



## Record of Revision

Version and Date	Page	Old Description	New Description	Remark
Aug. /11/2017	all		Initial release	

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## 1 General Description

The DMKX1006 is a 7 inch industrial grade sunlight readable LCD, with high brightness 1600 nits and high color saturation, 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 Features

- High Brightness 1600 nits
- Sunlight Readable
- LED Backlight
- Wide Viewing Angle of 176 °(H), 176 °(V)
- Wide Temperature (-20°C ~70°C)
- Low Power Consumption
- BL MTBF: 100,000 hours

### 1.2 General Specifications

Model Name	DMKX1006
Description	7" TFT LCD, LED Backlight 1600 nits, WXGA (1280x800)
Screen Size	7"
Display Area (mm)	149.76(H) x 93.60(V)
Brightness	1600 cd/m <sup>2</sup>
Resolution	1280x800
Aspect Ratio	16 : 10
Contrast Ratio	1000 : 1
Pixel Pitch (mm)	0.117(H) x 0.117(V)
Pixel Per Inch (PPI)	215
Viewing Angle	176 °(H), 176 °(V)
Color Saturation (NTSC)	55%
Display Colors	16.7M
Response Time (Typical)	35ms
Panel Interface	LVDS
AD Board Input Interface	VGA, DVI, HDMI
AD Board Input Power	DC12V
Power Consumption	5.5W (8.9W with AD Board)
OSD Key	4 Keys (Power Switch, Menu, +, -)
OSD Control	Brightness, Color, Contrast, Auto Turing, H/V Position...etc
Dimensions (mm)	161 x 107 x 6.22
Bezel Size(U/B/L/R)	8.7/2.7/6.4/2.9 mm
Weight (Net)	120g
Operating Temperature	-20 °C ~ 70 °C
Storage Temperature	-30 °C ~ 80 °C

### 1.3 Absolute Maximum Ratings

Permanent damage may occur if exceeding the following maximum rating.

GND=0V, Ta = 25°C

Item	Symbol	Min	Max	Unit	Remark
Power Voltage	VDD	-0.5	5.0	V	
	AVDD	-0.5	14.85	V	
	VGH	-0.3	42.0	V	
	VGL	VGH-42	0.3	V	
Backlight Forward Current	I <sub>LED</sub>	–	18	mA	For each LED
Operating Temperature	T <sub>OPR</sub>	-20	70	°C	
Storage Temperature	T <sub>STG</sub>	-30	80	°C	
Relative Humidity	RH	–	≤95	%	Ta≤40°C
		–	≤85	%	40°C < Ta≤50°C
		–	≤55	%	50°C < Ta≤60°C
		–	≤36	%	60°C < Ta≤70°C
		–	≤24	%	70°C < Ta≤80°C
Absolute Humidity	AH	–	≤70	g/m <sup>3</sup>	Ta > 70°C

## 2 Electrical Specifications

### 2.1 Electrical Characteristics

Permanent damage may occur if exceeding the following maximum rating.

Ta = 25°C

Item	Symbol	Min	Typ	Max	Unit	Remark
Digital Supply Voltage	VDD	3.0	3.3	3.6	V	
Analog Supply Voltage	AVDD		11		V	
Gate On Voltage	VGH		18.0		V	
Gate Off Voltage	VGL		-7.0		V	
Common Electrode Driving Signal	VCOM	2.98	3.57	4.46	V	With the VR Knob
VDD Power Consumption	PDD	--	1.0	1.2	W	Test pattern: White

## 2.2 LVDS Connections

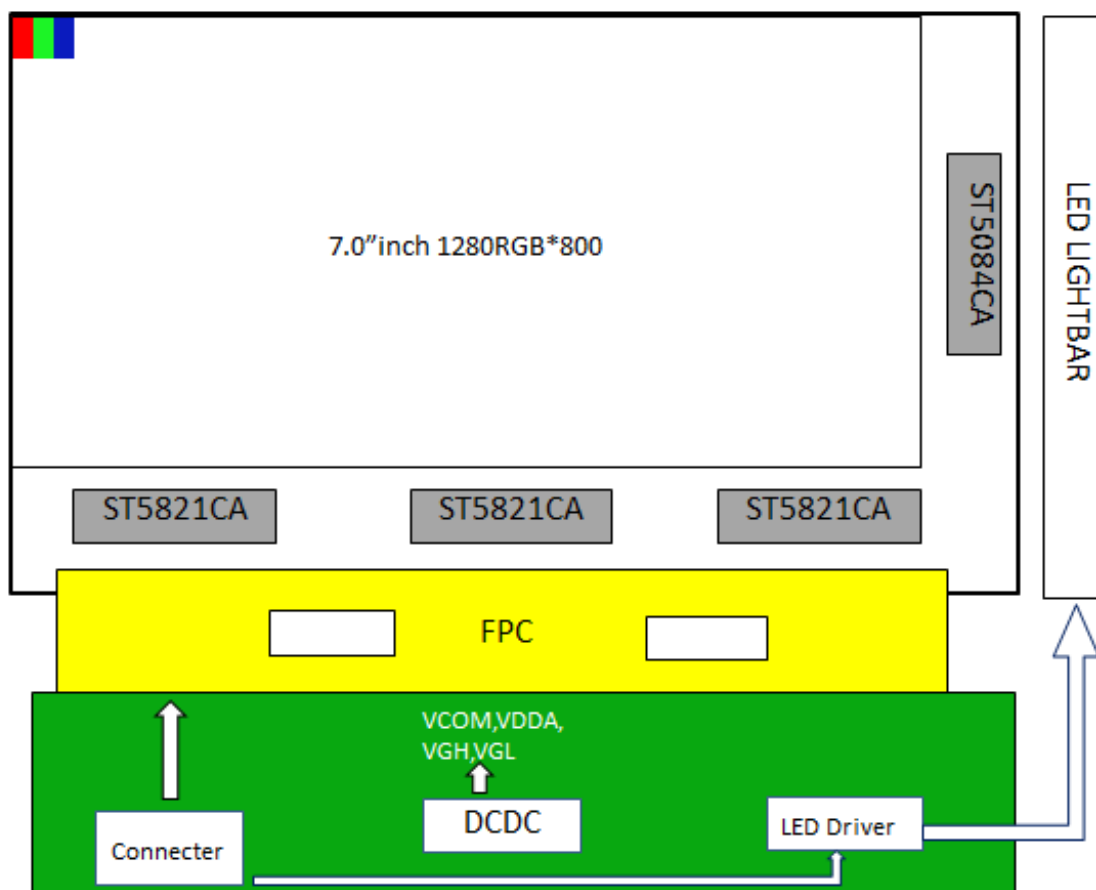
Connector Type : CviLux-CF38392D1R0-NH

Pin No.	Symbol	I/O	function	Remarks
1	VCCS	P	Power Voltage for digital circuit	
2	VCCS	P	Power Voltage for digital circuit	
3	NC	--	No connection	
4	NC	--	No connection	
5	NC	--	No connection	
6	NC	--	No connection	
7	RXIN0-	I	- LVDS differential data input	
8	RXIN0+	I	+LVDS differential data input	
9	VSS	P	Ground	
10	RXIN1-	I	-LVDS differential data input	
11	RXIN1+	I	+LVDS differential data input	
12	VSS	P	Ground	
13	RXIN2-	I	-LVDS differential data input	
14	RXIN2+	I	+LVDS differential data input	
15	VSS	P	Ground	
16	RXCLK-	I	-LVDS differential clock input	
17	RXCLK+	I	+LVDS differential clock input	
18	VSS	P	Ground	
19	RXIN3-	I	-LVDS differential data input	
20	RXIN3+	I	+LVDS differential data input	
21	VSS	P	Ground	
22	NC	--	No connection	
23	NC	--	No connection	
24	VSS	P	Ground	
25	NC	--	No connection	
26	NC	--	No connection	
27	VSS	P	Ground	
28	H_REV	I	Horizontal shift direction selection	Note2
29	V_REV	I	Vertical shift direction selection	Note2
30	LED_GND	P	LED Ground	
31	LED_GND	P	LED Ground	
32	LED_GND	P	LED Ground	
33	NC	--	No connection	
34	LED_PWM	I	PWM signal for LED dimming control	
35	LED_EN	I	Enable signal for LED driver	
36	NC	--	No connection	
37	LED_VCCS	P	Backlight power supply	
38	LED_VCCS	P	Backlight power supply	
39	LED_VCCS	P	Backlight power supply	

Note 1: I/O definition. I---Input, O---Output, P--- Power/Ground, N--- No connection

Note 2: H\_REV&V\_REV Pin NC, scan direction default setting is from up to down ,from left to right(when PCB at the top)

## 2.3 TFT Block Diagram

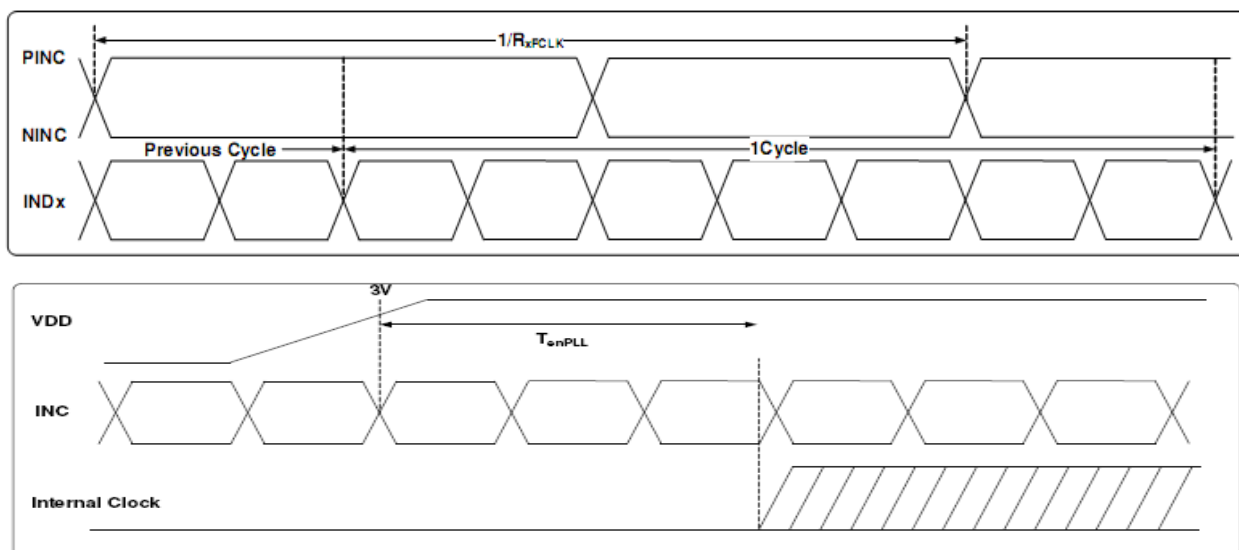




### 3 Timing Chart

#### 3.1 AC Electrical Characteristics

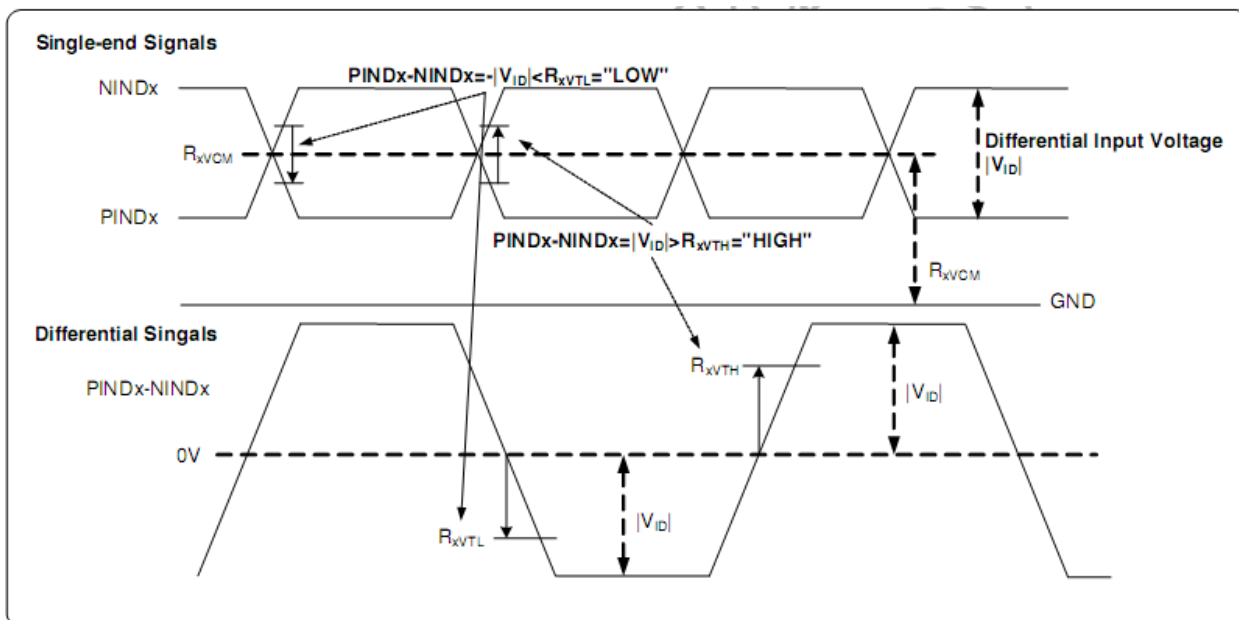
Parameter	Symbol	Min	Typ	Max	Unit	Conditions
Clock Frequency	$R_{xCLK}$	20	-	80	MHz	
Input data skew margin	$T_{RSKM}$	500	-	-	ps	$ VID =400mV$ , $R_{xVCM}=1.2V$ $R_{xCLK}=80MHz$
Clock high time	$T_{LVCH}$	-	4/7	-	$R_{xCLK}$	
Clock low time	$T_{LVCL}$	-	3/7	-	$R_{xCLK}$	
PLL wake-up time	$T_{enPLL}$	-	-	150	us	



### 3.2 DC Electrical Characteristics

V<sub>GH</sub>=18V, V<sub>GL</sub>= -6.8V, V<sub>DD</sub>=3.3V, GND=0V, T<sub>a</sub>=25°C

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Differential input high Threshold voltage	R <sub>XVTH</sub>	–	–	+0.1	V	
Differential input Low Threshold voltage	R <sub>XVTL</sub>	-0.1	–	–	V	
Input voltage range	R <sub>XVIN</sub>	0	–	V <sub>DD</sub> -1.0	V	
Differential input common Mode voltage	R <sub>XVCM</sub>	V <sub>ID</sub>  /2	–	2.4- V <sub>ID</sub>  /2	V	
Differential input voltage	V <sub>ID</sub>	0.2	--	0.6	V	
Differential input leakage Current	R <sub>V<sub>X</sub>liz</sub>	-10	--	+10	uA	
LVDS Digital Operating Current	I <sub>ddlvs</sub>	–	40	50	mA	Fclk=65MHz, VDD=3.3V
LVDS Digital Stand-by Current	I <sub>stlvs</sub>	–	10	50	uA	Clock & all functions are stopped
LVDS Terminating Resistor	R <sub>T</sub>	–	100	–	Ohm	



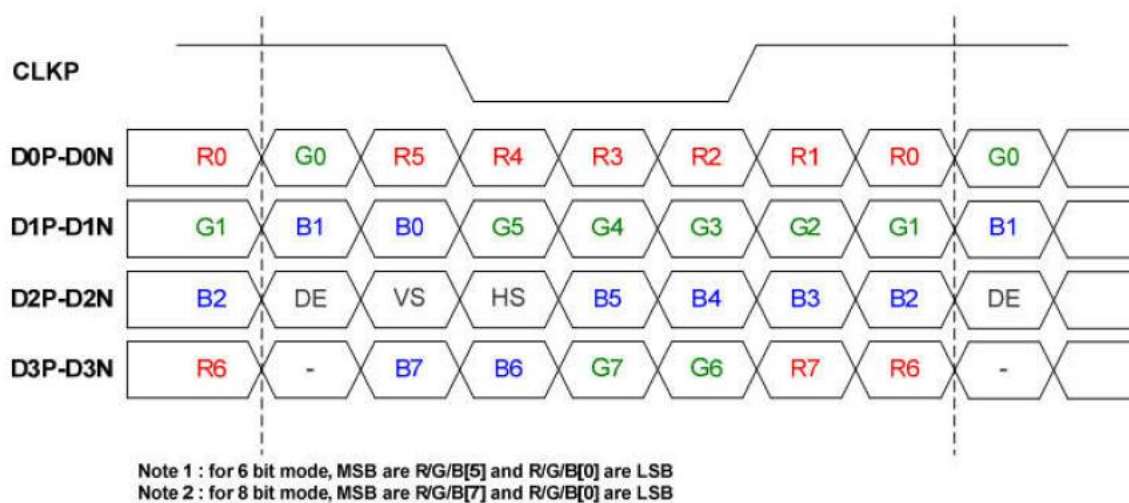
### 3.3 Input Timing

1280x800 (RES[3:0] = 0010)

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
CLK frequency	$t_{CLK}$	62.6	68.2	78.1	Mhz	
Horizontal blanking time	$t_{HBT}$	20	69	164	$t_{CLK}$	$t_{HBP} + t_{HFP}$
Horizontal back porch	$t_{HBP}$	5	5	$164 - t_{HFP}$	$t_{CLK}$	
Horizontal display area	$t_{HD}$	1280	1280	1280	$t_{CLK}$	
Horizontal front porch	$t_{HFP}$	15	64	159	$t_{CLK}$	
Horizontal period	$t_H$	1300	1349	1444	$t_{CLK}$	
Horizontal pulse width	$t_{HPW}$	1	1	256	$t_{CLK}$	
Vertical blanking time	$t_{VBT}$	5	42	101	$t_H$	$t_{VBP} + t_{VFP}$
Vertical back porch	$t_{VBP}$	2	2	$101 - t_{VFP}$	$t_H$	
Vertical display area	$t_{VD}$	800	800	800	$t_H$	
Vertical front porch	$t_{VFP}$	3	40	99	$t_H$	
Vertical period	$t_V$	803	842	901	$t_H$	
Vertical pulse width	$t_{VPW}$	1	1	128	$t_H$	

### 3.4 Data Input Fornat

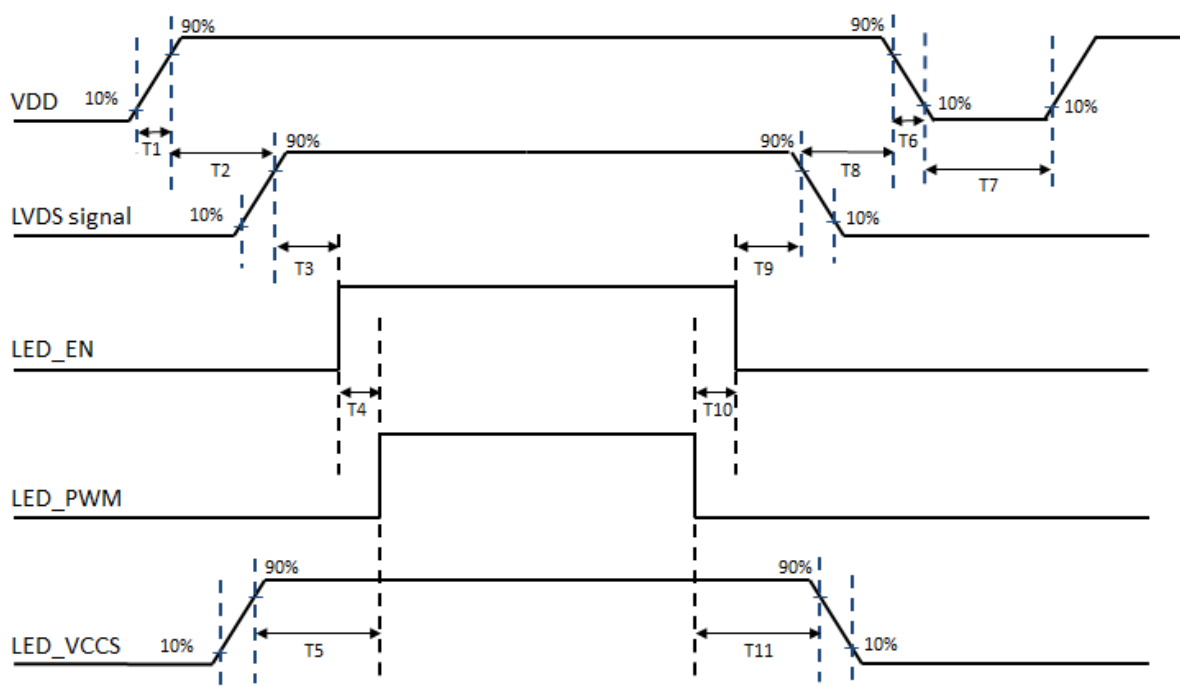
#### VESA data mapping



### 3.5 Power Sequence

Item	Symbol	Min	Typ	Max	Unit	Remark
VDD on to VDD stable	T1	1.5	-	3	ms	
VDD stable to signal on	T2	2	-	IBF-20	ms	
Signal on to VLED_EN on	T3	200	-	-	ms	
PWM on to VLED_EN on	T4	0	-	200	ms	
VLED to PWM on	T5	10	-	-	ms	
VDD off time	T6	1	-	5	ms	
VDD off to next VDD on	T7	200	-	-	ms	
Signal off before VDD off	T8	100	-	-	ms	
VLED_EN off before signal off	T9	200	-	-	ms	
VLED_EN off before PWM off	T10	0	-	200	ms	
PWM off before VLED off	T11	10	-	-	ms	

Note :  $IBF = 10 * T_{frame}$  (  $T_{frame}$  is time for one frame )

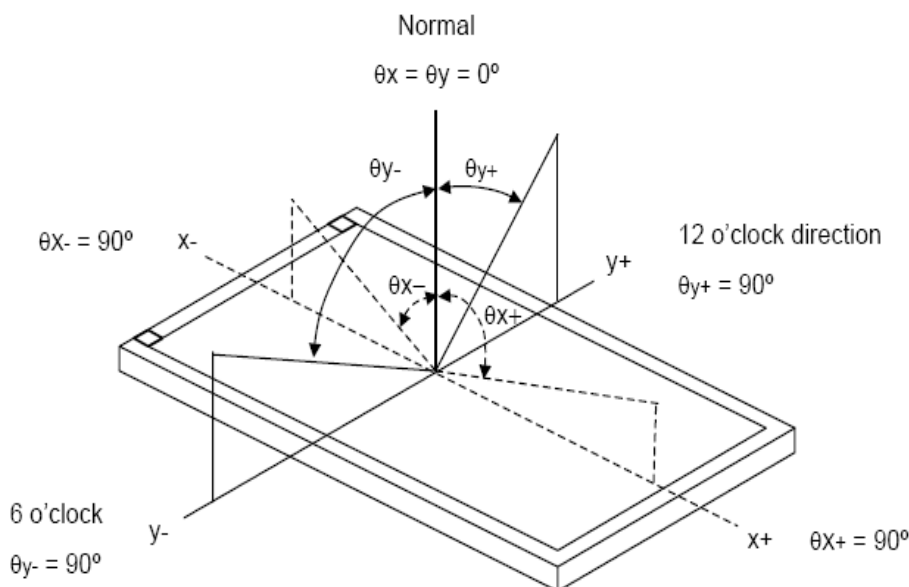


## 4 Optical Specification

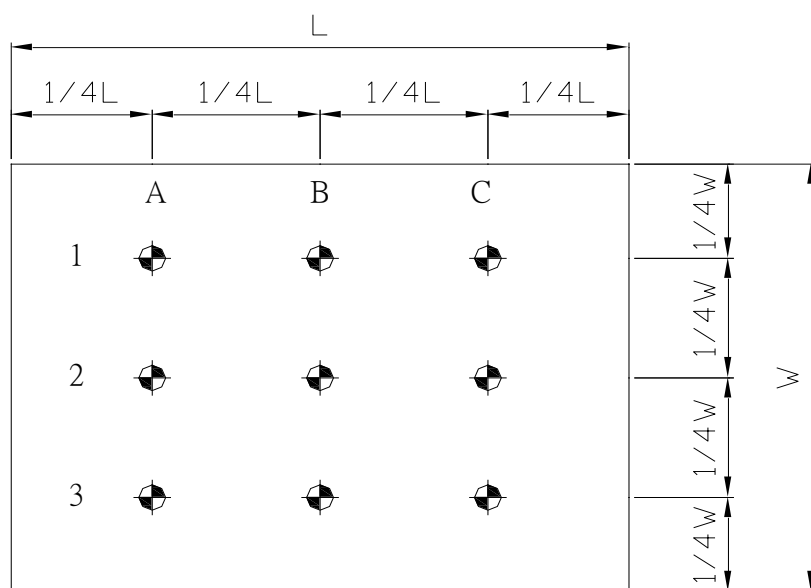
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Color chromaticity	Red	R <sub>x</sub>	$\theta_x=0$ $\theta_y=0$ Klein K-10	0.525	0.555	0.585	-	Test Mode: (1) (2) (3)
		R <sub>y</sub>		0.305	0.335	0.365	-	
	Green	G <sub>x</sub>		0.300	0.330	0.360	-	
		G <sub>y</sub>		0.572	0.602	0.632	-	
	Blue	B <sub>x</sub>		0.118	0.148	0.178	-	
		B <sub>y</sub>		0.055	0.085	0.115	-	
	White	W <sub>x</sub>		0.260	0.290	0.320	-	
		W <sub>y</sub>		0.283	0.313	0.343	-	
Center Luminance of White		L <sub>c</sub>	$\theta_x=0$	-	1600	-	cd/m <sup>2</sup>	
Uniform		L <sub>u</sub>	$\theta_y=0$ BM-7	-	80	-	%	
Contrast Ratio		CR	$\theta_x=0$	-	1000:1	-	-	Test Mode: (1) (4)
Color Saturation		NTSC	$\theta_y=0$ Klein K-10	-	55	-	%	
Viewing Angle	Horizontal	$\theta_{x+}$	CR ≥ 10	80	88	-	Deg	Test Mode: (1) (3)
		$\theta_{x-}$		80	88	-		
	Vertical	$\theta_{y+}$		80	88	-		
		$\theta_{y-}$		80	88	-		

### Test Mode :

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

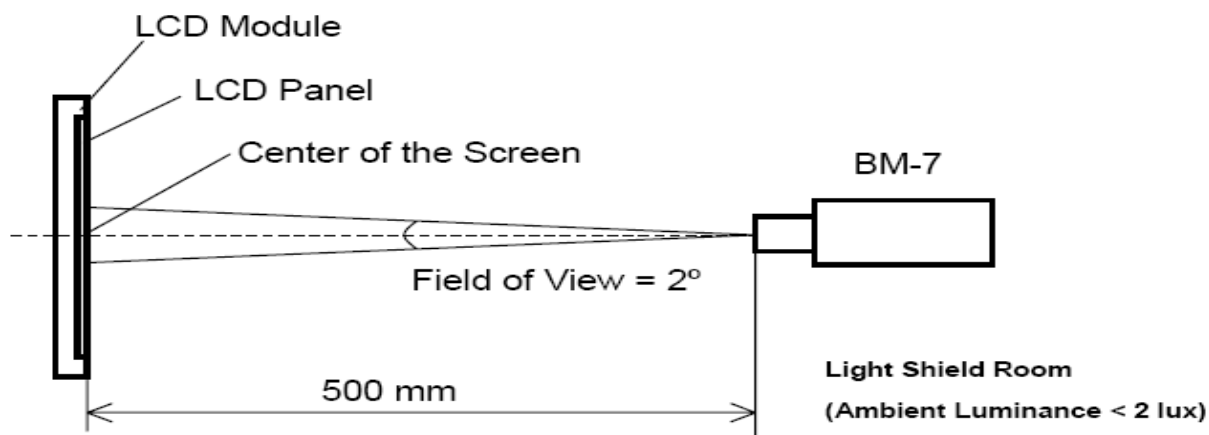


(2) Definition of Test Point:

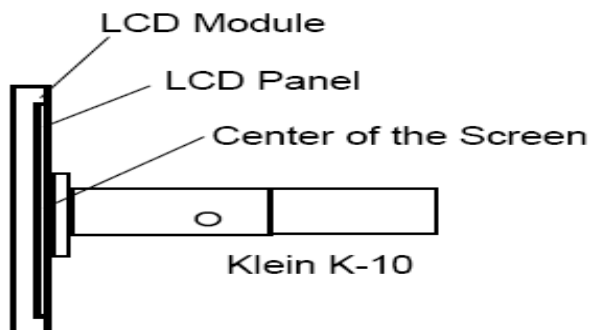


Active Area

(3) BM-7 Measurement Setup:



(4) Klein K-10 Measurement Setup:



## 5 LED Driving Board Specifications

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

### 5.1 Operating Characteristics

Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remark
Input Voltage	V <sub>in</sub>		10.0	12.0	14.0	V	
Input Current (Low Brightness)	I <sub>inL</sub>	V <sub>in</sub> =12V, V <sub>adj</sub> =5V	3	-----	-----	mA	
Input Current (High Brightness)	I <sub>inH</sub>	V <sub>in</sub> =12V, V <sub>adj</sub> =0V	0.44	0.37	0.32	A	(1)
LED Current (Low Brightness)	I <sub>outL</sub>	V <sub>in</sub> =12V, V <sub>adj</sub> =5V	0.0	-----	-----	Arms	
LED Current (High Brightness)	I <sub>outH</sub>	V <sub>in</sub> =12V, V <sub>adj</sub> =0V	248	250	252	mA	J2, J3
Working	Freq	V <sub>in</sub> =12V, V <sub>adj</sub> =0V	230	235	240	KHz	
Brightness Control	V <sub>adj</sub>	Connection of Voltage	0.2	-----	4.8	V	V <sub>adj</sub> ±5%
ON/OFF Control	V <sub>on</sub>	Normal Operation	2	-----	5	V	
	V <sub>off</sub>		0	-----	0.8	V	
Output Voltage	V <sub>out</sub>	V <sub>in</sub> =12V, V <sub>adj</sub> =0V	16.0	16.5	16.7	V	J2, J3
Efficiency	η	V <sub>in</sub> =12V, V <sub>adj</sub> =0V	89.4	90.8	93.7	%	(2)

#### Remark:

(1) This data is based on the testing result of practical input voltage, I<sub>in</sub> is measured by related V<sub>in</sub>.(min, typ, max)

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

## 5.2 Connector Socket

### Input Connector:

J1 (JST S8B-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

### Output Connector:

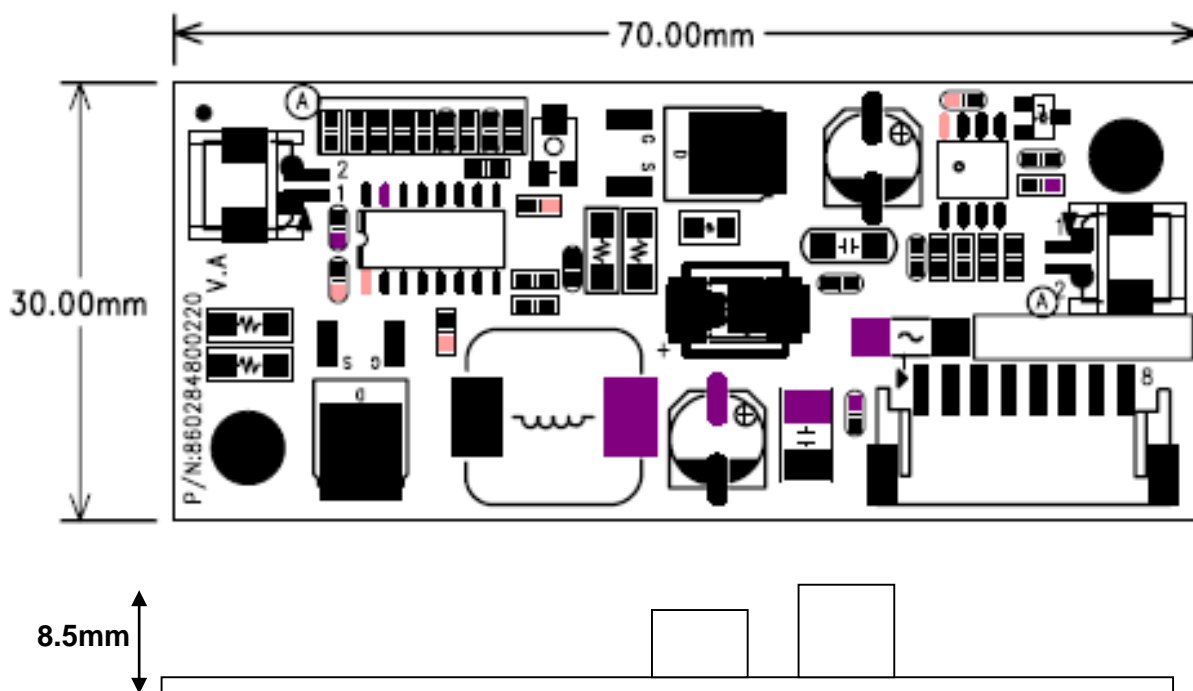
J2, J3 (JST S2B-ZR-SM3A-TF or Compatible)

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

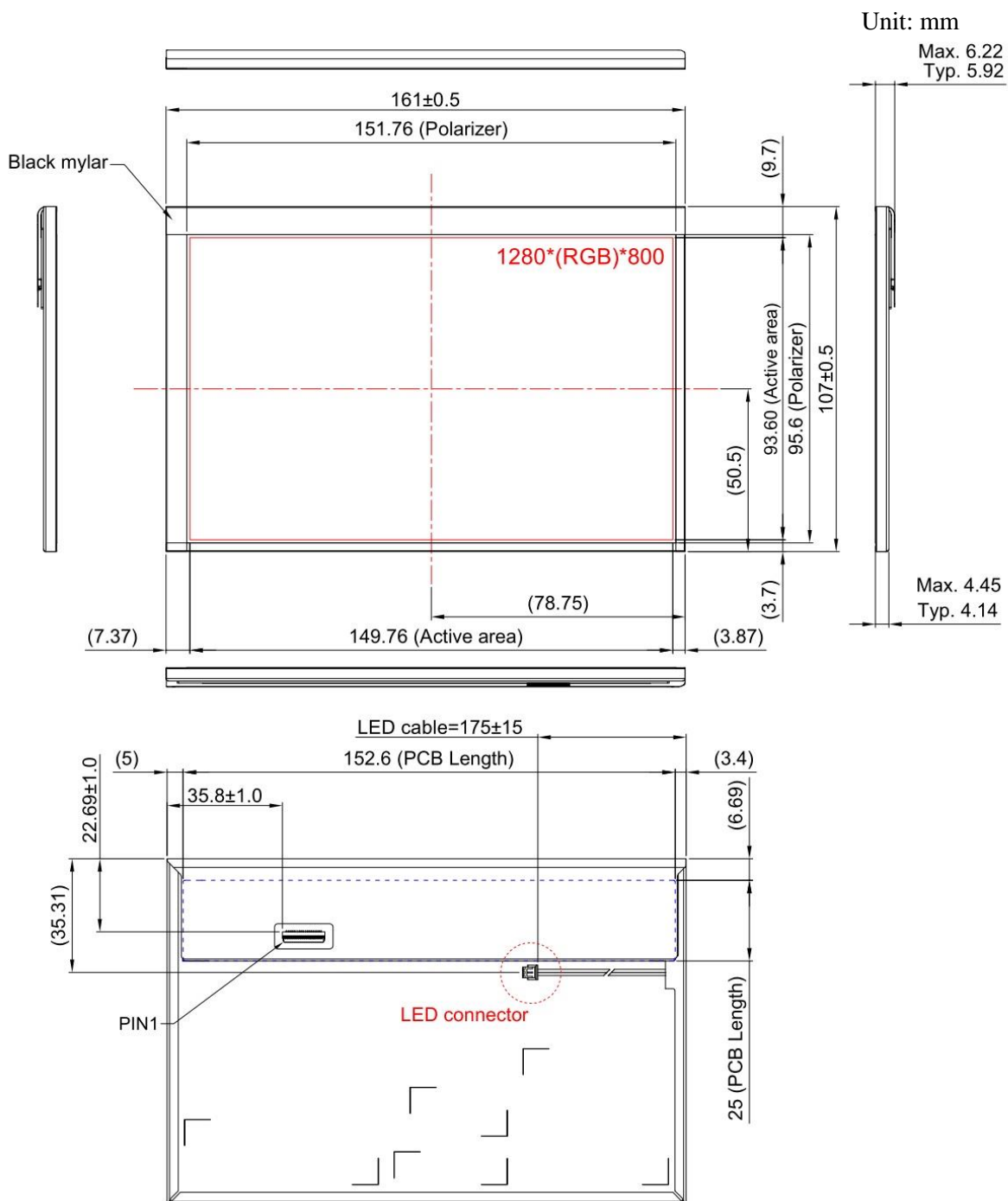


### 5.3 Mechanical Characteristics

Dimension: 70mm\*30mm\*8.5mm

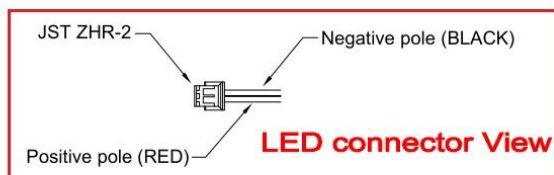


## 6 Mechanical Drawing



### Note:

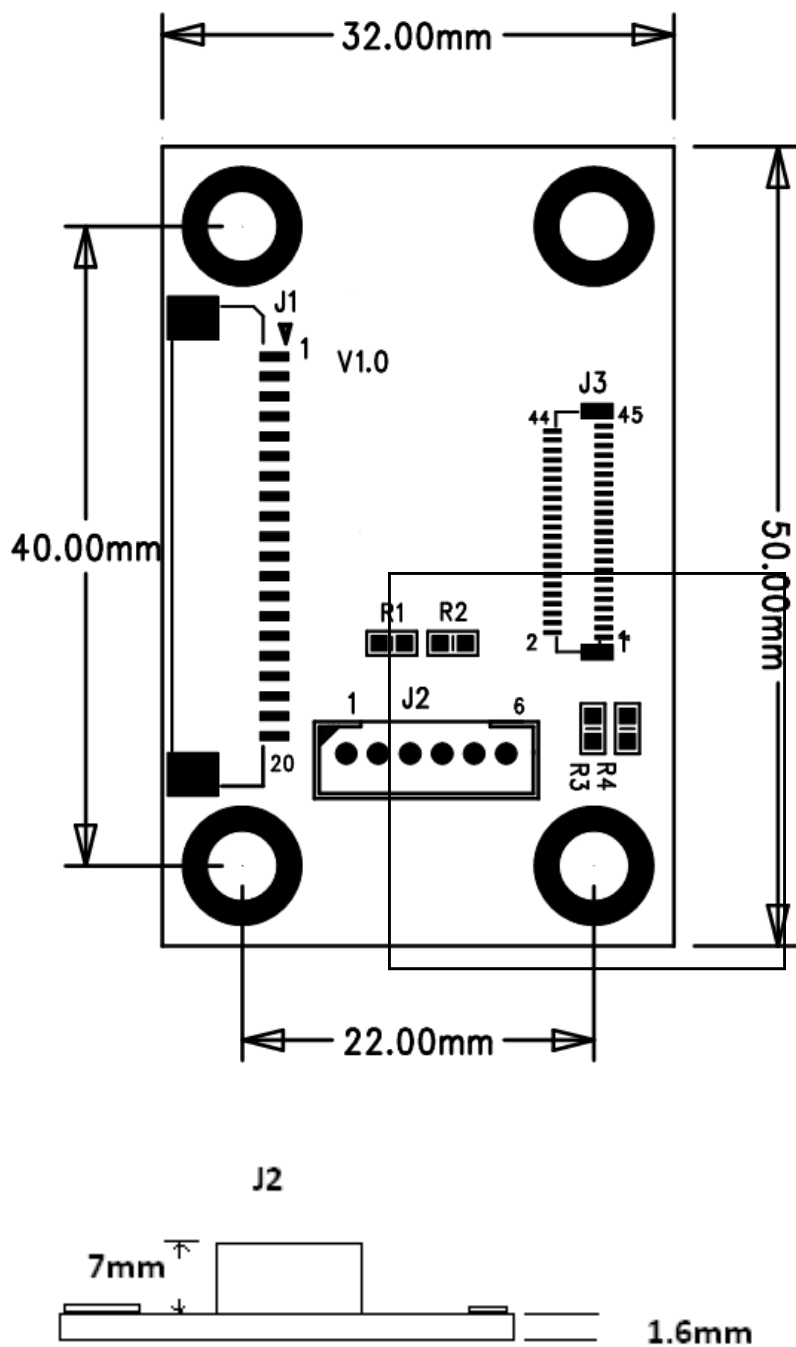
- 1.General tolerance:  $\pm 0.3$
- 2.Display type: a-si SFT-TFT
- 3.Recommended connector type: CviLux-CF38392D1R0-NH
- 4."( )"marks the reference dimensions



## 7 LVDS/LVDS Converter Board

### 7.1 Drawing Dimension

Dimension: 32mm (L) x 50mm (W)



## 7.2 Pin Define

### J1: Panel Connector (to A/D Board PCB)

Pin NO.	Function	Pin NO.	Function
1	PVCC	2	PVCC
3	PVCC	4	GND
5	Rx0-	6	Rx0+
7	GND	8	Rx1-
9	Rx1+	10	GND
11	Rx2-	12	Rx2+
13	GND	14	RxCLK-
15	RxCLK+	16	GND
17	Rx3-	18	Rx3+
19	NC	20	NC

### J3: Panel Connector(to Panel-FPC 0.6mm Connector 45P)

Pin NO.	Function	Pin NO.	Function
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC
7	NC	8	NC
9	NC	10	NC
11	U/D	12	L/R
13	GND	14	NC
15	NC	16	GND
17	NC	18	NC
19	GND	20	RX3+
21	RX3-	22	GND
23	RXCK+	24	RXCK-
25	GND	26	RX2+
27	RX2-	28	GND
29	RX1+	30	RX1-
31	GND	32	RX0+
33	RX0-	34	NC
35	NC	36	NC
37	NC	38	PVCC(3.3V)
39	PVCC(3.3V)	40	NC
41	NC	42	NC
43	NC	44	NC
45	NC		

Note: U/D and L/R be fixed on Panel.

**J2: Panel Connector(to A/D Board PCB)**

Pin NO.	Function	Pin NO.	Function
1	NC	2	NC
3	NC	4	NC
5	NC	6	NC

Note 1: LED\_EN = 0 ~ 12V

Note 2: ADJ = 0 ~ 12V, operation frequency = 100Hz ~ 100 KHz

## 8 AD 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 an external luminance sensor as an option, an optional VR button to control brightness, fan rotation and RS232.

Rev.1 is European RoHS compliant.

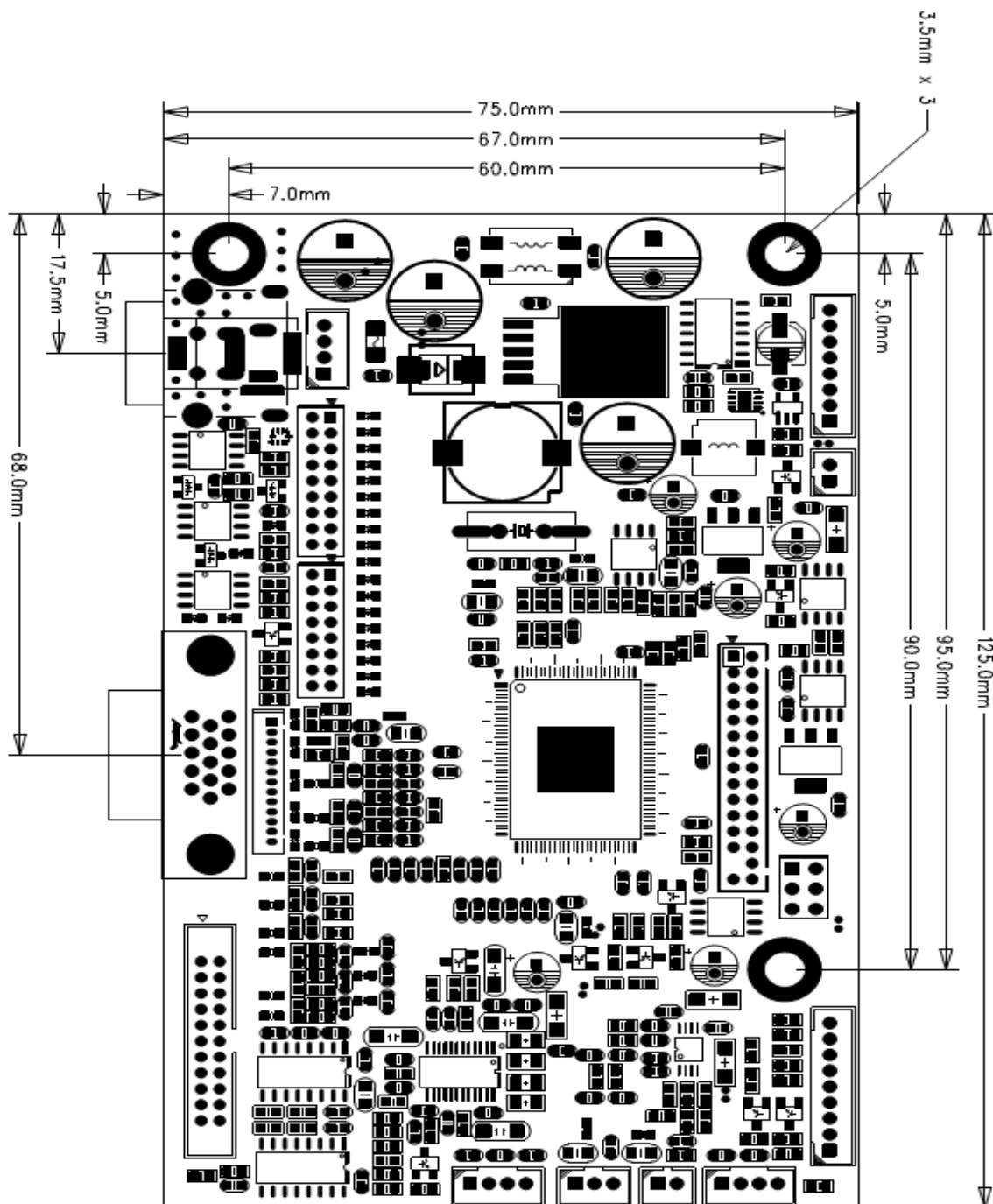
### 8.1 General Description

- Max Resolution Up To WUXGA
- Analog RGB Input up to 205MHz
- ULTRA-RELIABLE DVI INPUT
- HDMI INPUT(optional)
- Dual/single LVDS interface
- Support Panel DC5V 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 12Vdc
- CBVS, S-VIDEO, \*\*YCbCr (optional) INPUT
- Audio in and 2Wx2 Audio Out(optional)PHOTO

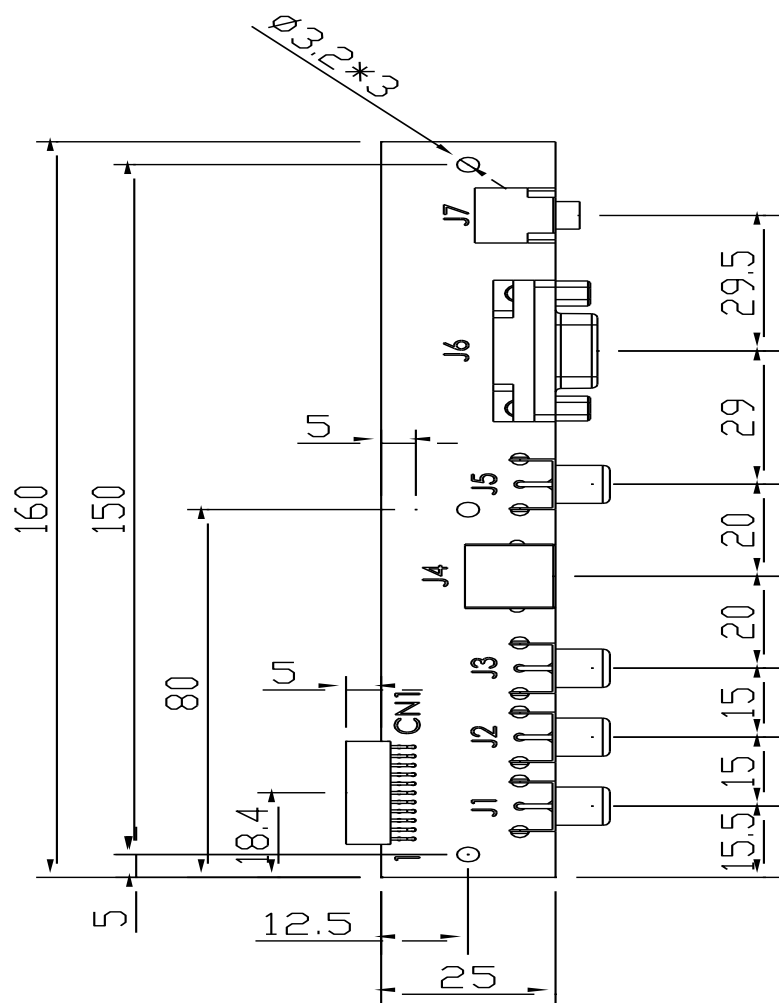


## 8.2 Outline Dimensions

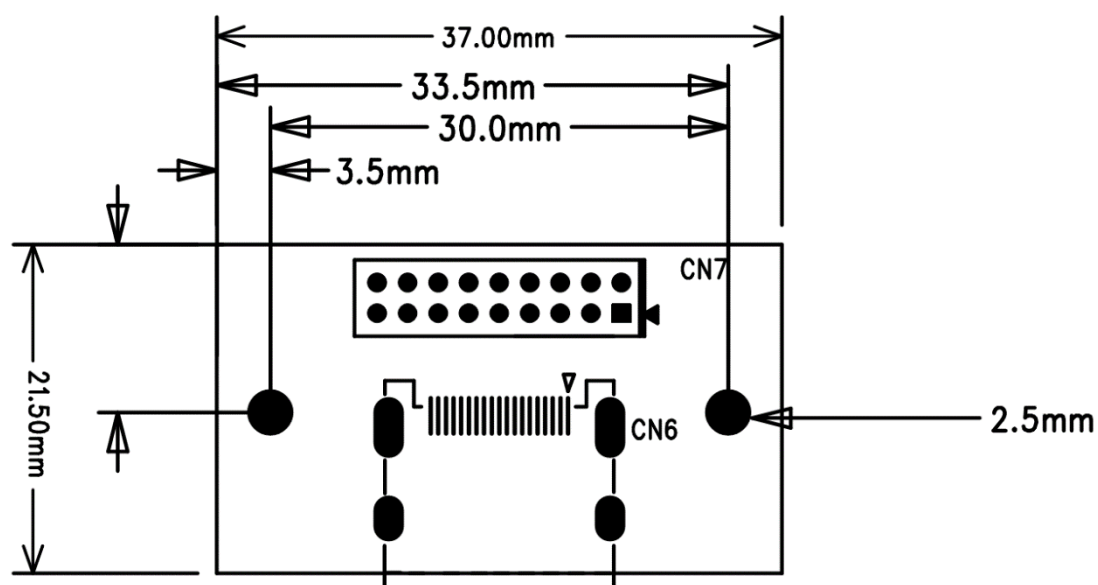
ADBoard 125mm x 75mm



I/O BOARD 160mm x 25mm x 15mm



HDMI BOARD 37mm x 21.5mm x 6.5mm







### **J3: Panel connector**

Pin No.	Function	Pin No.	Function
1	RxO0-	16	RxE1+
2	RxO0+	17	RxE2-
3	RxO1-	18	RxE2+
4	RxO1+	19	RxEC-
5	RxO2-	20	RxEC+
6	RxO2+	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

### **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		

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

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

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

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

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

Pin No.	Symbol	Description	Pin No.	Symbol	Description
1	SCL	DDC Data Clock	8	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	VSYN	Vertical Sync	13	+5V	+5VDDC
7	BGND	Blue Return			

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

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

**CN1: Power Jack (12V)**

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

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

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

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

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

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

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

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

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

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

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

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

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

**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

**J5: Ambient (2PIN 2.0mm)**

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

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

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

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

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

## I/O BOARD Pin Define

### J1: Component Y

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

### J2: Component Cb

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

### J3: Component Cr

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

### J4: S-Video

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

### J5: Composite

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

### J6: D-SUB9(RS232)

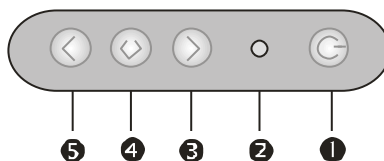
Pin No.	Function	Pin No.	Function
1	NC	2	TXD
3	RXD	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC		

### CN1:11P X 2 Connector

Pin No.	Function	Pin No.	Function
1	Component Cb	2	Component Y
3	GND	4	Component Cr
5	GND	6	S-Video Y
7	GND	8	S-Video C
9	GND	10	Composite
11	GND	12	GND
13	TXD	14	RXD
15	GND	16	GND
17	GND	18	GND
19	Audio IN(R)	20	Audio IN(L)
21	GND	22	GND

## 8.4 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.  
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.

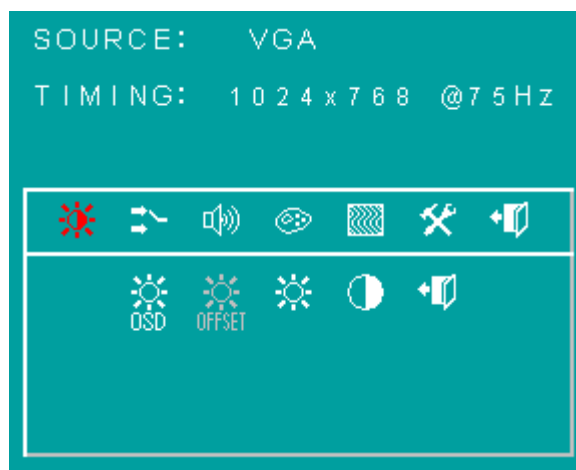
#### 5. Return & Exit the main menu

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.

## 8.5 OSD Menu

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

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



There are 7 sub pages inside the OSD manual, Brightness, Signal select, Sound, Color, Image, Tools, and Exit.

When you press “menu” button, you enter the “Brightness” sub page. You will see 5 selections:



press “menu”



press “menu”



press “menu”



### OSD Brightness:



press “right” key



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



**Ambient light sensor:** press this Icon, must to accompany with DELTA COMPONENTS 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)



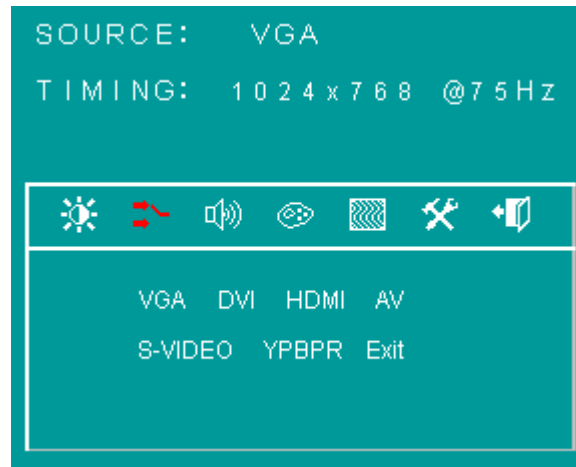
**Contrast:** Press “menu” and “right” you can adjust the contrast from “0” to “100” by pressing the “left” and “right”.





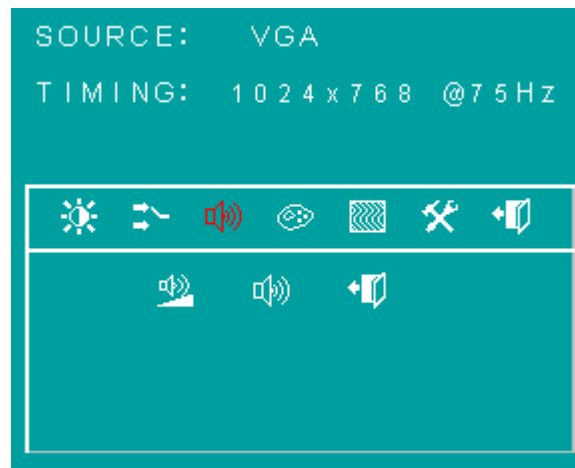
**Exit:** You can exit this sub menu back to normal screen.

### Source :



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

### Sound :



There are 3 options for “Sound” sub page.



**Audio Volume:** Audio volume adjustment.



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



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

## Color :



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



**sRGB:** Windows standard color setting.



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



**Color Tempture User**



**Color Tempture\_6500K**



**Color Tempture\_9300K**

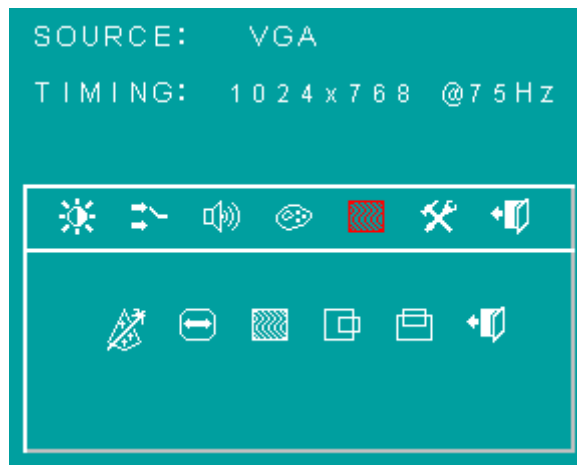


**Exit:** back to the normal screen.

“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 Autotune result, you can adjust manually by “Clock”. The screen will be “wider” if you adjust this function.



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



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



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



**Exit:** Back to normal screen.

## TOOLS :

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



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



**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.

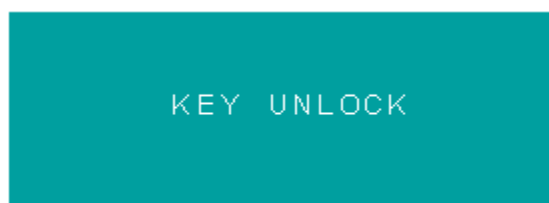
You can plug in the VGA signal cable, and re-plug the power connector to exit the burn-in mode.

## 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 °C. 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.