storage temperature is between -30°C to 80°C , and the operating ambient temperature is between -20°C to 60°C . The maximum operating temperature is based on the test condition that the surface temperature of display area is less than or equal to 68°C with LCD module in a temperature controlled chamber alone. Thermal management should be considered in final product design to prevent the surface temperature of display area from being over 68°C . The range of operating temperature may degrade in case of improper thermal management in the end product design.
- (3) The rating of environment is based on LCD module. Leave LCD cell alone, this environment condition can't be guaranteed. Except LCD cell, the customer has to consider the ability of other parts of LCD module and LCD module process.

2.3 Electrical Specifications

Open Cell Power Consumption ($T_A = 25 \pm 2^\circ\text{C}$)

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V_{CC}	10.8	12.0	13.2	V	(1)
Rush Current		I_{RUSH}	-		3	A	(2)
Power Supply Current	White Pattern	I_{CC}	-	0.36	0.468	A	(3)
	Sub-Horizontal Stripe	I_{CC}	-	0.3	0.39	A	
	Black Pattern	I_{CC}	-	0.18	0.234	A	

Note:

- (1) The ripple voltage should be controlled less than 10% of V_{CC} .
- (2) Measurement condition: V_{CC} rising time = $470\ \mu\text{s}$ and the duration of inrush current is no more than 1ms.

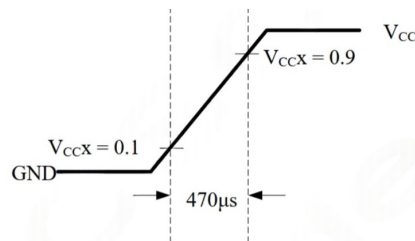


Fig. 3.1 V_{CC} rising time condition

- (3) Measurement condition: $V_{CC} = 12\text{V}$, $T_A = 25 \pm 2^\circ\text{C}$, $F = 60\ \text{Hz}$. The test patterns are shown as below.

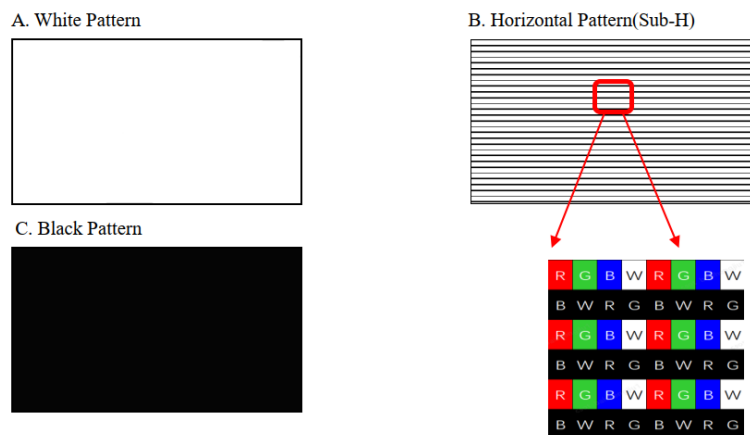


Fig. 3.2 Test patterns

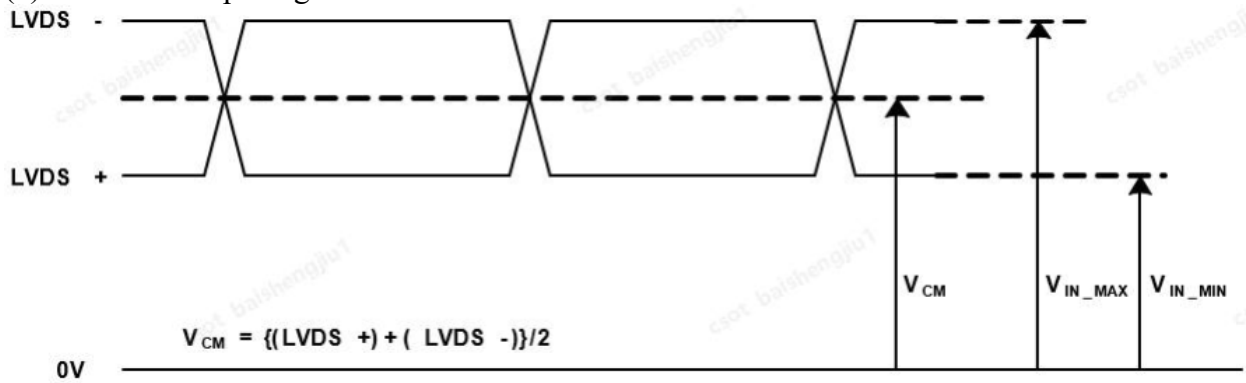
2.4 LVDS Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
LVDS Interface	Differential Input High Threshold Voltage	V_{TH}	100	-	600	mV	(1) (2)
	Differential Input Low Threshold Voltage	V_{TL}	-600	-	-100	mV	
	Common Input Voltage	V_{CM}	0.6	-	1.5	V	
	Differential Input Voltage	$ V_{ID} $	100	-	600	mV	
	LVDS input Voltage Range	V_{IN}	0.3	-	1.8	V	
	Change in common mode Voltage	ΔV_{CM}	-	-	250	mV	
	Terminating Resistor	R_T	80	100	120	ohm	

Note:

(1) This product should be always operated within above ranges

(2) The LVDS input signal has been defined as follows:



3 Input Terminal Pin Assignment

3.1 Interface Pin Assignment

CN1: 0-513037-5 (XDYT) or equivalent (see Note (1))

Pin No.	Symbol	Description	Note
1	NC	NC	(3)
2	Mplus ON	L or NC=Mplus Mode(Default),H=RGB mode	
3	Mplus Mode2	L or NC=High Lum1(MLE2,defalut),H=High Lum2 (MLE7)	
4	SDA	I2C SDA	
5	SCL	I2C SCL	
6	WP	WP	
7	LVDS_SEL	LVDS Data Format Selection	(2)
8	Mplus Mode1	L or NC=High Lum(Default),H=Low Power	
9	NC	No Connection	
10	local dimming	L or NC=local dimming off (default),H=local dimming on	
11	GND	Ground	
12	RO[0]N	Odd LVDS Signal -	
13	RO[0]P	Odd LVDS Signal +	
14	RO[1]N	Odd LVDS Signal -	
15	RO[1]P	Odd LVDS Signal +	
16	RO[2]N	Odd LVDS Signal -	
17	RO[2]P	Odd LVDS Signal +	
18	GND	Ground	
19	ROCLK-	Odd LVDS Clock -	
20	ROCLK+	Odd LVDS Clock +	
21	GND	Ground	
22	RO[3]N	Odd LVDS Signal -	
23	RO[3]P	Odd LVDS Signal +	
24	RO[4]N	Odd LVDS Signal -	
25	RO[4]P	Odd LVDS Signal +	
26	GND	Ground	
27	Bit_SEL	H or NC=10bit(default),L=8bit	
28	RE[0]N	Even LVDS Signal -	
29	RE[0]P	Even LVDS Signal +	
30	RE[1]N	Even LVDS Signal -	
31	RE[1]P	Even LVDS Signal +	
32	RE[2]N	Even LVDS Signal -	
33	RE[2]P	Even LVDS Signal +	

34	GND	Ground	
35	RECLK-	Even LVDS Clock -	
36	RECLK+	Even LVDS Clock +	
37	GND	Ground	
38	RE[3]N	Even LVDS Signal -	
39	RE[3]P	Even LVDS Signal +	
40	RE[4]N	Even LVDS Signal -	
41	RE[4]P	Even LVDS Signal +	
42	GND	Ground	
43	GND	Ground	
44	AGP	L: bist pattern is black,H : bist pattern is rotate pattern(default)	(4)
45	GND	Ground	
46	GND	Ground	
47	NC	No Connection	
48	12V	DC power supply	
49	12V	DC power supply	
50	12V	DC power supply	
51	12V	DC power supply	

Note:

(1) The direction of pin assignment is shown as below:

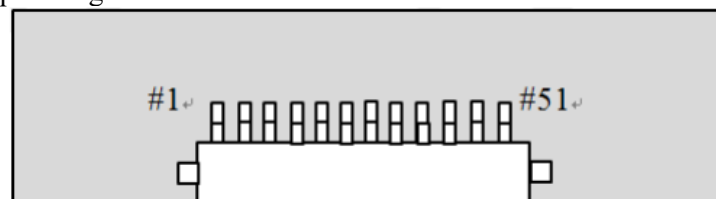


Fig. Connector direction sketch map

(2) High: connect to + 3.3 V → JEIDA format; Low: connect to GND or Open → VESA format.

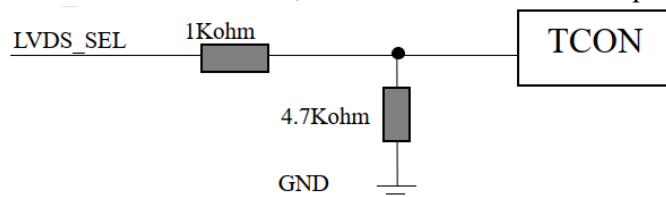


Fig. LVDS_SEL PCBA set

(3) Set this pin open.

(4) When LVDS abnormal, Open or High: connect to +3.3 V → Black→White→Red→Green→Blue
Low: connect to GND or Open → Black

3.2 Block Diagram of Interface

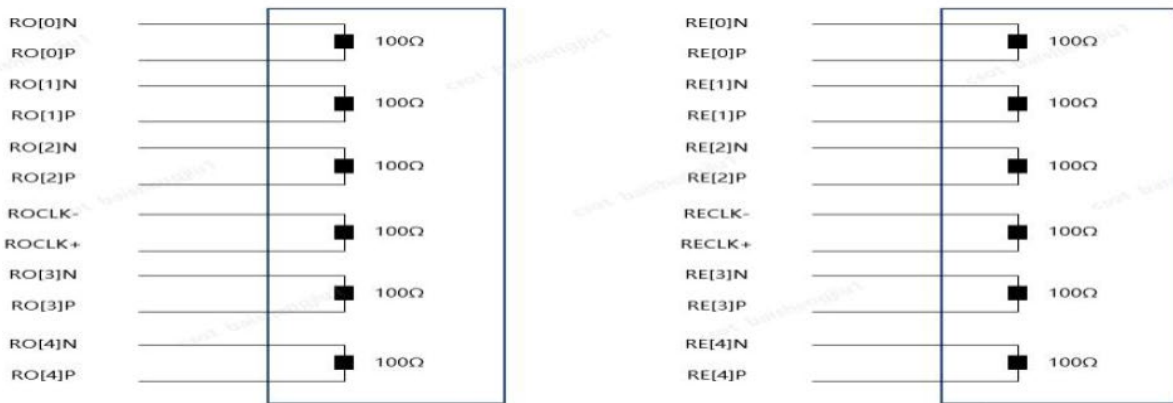


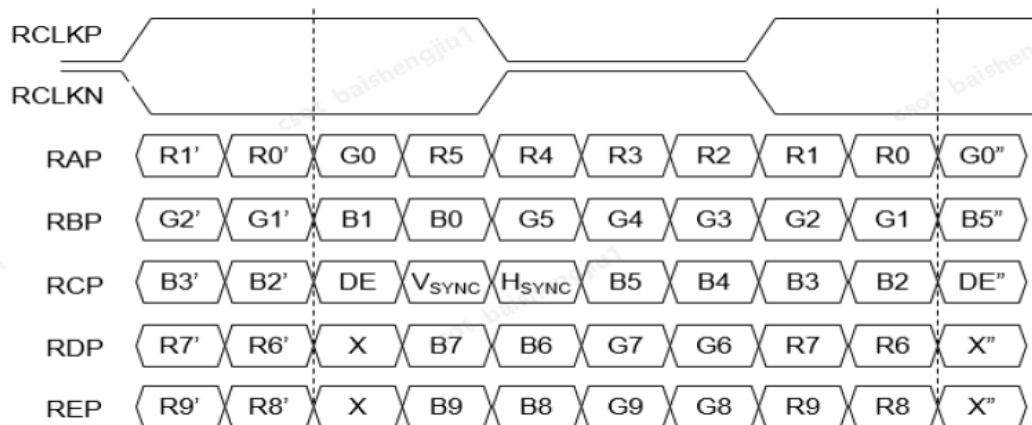
Fig. Block diagram of interface

Attention:

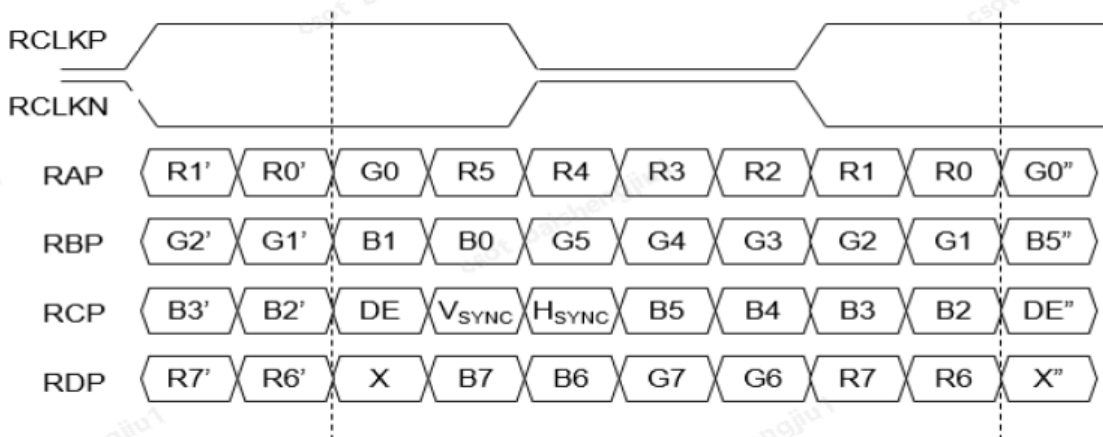
- (1) This open cell uses a 100 ohms (Ω) resistor between positive and negative lines of each receiver input.
- (2) LVDS cable impedance shall be about 100 ohms per twist-pair line respectively.

3.3 LVDS Interface

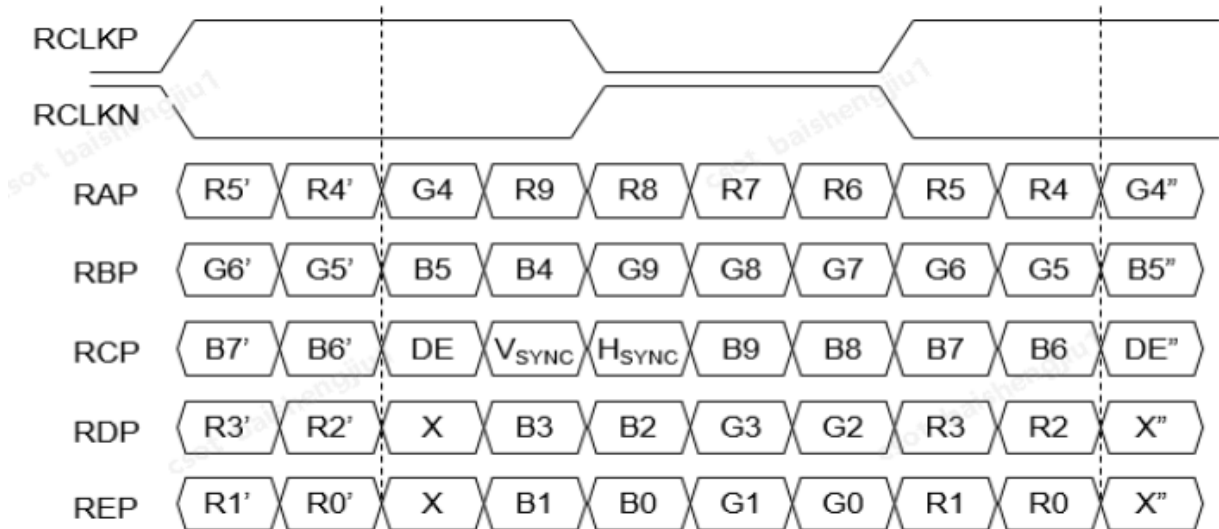
VESA Format 10bit (SELLVDS = L or Open , BIT_SEL=H)



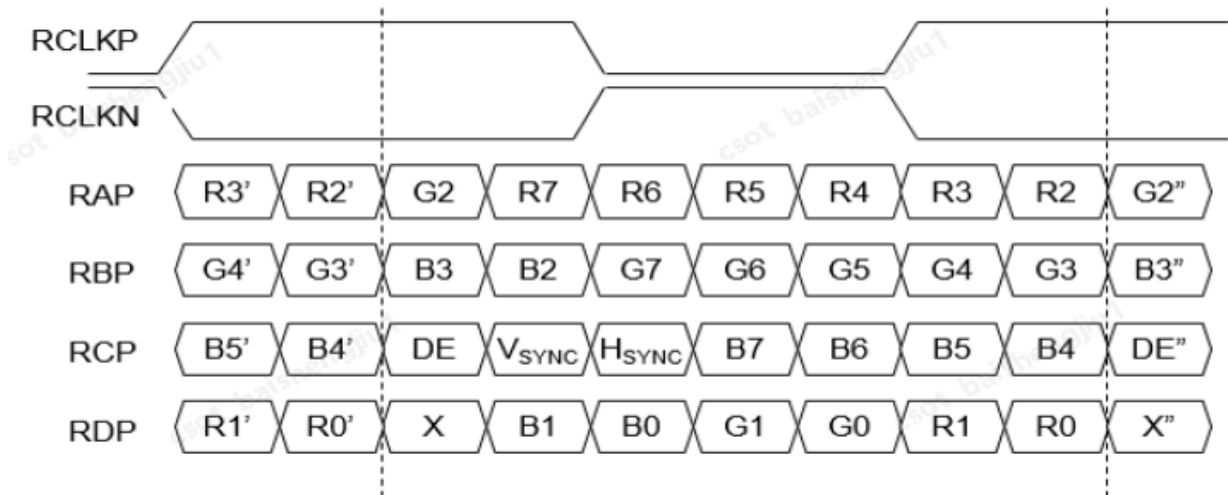
VESA Format 8bit (SELLVDS = L or Open,BIT_SEL=L)



JEIDA Format 10bit(SELLVDS = H,BIT_SEL=H)



JEIDA Format 8bit(SELLVDS = H,BIT_SEL=L)



4 Interface Timing

4.1 Timing Table (DE Only Mode)

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Receiver Clock	Frequency	F_{clkin} ($=1/T_{clk}$)	55	74.25	95	MHz	(2) (3)
	Spread spectrum modulation range	F_{clkin_mod}	-4%	-	+4%	MHz	(1)
	Spread spectrum modulation frequency	F_{SSM}	-	-	100	KHz	
LVDS Receiver Data	LVDS Clock to Data Skew	T_{skew}	-	-	$ 0.2 * T_{clk}/7 $	ps	(4)
	LVDS Clock to Clock Skew(Each other)	t_{skew_clk}	-	-	$ T_{clk}/7 $	ps	
Vertical Active Display Term	Frame Rate	F	48	60	62	Hz	
	Total	T_V	1100	1125	1380	T_H	$T_V = T_{VD} + T_{VB}$
	Display	T_{VD}	1080			T_H	
	Blank	T_{VB}	20	45	300	T_H	
Horizontal Active Display Term	Total	T_H	1050	1100	1174	T_{CLK}	$T_H = T_{HD} + T_{HB}$
	Display	T_{HD}	960			T_{CLK}	
	Blank	T_{HB}	90	140	214	T_{CLK}	

Note:

- (1) The SSCG (Spread Spectrum Clock Generator) is defined as the following figure.
The LVDS SSM's suggestion is off by default, SOC board must test all validation if SOC board open the LVDS SSM. When SSC modulation frequency is 50KHz , LVDS RX SSC modulation ratio is $\pm 4\%$.when SSC modulation frequency is 100KHz , LVDS RX SSC modulation ratio is $\pm 3\%$

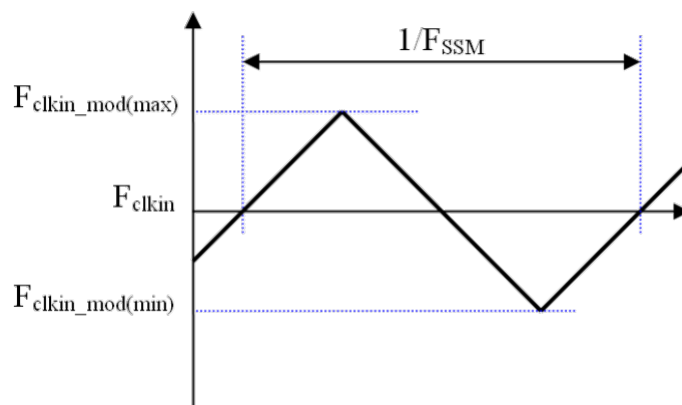


Fig. SSCG

- (2) The TFT LCD open cell is operated in DE only mode, H sync and V sync input signal have no effect on normal operation.

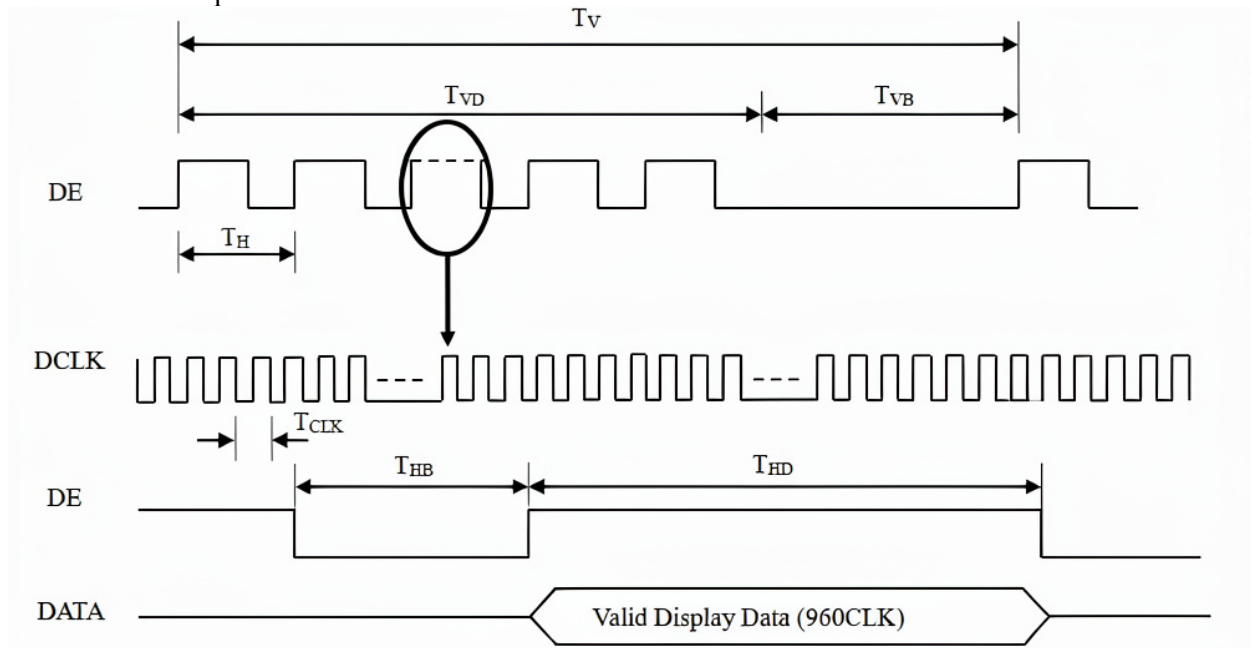


Fig. Interface signal timing diagram

- (3) Please make sure the range of pixel clock follows the following equations:

$$F_{CLKIN(max)} \geq F_{(max)} \times T_V \times T_H$$

$$F_{(min)} \times T_V \times T_H \geq F_{CLKIN(min)}$$

- (4) The LVDS timing diagram and setup/hold time is defined and showed as the following figure.

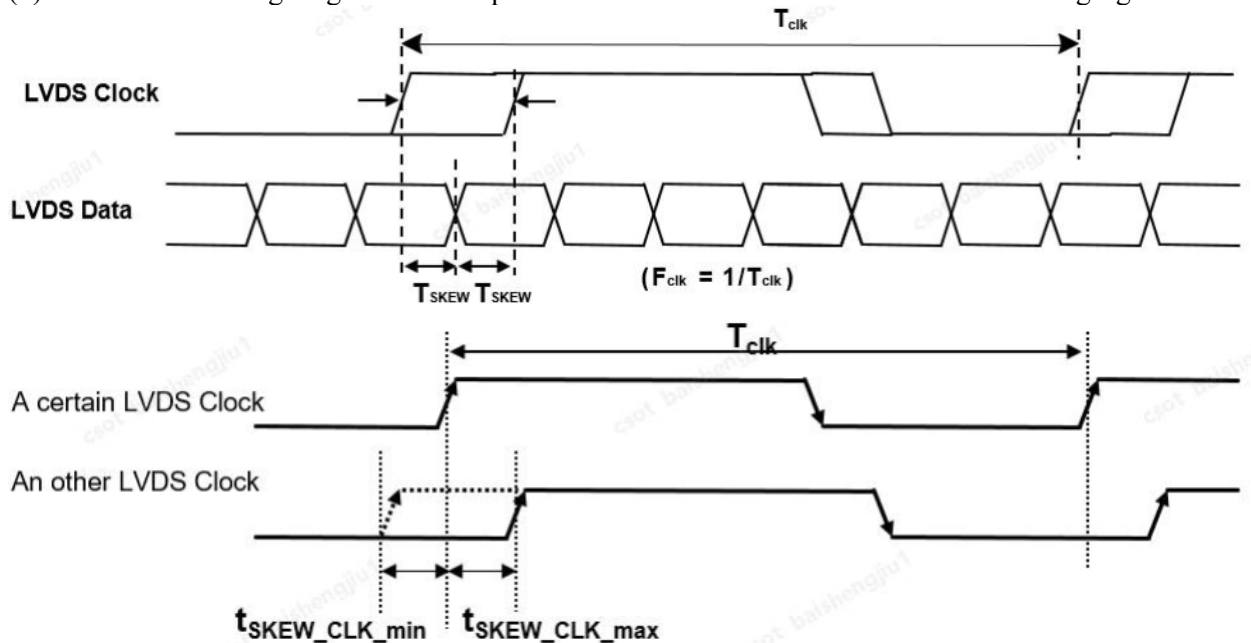


Fig. The LVDS timing diagram and the definition of setup/hold time

4.2 Power On/Off Sequence

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

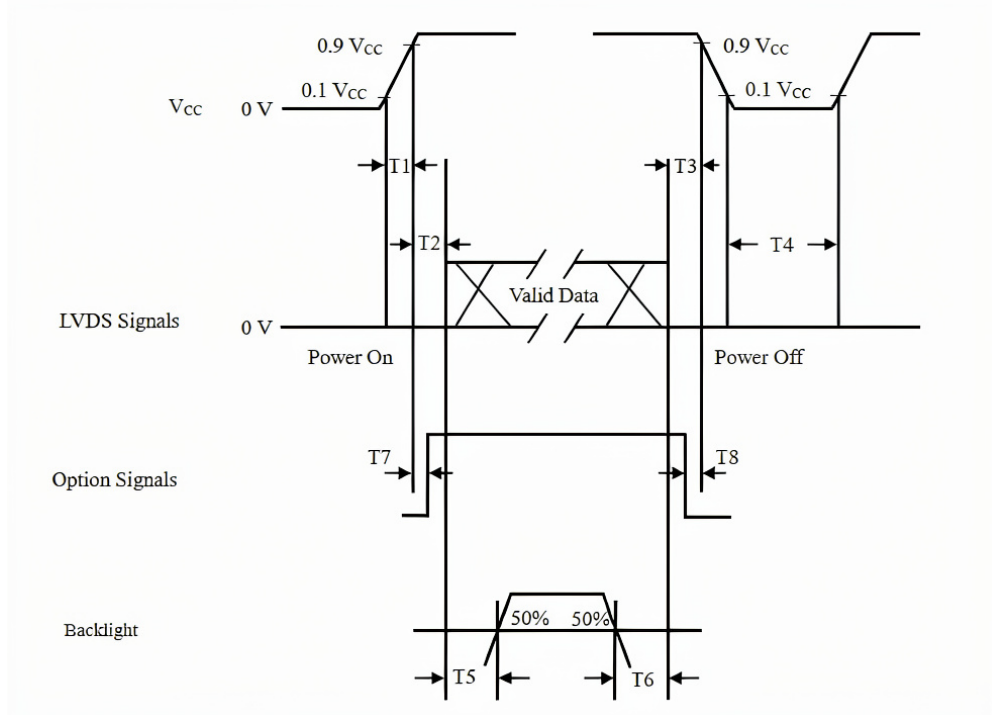


Fig. Power on/off sequence

Parameter	Values			Unit Min.
	Min.	Typ.	Max.	
T1	0.5	-	10.0	ms
T2	0.0	-	50	ms
T3	0.0	-	50	ms
T4	1000.0	-	-	ms
T5	500.0	-	-	ms
T6	100.0	-	-	ms
T7	-	-	T2	ms
T8	-	-	T3	ms

Attention:

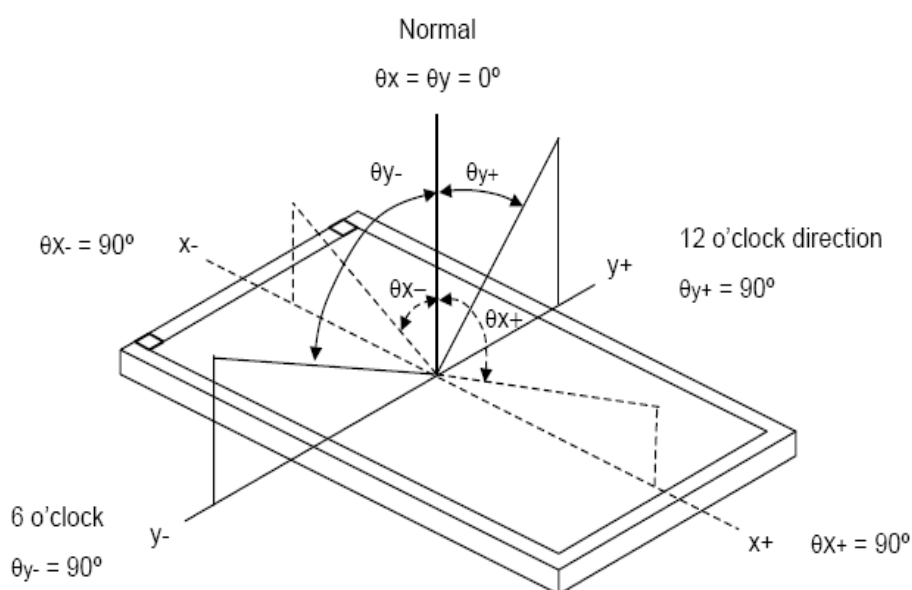
- (1) The supply voltage of the external system for the open cell input should follow the definition of VCC.
- (2) When the customer's backlight turns on before the LCD operation or the LCD turns off before the backlight turns off, the display may momentarily become abnormal screen.
- (3) In case that VCC is in off level, please keep the level of input signals on the low or high impedance. If $T2 < 0$, that may cause electrical overstress.
- (4) T4 should be measured after the module has been fully discharged between power off and on period.
- (5) Interface signal shall not be kept at high impedance when the power is on.

5 Optical Specification

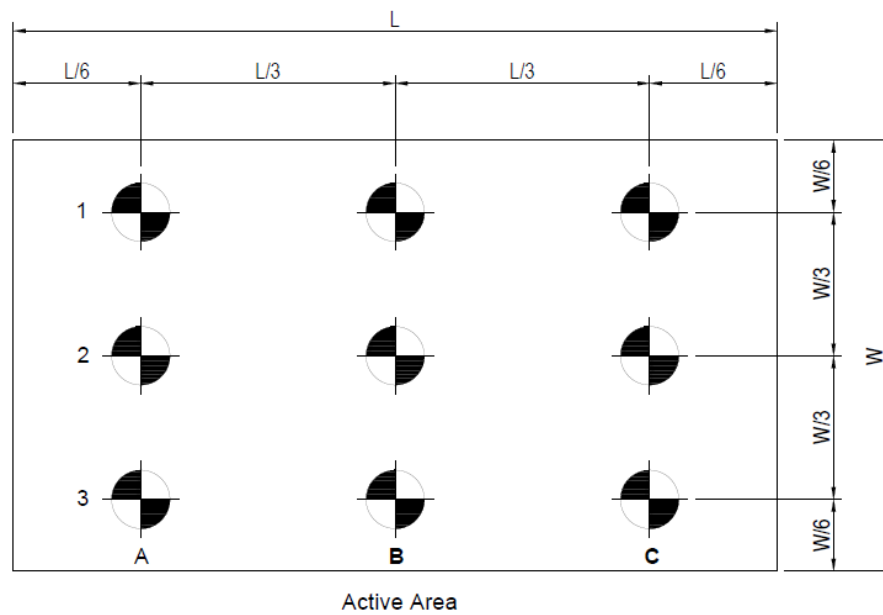
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color chromaticity	Red	Rx	$\theta_x=0$ $\theta_y=0$ CA-410	0.620	0.650	0.680	-	Test Mode: (2) (3)
		Ry		0.303	0.333	0.363	-	
	Green	Gx		0.285	0.315	0.345	-	
		Gy		0.571	0.601	0.631	-	
	Blue	Bx		0.114	0.144	0.174	-	
		By		0.042	0.072	0.102	-	
	White	Wx		0.258	0.288	0.318	-	
		Wy		0.290	0.320	0.350	-	
Center Luminance of White		Lc	$\theta_x=0$	3600	4000	5200	cd/m ²	
Uniform		Lu	$\theta_y=0$ CA-410		92		%	
Contrast Ratio		CR	$\theta_x=0$	1170:1	1300:1		-	Test Mode: (4)
Color Saturation		NTSC	$\theta_y=0$ Klein K-10		83		%	
Viewing Angle	Horizontal	θ_{x+}	$CR \geq 10$		89		Deg	Test Mode: (1)
		θ_{x-}			89			
	Vertical	θ_{y+}			89			
		θ_{y-}			89			

Test Mode :

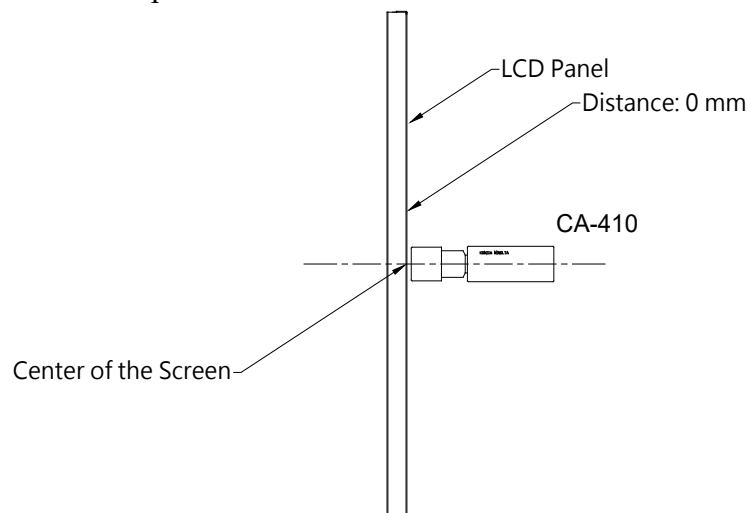
(1) Definition of Viewing Angle (θ_x , θ_y):



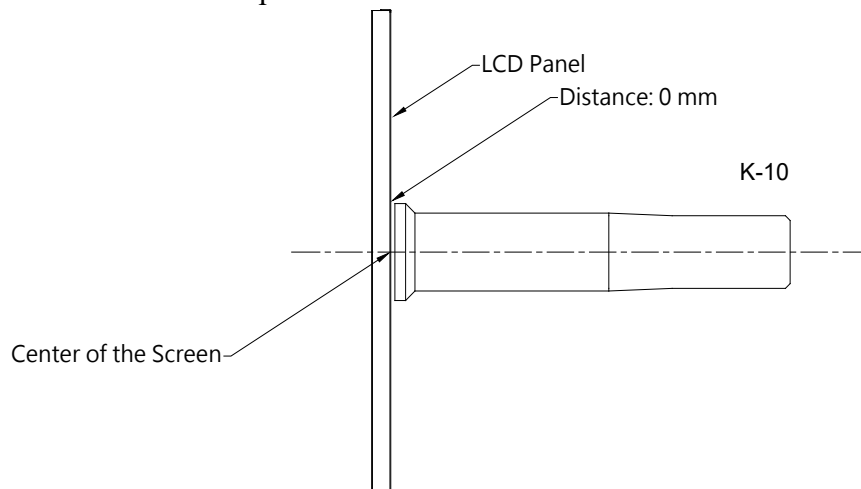
(2) Definition of Test Point:



(3) CA-410 Measurement Setup:



(4) Klein K-10 Measurement Setup:



6 LED Driving Board Electrical Specifications

This specification is applied to LED converter unit for DLD5501 4000nits LED backlight.

6.1 Operating Characteristics

Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remark
Input Voltage	Vin		22	24	26	V	
Input Current (High Brightness)	IinH	PWM=100%	6.36	5.83	5.38	A	(1)
Input Power Consumption	Pin	PWM=100%	-----	52.5	-----	W	
LED Current (High Brightness)	IoutH	PWM=100%	-----	1.045	-----	A	J3
			-----	2.09	-----	A	J7, J8
Working Frequency	Freq	PWM=100%	-----	400	-----	KHZ	
Brightness Control	PWM	Duty cycle	0	--	100	%	Max ratio:100:1
		Freq.	--	2	--	KHZ	(2)
ON/OFF Control	Von	Normal Operation	2	-----	5	V	
	Voff	Normal Operation	0	-----	0.8	V	
Output Voltage	Vout	PWM=100%	-----	40.20	40.25	V	J3
			-----	40.20	40.25	V	J7, J8
Efficiency	η	PWM=100%	-----	90.1	-----	%	(3)

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) Frequency can be adjusted in accordance with demand(120Hz minimum, or lights will be flickering)
- (3) $\eta_{\max} = V_{\text{out}(\max)} * I_{\text{outH}(\max)} / V_{\text{in}(\max)} * I_{\text{inH}(\min)}$
 $\eta_{\min} = V_{\text{out}(\min)} * I_{\text{outH}(\min)} / V_{\text{in}(\min)} * I_{\text{inH}(\max)}$

6.2 Connector Pin Assignment

Input Connector :CN1(JST B10B-PH-K-S or Compatible)

PIN No	Symbol	Description
1	Vin	DC+
2	Vin	DC+
3	Vin	DC+
4	Vin	DC+
5	Vin	DC+
6	GND	Ground
7	GND	Ground
8	GND	Ground
9	GND	Ground
10	GND	Ground

Input Connector :CN2(JST B3B-PH-K-S or Compatible)

PIN No	Symbol	Description
1	Control	ON/OFF Control
2	Brightness	Brightness Control
3	GND	Ground

Output Connector : J3,J7,J8 (JST B2B-EH-TS or Compatible)

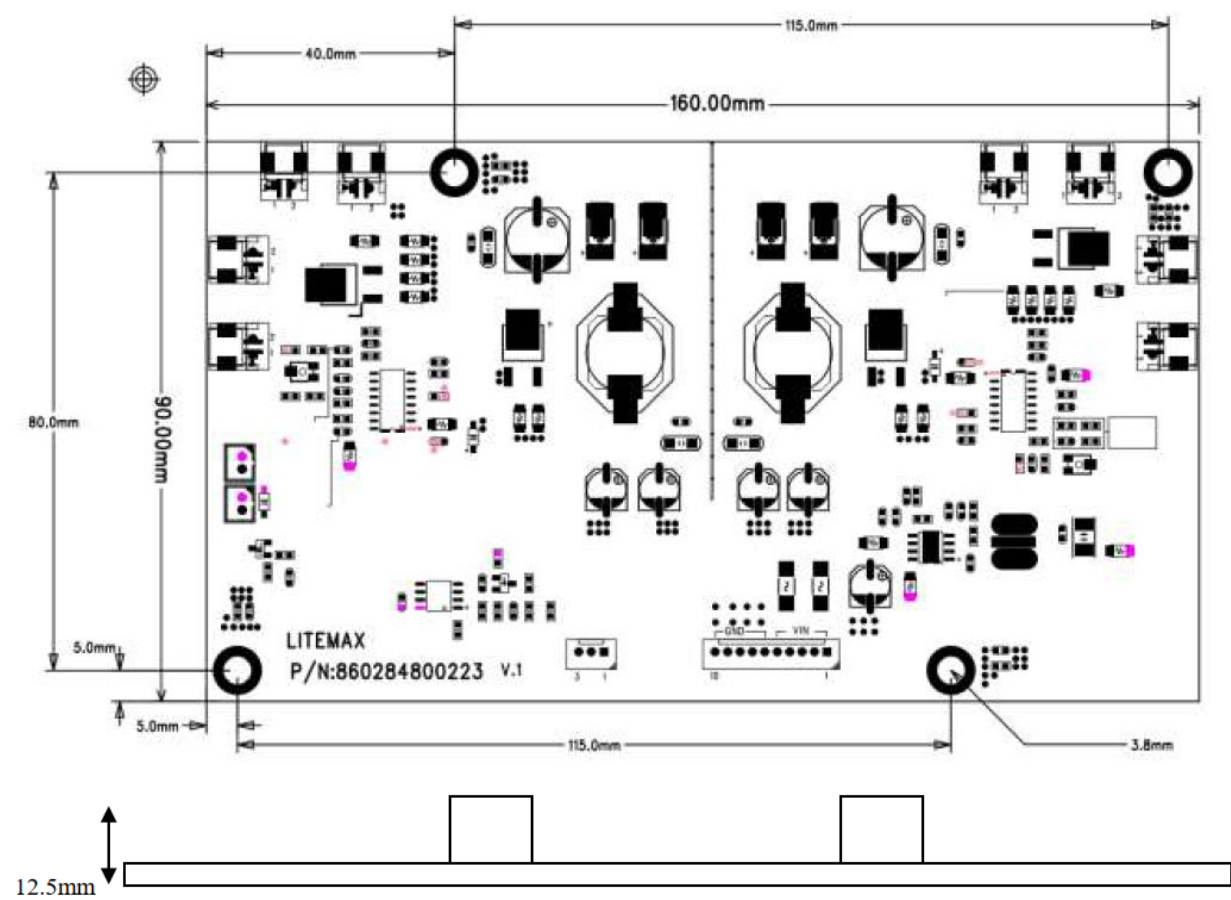
PIN NO	Symbol	Description
1	Output	LED High Voltage(+)
2	Output	LED Low Voltage (-)

Output Connector :H133,H134 (JST S2B-PH-K-S or Compatible)

PIN NO	Symbol	Description
1	Output	Fan (+)
2	Output	Fan (-)

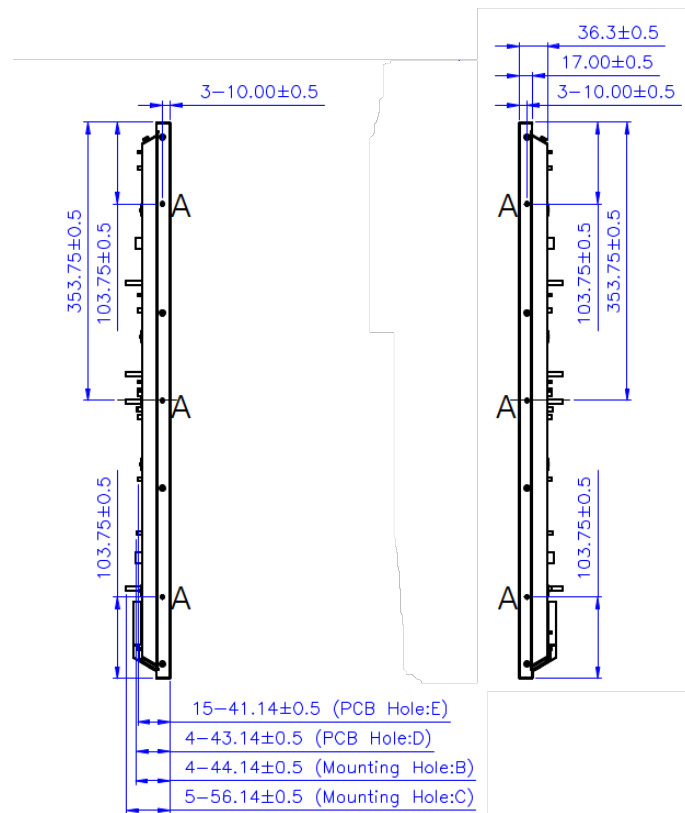
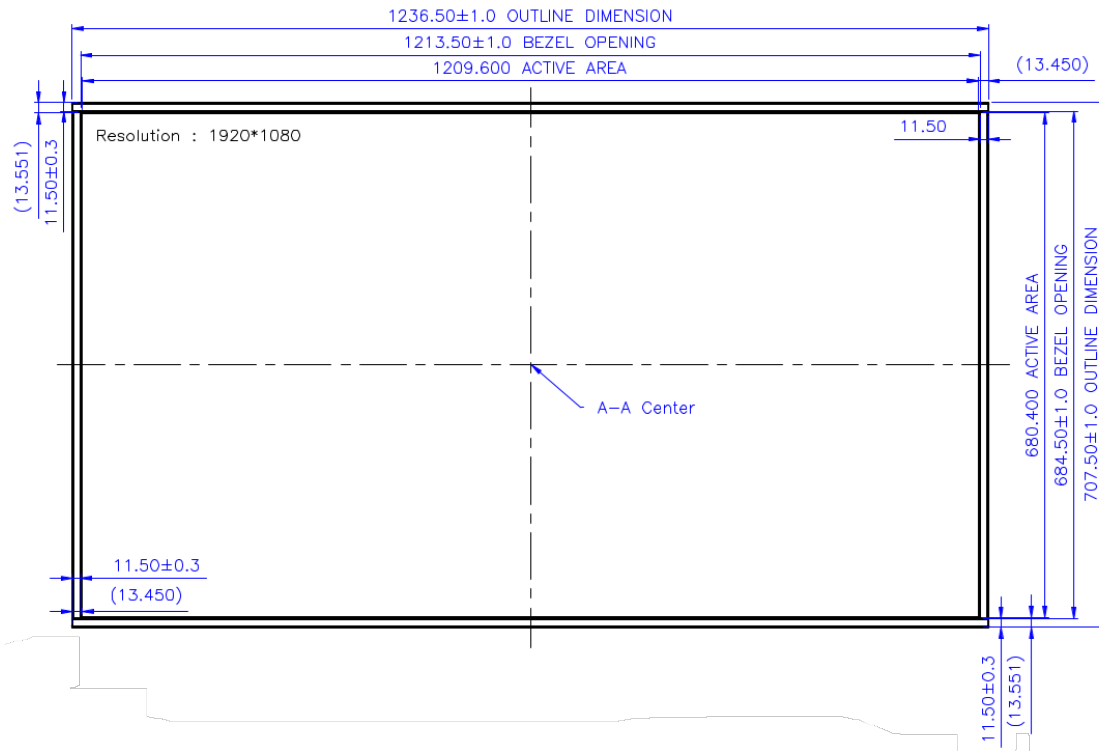
6.3 LED Driving Board Mechanical Characteristics

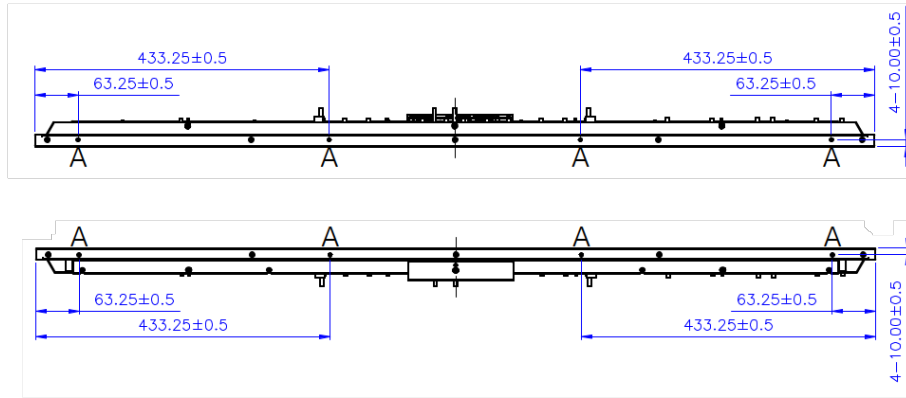
Dimension: 160 x 90 x 12.5mm



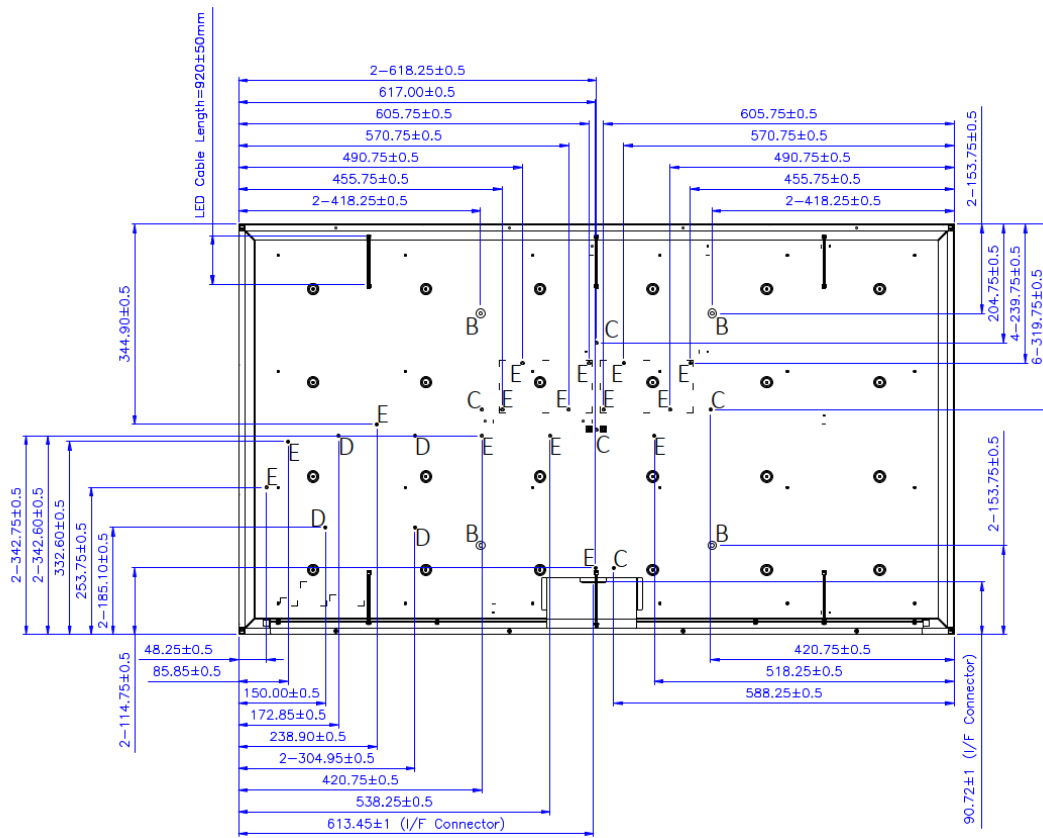
7 Mechanical Drawing

Unit:mm





A	M4 MOUNTING HOLE (14X), DP=6.0mm MAX, TORQUE=8.0kgf-cm MAX
---	--



B	M6 MOUNTING HOLE (4X), DP=6.0mm MAX, TORQUE=25.0kgf-cm MAX
C	M3 MOUNTING HOLE (5X), DP=10.0mm MAX, TORQUE=5.0kgf-cm MAX
D	M3 PCB HOLE (4X), DP=4.5mm MAX, TORQUE=5.0kgf-cm MAX
E	M3 PCB HOLE (15X), DP=3.5mm MAX, TORQUE=5.0kgf-cm MAX

Note :

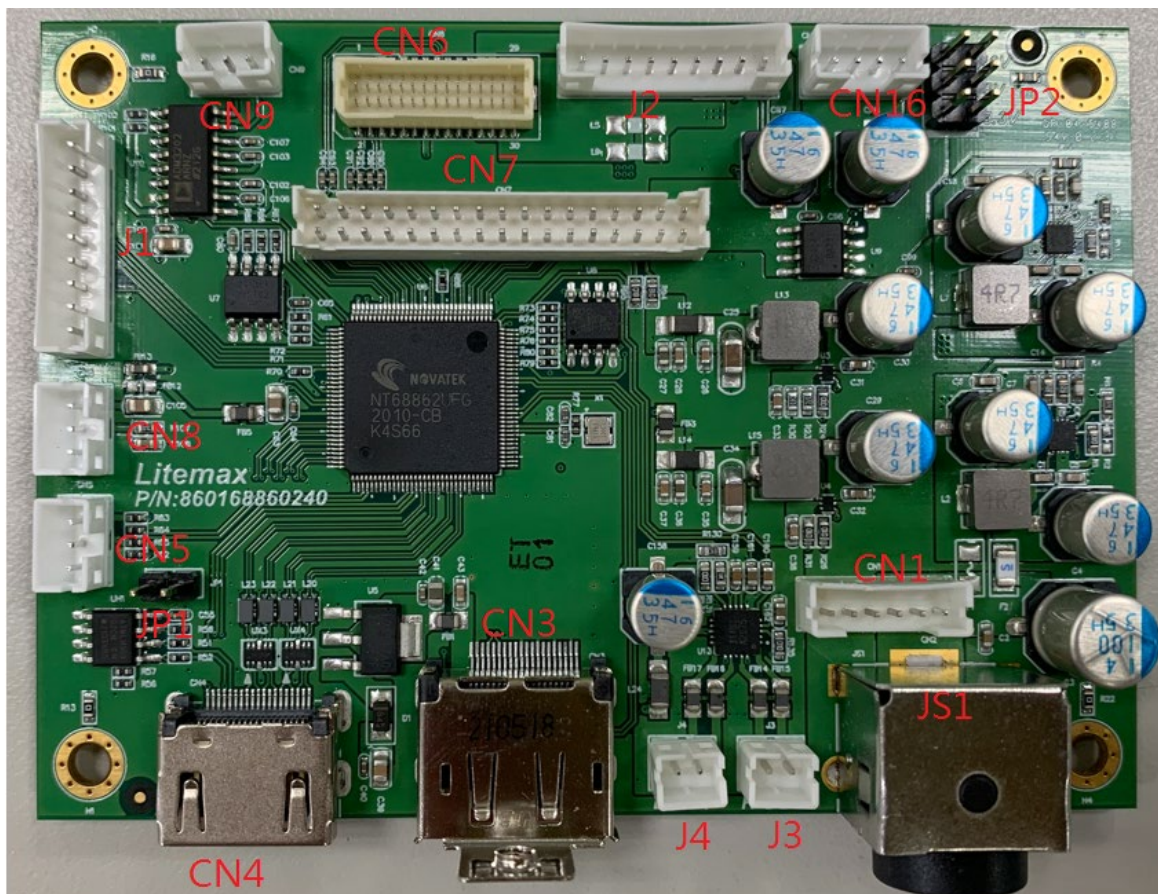
1. Resolution: 1920x1080.
2. "()"marks the reference dimensions.
3. Front Case is black paint.

8 AD68862HP Board & OSD Functions

We developed this A/D board to support industrial high brightness and commercial applications. This A/D board has many functions. It has a HDMI and Display Port input. Rev.1 is European RoHS compliant.

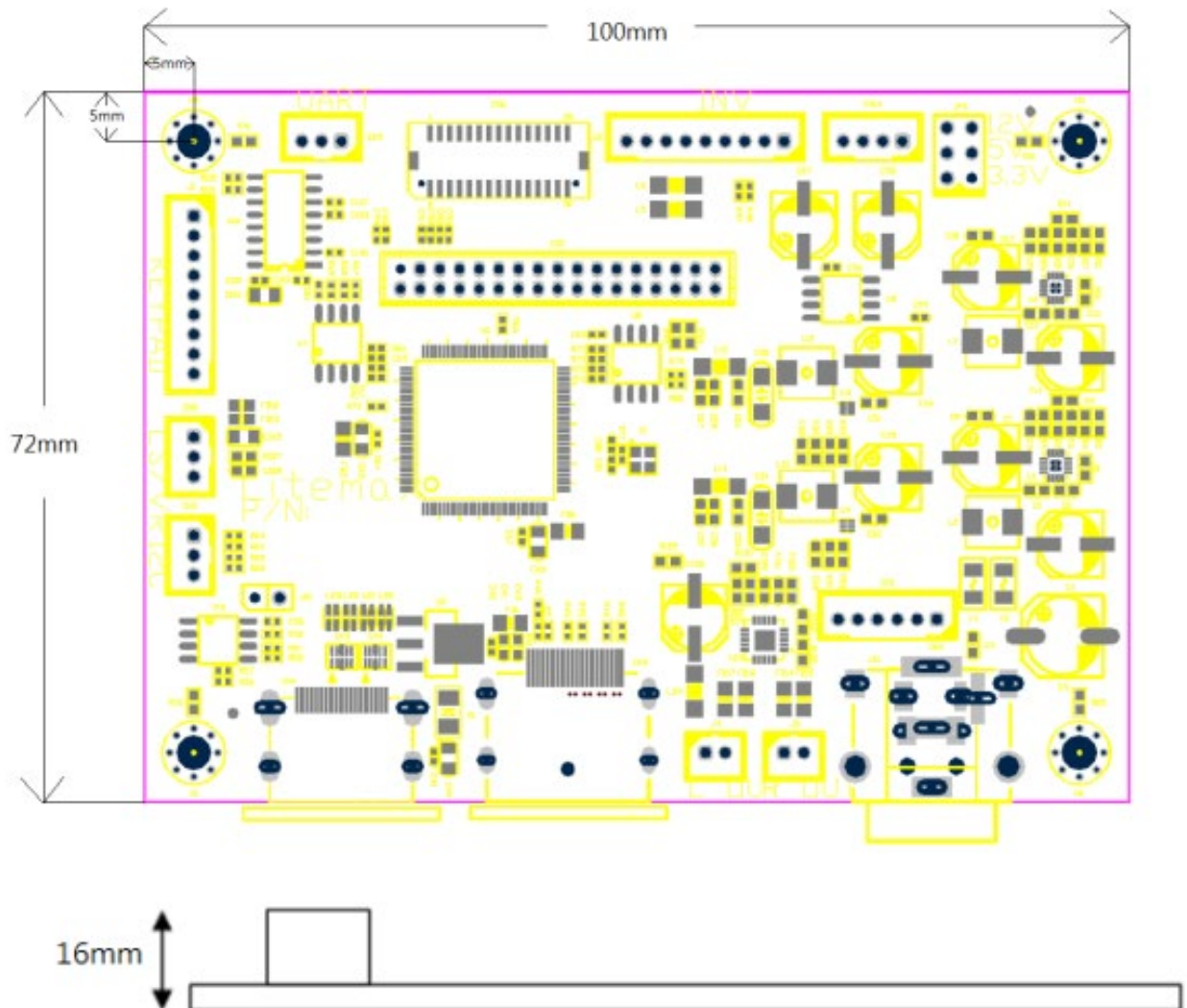
General Description

- 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. (Optional)
- Embedded OSD.
- Support panel voltage 3.3/ 5/ 12 V
- Support eDP panel.
- Support Dual/Single LVDS
- Support 2.8W speaker x 2 (Optional)
- Size 100mm*72mm
- Support output voltage 12V(1A) or 5V(1A)



Outline Dimensions

AD68862HP 100 mm x 72mm



AD68862HP Board Pin Define

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

Pin	Function	Pin	Function
1	TX0P	16	TXAUX-
2	TX0N	17	TX_HPDP
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 3 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)

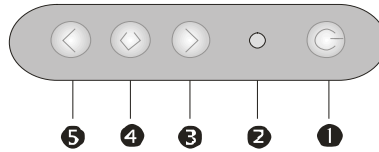
Pin	Function	Pin	Function
1	ROUTP	2	ROUTN

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

Pin	Function	Pin	Function
1	LOUTP	2	LOUTN

8.1 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.

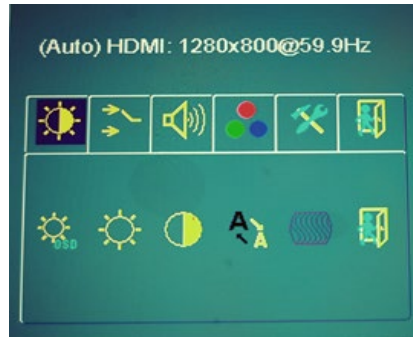
5. Return & Exit the main menu

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.

8.2 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.



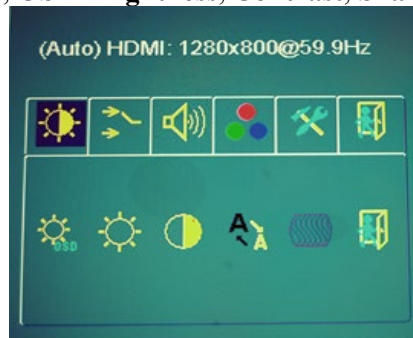
There are 6 sub menus within the OSD user interface:

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)

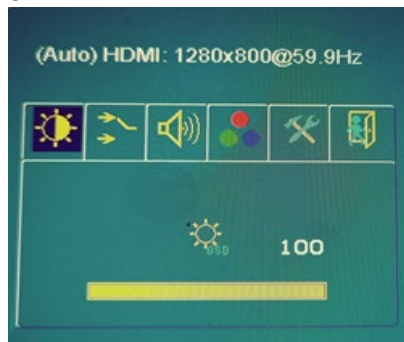
press this Icon, must to accompany with Litemax ambient light sensor to auto dimming.





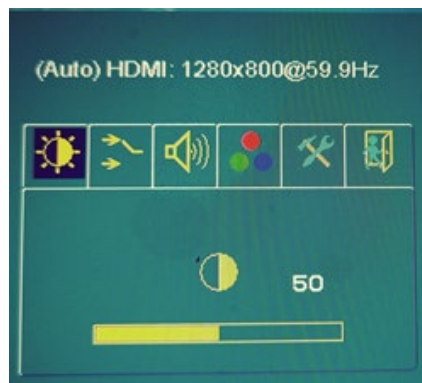
OSD Brightness :

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”



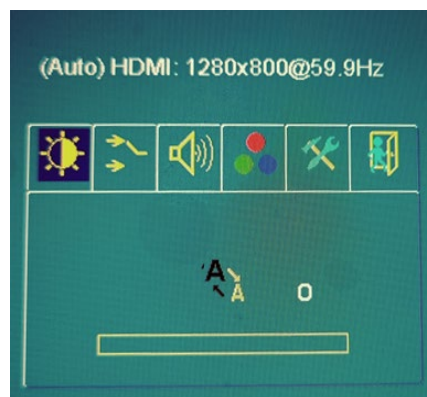
Contrast :

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



Sharpness :

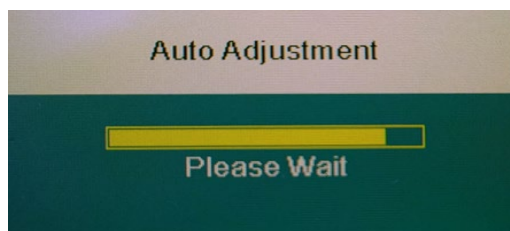
Press “Menu” once, you can adjust the Sharpness from “0” to “4” by pressing the “Left” and “Right”.





Auto Tune : (VGA only)

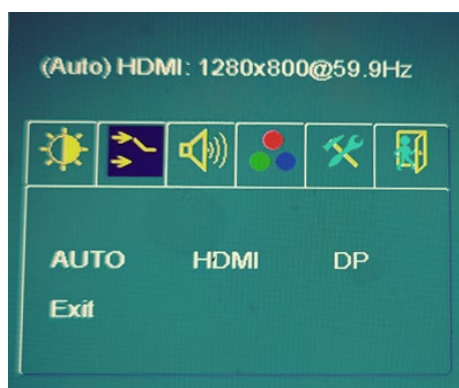
Press “Menu” once, you can activate the Auto Tune.



Exit: back to the beginning menu.



Input Signal: (default auto detect)



AUTO

AUTO: auto detect

HDMI

HDMI: HDMI input

DP

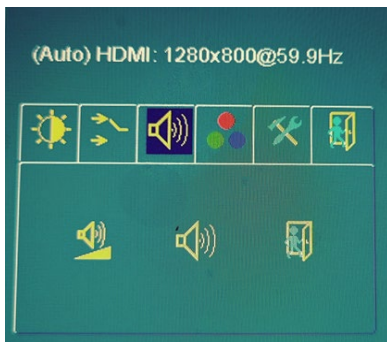
DP: DisplayPort input

Exit

Exit: back to the beginning menu.



Audio:



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

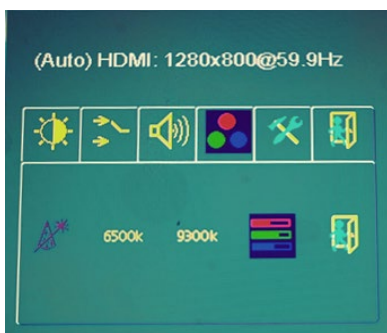


UnMute/Mute: You can mute the speaker by pressing this option.

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.



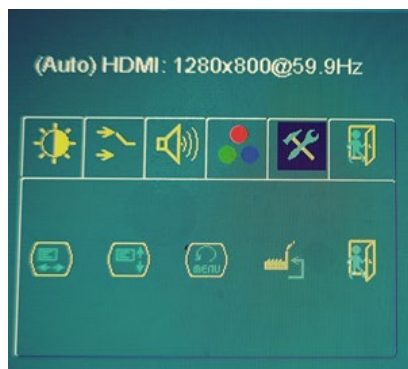
Color Temperature User Define: Default is 100 for “R”, “G”, and “B”. Range is “0” to “255”.



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).



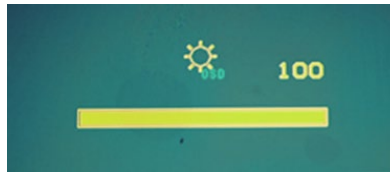
Load Default: You can load the default data using this function.



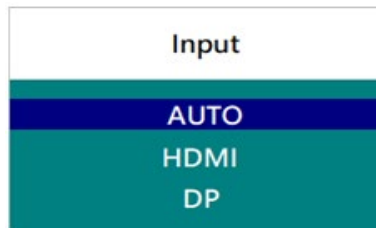
Exit: back to the beginning menu.

< Hot Key >

Left click to display brightness adjustment.

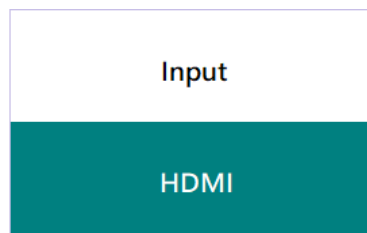


Right click to display Input Source Menu.



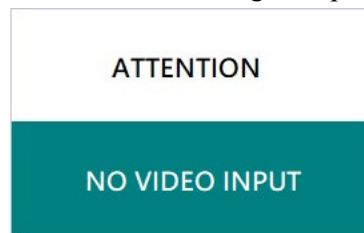
<Others>

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



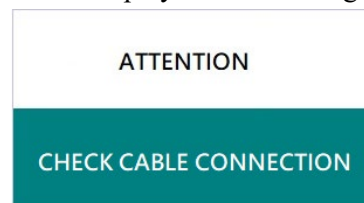
(Signal Information)

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)

9 Precautions

9.1 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 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.

9.2 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.

9.3 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.

10 Disclaimer

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