

# LCD Controller Board

## Preliminary Spec

### TDP62 Series Board (DP/VGA/DVI)

CUSTOMER:

---

PART NO.:

---

DATE:

---

<b>Revision: V 0.2</b>
------------------------

<b>DOC :</b>	
--------------	--

<b>COPY :</b>	<b>1</b>
---------------	----------

<b>PAGE :</b>	
---------------	--

<b>Contact</b>	
----------------	--

<b>Approval by :</b>		
----------------------	--	--

<b>Review by :</b>	
--------------------	--

<b>Design by :</b>	
--------------------	--

## **TABLE OF CONTENTS**

### **1. SCOPE**

1.1 PRODUCT FEATURES

### **2. ELECTRICAL PERFORMANCE**

2.1 POWER INPUT & OPERATION TEMPERATURE

2.2 PRESET TIMING CHART

### **3. DIMENSIONS**

3.1 COMPONENT SIDE

3.2 SOLDER SIDE

3.3 PCB DIMENSIONS

### **4. CONNECTOR**

### **5. CORRESPONDING KEYPAD SCHEMATIC**

### **6. OSD WINDOW OPERATION**



## 1. SCOPE

The TDP62 is LCD Controller board with compact size and high performance which can support Display port 1.2 and VGA as well as DVI Source input source with Audio Amp output option.

### Available Model List :

**TDP62 : Standard Version**

**TDP62S: Standard Version+ Audio Amp**

**TDP62H: Standard Version+ Triple Power system for 24V**

**TDP62L: Standard version with Low profile**

## 1.1 PRODUCT FEATURES

### VIDEO

- Horizontal Synchronization 30 KHz to 83 KHz.
- Vertical Synchronization 55 Hz to 75 Hz.
- Support Display Port 1.2
- Support DVI
- Support VGA Dsub
- Output data type : LVDS 18bit,24bit,36Bit,48bit.

### AUDIO (optional)

- Display port /External sound input.
- LINE out
- Includes 2W+2W audio amplifier.

### POWER

- Two input for control board : 12Vdc/24V(TDP62H)
- Jack 5.5×2.1Φ  
(a) Wafer 4P 2.0mm
- Output for LCD panel : 3.3V / 5V / 12V.
- VESA DPMS compliant.



SPECIFICATION FOR LCD Controller	Model NO TDP62	Rev : 0.2	Date : 14 November Page : 4 of 17
----------------------------------	-------------------	-----------	--------------------------------------

## 2. ELICTRICAL PERFORMANCE

All tests must be performed under “standard testing conditions”  
( item 2.1 ) unless otherwise specified.

### 2.1 OPERTION TEMPERATURE

- Warm up time :  $\geq 30$ min.
- Operation Temperature :  $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$
- Storage Temperature :  $-30^{\circ}\text{C} \sim 80^{\circ}\text{C}$
- Operation Humidity : 10%  $\sim$  80%
- Storage T Humidity : 5%  $\sim$  90%

### 2.2 PRESET TIMING CHART

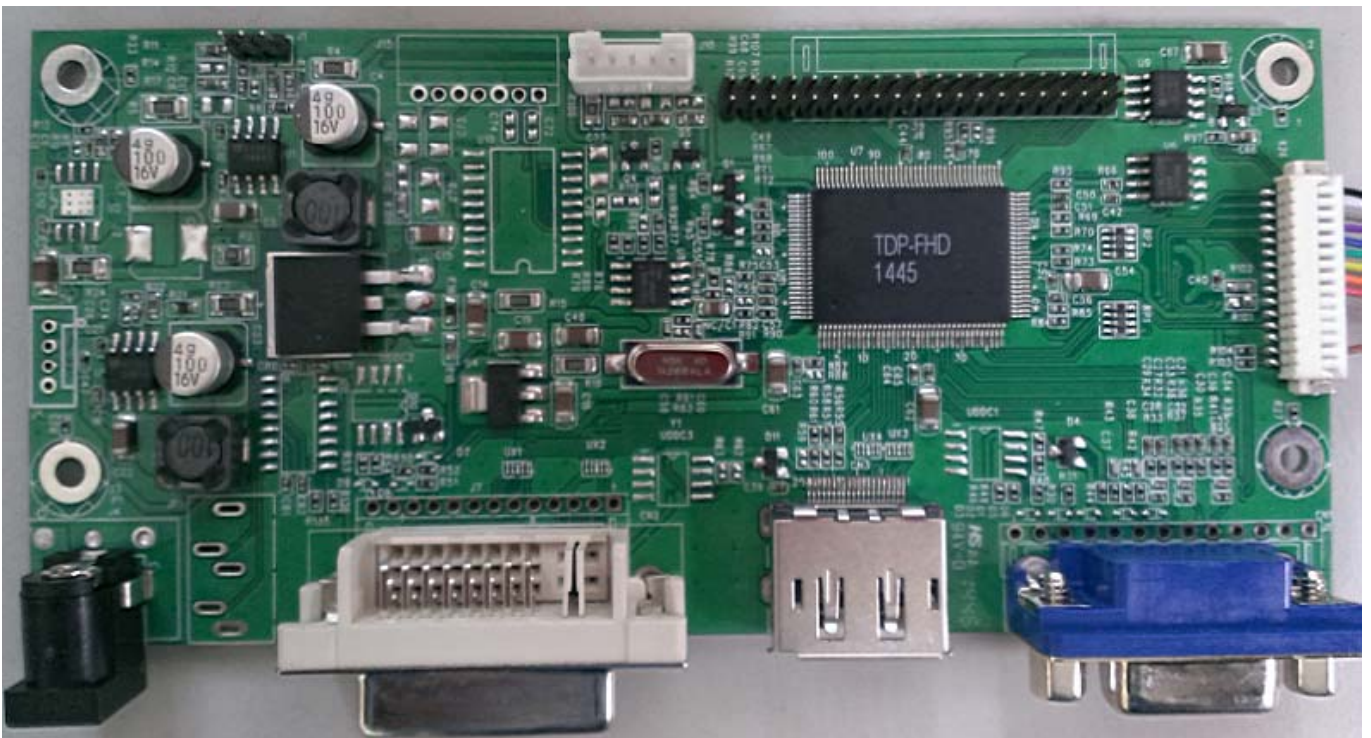
#### 2.2.2 FACTORY PRESETTED AND PREDEFINED TIMINGS

VESA MODES			
Mode	Resolution	Horizontal Frequency	Vertical Frequency
1	640 × 480@60Hz	31.469 KHz	59.940 Hz
2	640 × 480@72Hz	37.861 KHz	72.809 Hz
3	640 × 480@75Hz	37.500 KHz	75.00 Hz
4	800 × 600@56Hz	35.156 KHz	56.250 Hz
5	800 × 600@60Hz	37.879 KHz	60.317 Hz
6	800 × 600@72Hz	48.077 KHz	72.188 Hz
7	800 × 600@75Hz	46.875 KHz	75.000 Hz
8	1024 × 768@60Hz	48.363 KHz	60.004 Hz
9	1024 × 768@70Hz	56.476 KHz	70.609 Hz
10	1024 × 768@75Hz	60.023 KHz	75.029 Hz
11	1280 × 1024@60Hz	63.981 KHz	60.020 Hz
12	1280 × 1024@75Hz	79.976 KHz	75.025 Hz

13	1360 × 768@60Hz	47.712 KHz	60.015 Hz
14	1440 × 900@60Hz	55.935 KHz	59.887 Hz
15	1440 × 900@75Hz	70.635 KHz	74.984 Hz
16	1680 × 1050@60Hz	65.290 KHz	59.954 Hz
17	1680 × 1050@75Hz	82.306 KHz	74.892 Hz
18	1920 × 1080@60Hz	67.158 KHz	59.963 Hz

### 3. DIMENSIONS

#### 3.1 COMPONENT SIZE

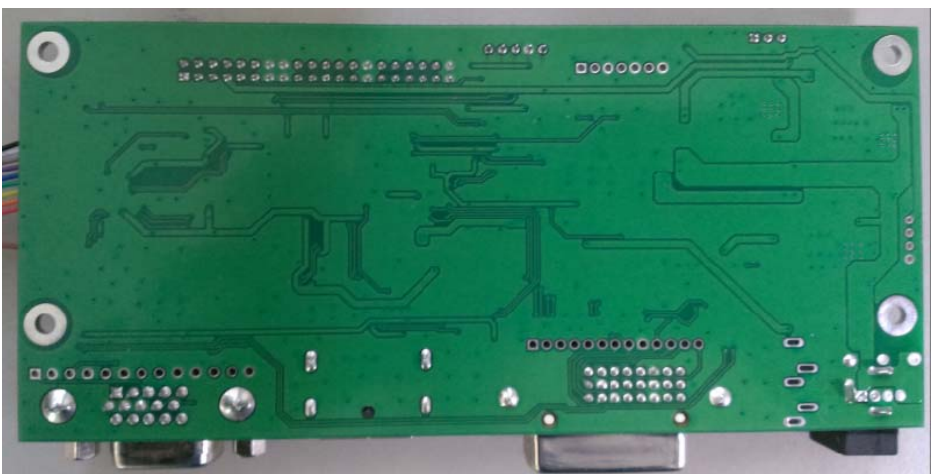


(Standard Version)



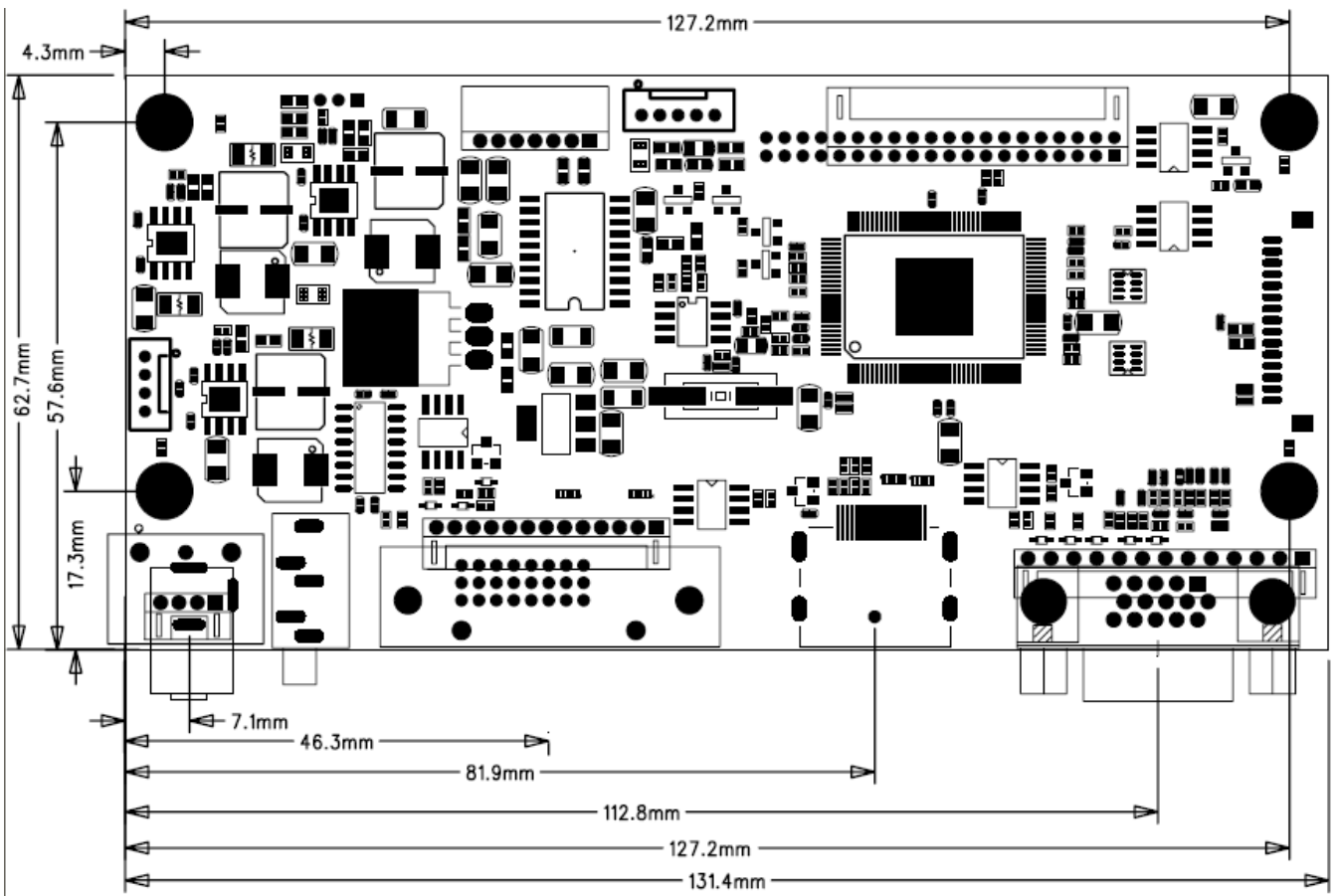
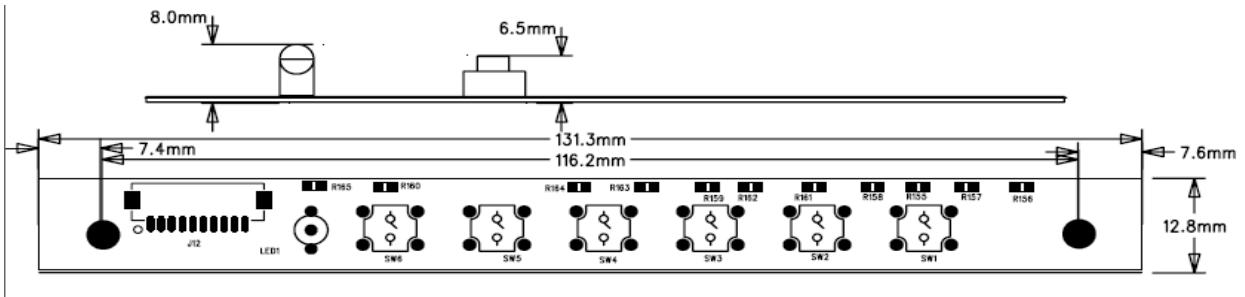
( Low Profile Version )

### 3.2 SOLDER SIDE



SPECIFICATION FOR LCD Controller	Model NO TDP62	Rev : 0.2	Date : 14 November Page : 7 of 17
----------------------------------	-------------------	-----------	--------------------------------------

### 3.3 PCB DIMENSIONS



SPECIFICATION FOR LCD Controller	Model NO TDP62	Rev : 0.2	Date : 14 November Page : 8 of 17
----------------------------------	-------------------	-----------	--------------------------------------



## 4. CONNECTOR

### 4.1 POWER CONNECTOR ( P1 ) 5.5x2.1Φ

PIN	Symbol	Description
1	+12V	POWER SUPPLY +12V
3	GND	POWER SUPPLY GROUND

### 4.2 POWER CONNECTOR ( J4 ) Wafer 4P 2.0mm

PIN	Symbol	Description
1	DC_IN	POWER SUPPLY +12V
2	GND	POWER SUPPLY GND
3	GND	POWER SUPPLY GND
4	DC_IN	POWER SUPPLY +12V

### 4.3 VGA INPUT CONNECTOR ( CON1 )—D-Sub 15P

PIN	Symbol	Description	PIN	Symbol	Description
1	VGA IN R	Red analog signal	9	DDC_VDD	DDC power supply
2	VGA IN G	Green analog signal	10	GND	Digital ground
3	VGA IN B	Blue analog signal	11	N.C	N.C
4	N.C	N.C	12	DDC SDA	DDC Serial Data
5	GND	Digital ground	13	Hor. SYNC	Horizontal synchronous
6	GND-R	Analog ground of Red	14	Ver. SYNC	Vertical synchronous
7	GND-G	Analog ground of Green	15	DDC SCL	DDC Serial Clock
8	GND-B	Analog ground of Blue			

#### 4.4 VGA INPUT CONNECTOR (JP13 )—Wafer 13P 2.5mm

PIN	Symbol	Description	PIN	Symbol	Description
1	VGA IN R	Red analog signal	7	Ver. SYNC	Vertical synchronous
2	GND-R	Analog ground of Red	8	Hor. SYNC	Horizontal synchronous
3	VGA IN G	Green analog signal	9	GND	
4	GND-G	Analog ground of Green	10	GND	Digital ground
5	VGA IN B	Blue analog signal	11	DDC SDA	DDC Serial Data
6	GND-B	Analog ground of Blue	12	DDC SCL	DDC Serial Clock
			13	GND	

#### 4.5 DVI (J7) Connector (2.0 mm13 Pin 90°)

Pin	Function	Note
1	TMDS 0+	
2	TMDS 0-	
3	TMDS 1+	
4	TMDS 1-	
5	TMDS 2+	
6	TMDS 2-	
7	TMDS CK+	
8	TMDS CK-	
9	GND	
10	DVIPOWER	
11	Hot Plug	
12	DVI_SCL	
13	DVI_SDA	

#### 4.6 Display Port CONNECTOR (CN3 )—D-20P

PIN	Symbol	Description	PIN	Symbol	Description
1	Lane3N	Lane3N	11	GND	Ground
2	GND	Ground	12	Lane0P	Lane0P
3	Lane3P	Lane3P	13	GND	GND
4	Lane2N	Lane2N	14	GND	GND
5	GND	Ground	15	AUX_Channel_P	Aux_channel_P
6	Lane2P	Lane2P	16	GND	Gnd
7	Lane1N	Lane1N	17	AUX_Channel_N	Aux_Channel_N
8	GND	Ground	18	Hot Plug	Hot Plug
9	Lane1P	Lane1P	19	Retuen	Return
10	Lane1N	Lane0N	20	DP_Power	DP 5V power

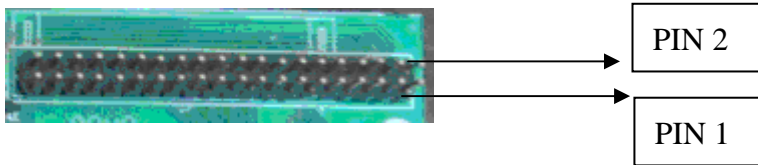
#### 4.7 SPEAKER OUTPUT CONNECTOR (J15 )--Wafer 7Pin 2.0mm

PIN	Symbol	Description
1	Audio_R_in	Audio_Input_R
2	Audio_L_in	Audio_Input_L
3	GND	GND
4	R-OUT	To speaker R
5	GND	GROUND
6	L-OUT	To speaker L
7	GND	GROUND

#### 4.8 LVDS OUTPUT CONNECTOR ( J8 )--Header 2x20 Pin 2.0mm

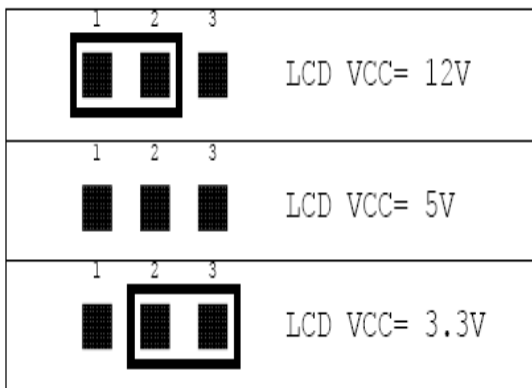
PIN	Symbol	Description	PIN	Symbol	Description
1	GPIO1	GPIO1	21	RxO2-	RxO2-
2	GPIO2	GPIO2	22	RxO2+	RxO2+

3	GPIO3	GPIO3	23	RxO1-	RxO1-
4	GPIO4	GPIO4	24	RxO1+	RxO1+
5	GPIO5	GPIO5	25	RxO0-	RxO0-
6	GPIO6	GPIO6	26	RxO0+	RxO0+
7	BK_PWR	BK_PWR *	27	GND	GND
8	GPIO8	GPIO8	28	GND	GND
9	VDD	VDD *	29	RxE3-	RxE3-
10	VDD	VDD *	30	RxE3+	RxE3+
11	BK_EN	BK_EN	31	RxEC-	RxEC-
12	LED_PWM	LED_PWM	32	RxEC+	RxEC+
13	GND	GND	33	RxE2-	RxE2-
14	GND	GND	34	RxE2+	RxE2+
15	GND	GND	35	RxE1-	RxE1-
16	GND	GND	36	RxE1+	RxE1+
17	RxO3-	RxO3-	37	RxE0-	RxE0-
18	RxO3+	RxO3+	38	RxE0+	RxE0+
19	RxOC-	RxOC-	39	GND	GND
20	RxOC+	RxOC+	40	GND	GND



Note: The Voltage of VDD is selected by J1. ( jumper with 3 pins, VDD 5V is default

J1 setting for LCD VDD



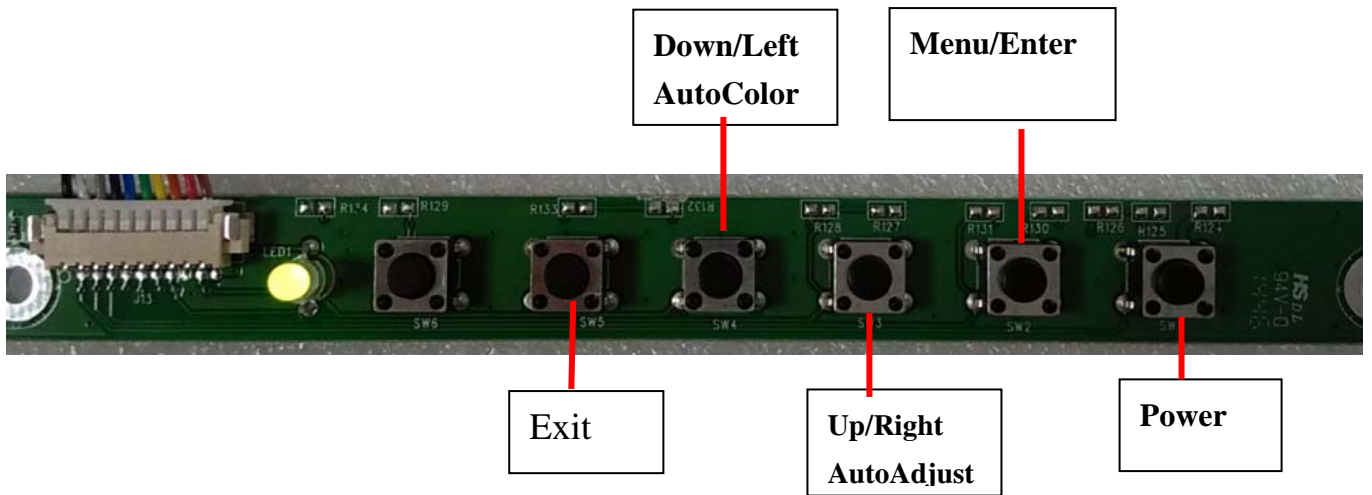
#### 4.9 INTERVER CONNECTOR (J10)--Wafer 5 Pin 2.0mm

PIN	Symbol	Description
1	+12V	Power Supply +12V
2	GND	GND
3	BK_PWM	Dimming Control by digital PWM mode
4	BK_ADJ	Dimming Control by Analog mode
5	BL_EN	Penal Backlight On/Off control

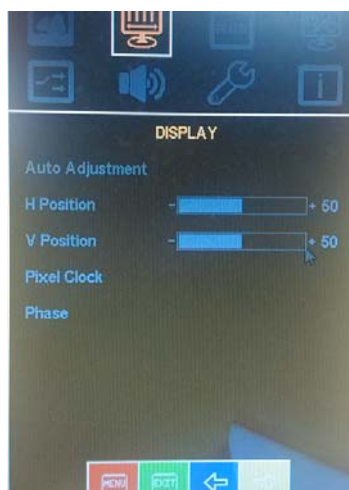
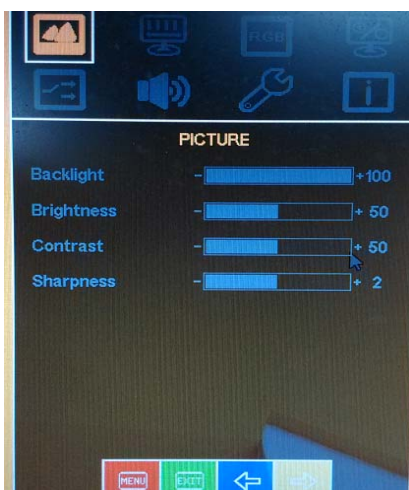
#### 4.10 Keypad SELECTION ( J9 )--Wafer 15P 1.25mm

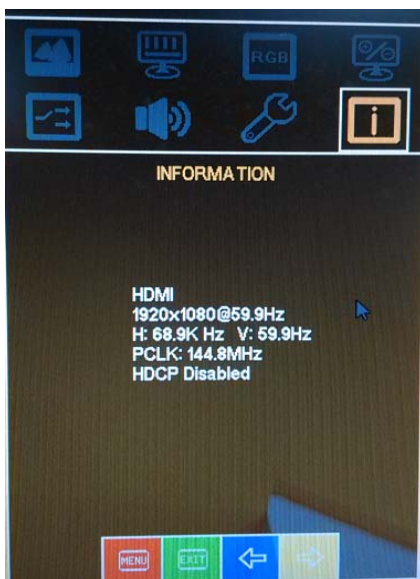
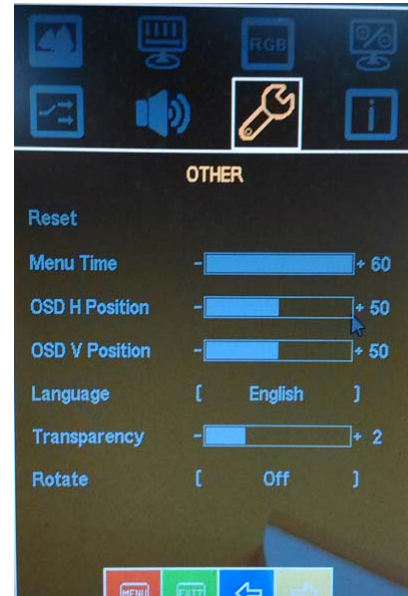
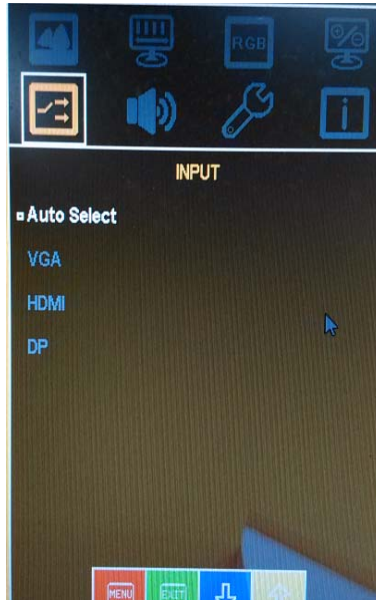
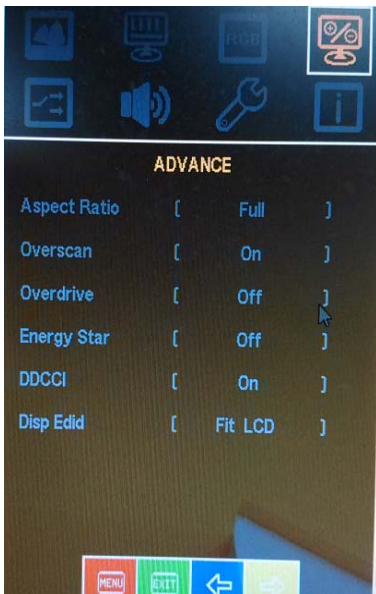
Pin	Function	Note
1	SW1	POWER
2	SW2	MENU/ENTER
3	SW3	DOWN/ AUTO ADJUST
4	SW4	UP / AUTO COLOR
5	SW5	DOWN/AUTO ADJUST(Reserve)
6	LED-G	LED GREEN
7	LED-R	LED RED
8	GND	GND
9	SW6	UP / AUTO COLOR
10	LED_POWER	
11	Reserved	
12	Reserved	
13	Reserved	
14	Reserved	
15	Reserved	

## 5 CORRESPONDING KEYPAD



## 6 OSD WINDOW OPERATION





<b>OSD Menu item</b>	<b>Description</b>
<b>Backlight</b>	Adjusts the backlight luminance of the image
<b>Brightness</b>	Adjusts the luminance of display by up/down key
<b>Contrast</b>	Adjusts the contrast ratio by up/down key
<b>Sharpness</b>	Adjusts the image for the enhancement
<b>Autoadjust</b>	Adjusts the color Hue by adjustable Bar.
<b>H Position</b>	Adjusts the image H position (VGA only)
<b>V Position</b>	Adjusts the image V position (VGA only)
<b>Pixel Clock</b>	Adjusts the image clock (VGA only)
<b>Phase</b>	Adjusts the image Phase (VGA only)
<b>Gamma</b>	Adjusts the Gamma curve to match with LCD default curve
<b>Color Temp</b>	The item has 5 options They are 9300k,/7500k/ 6500k/user color/sRGB /off available for color temp..
<b>Color Effect</b>	Select preferred color effect by 5 options, they are Standard/games/movie/photo/vivid/user available
<b>Color Format</b>	Please select the default "RGB" for this Item
<b>Hue</b>	Adjust Image Hue parameter
<b>Saturation</b>	Adjust Color level
<b>Aspect Ratio</b>	Full/16:9/4:3/5:4/original for options
<b>OverScan</b>	Reserved for Video source only
<b>OverDrive</b>	N.A. for this Item
<b>Energy Star</b>	Adjust On/Off for Energy star support
<b>DDCCI</b>	Adjust On/Off to support DDC/CI function
<b>EDID Select</b>	Select EDID mapping algorithm Auto: can do Auto calculation for EDID parameter base on the Panel type Higher display: Fill in the Fixed EDID table with Higher resolution LCD Fit:: Fill in the Fixed EDID table
<b>Input Source</b>	Auto Select /DP / DVI / VGA are available for selection
<b>Reset</b>	Recall all setting value to default
<b>OSD Timer</b>	Osd display timer
<b>OSD H pos.</b>	Adjust OSD H. position
<b>OSD V pos.</b>	Adjust OSD V position
<b>Language</b>	OSD Language Support
<b>OSD Transparency</b>	OSD blending/Transparency Setting
<b>OSD Rotate</b>	OSD rotating enable/disable
<b>Information</b>	Show Input mode /Clock/H/V sync information from OSD



