


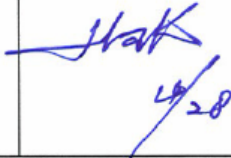
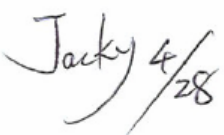


**LITEMAX**  
**SSD1712**  
Spanpixel

17.2" LCD Display

(1<sup>st</sup> Edition 5/3/2011 )

All information is subject to change without notice.

Approved by	Checked by	Prepared by
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**RECORD OF REVISION**

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Version	Date	Description	Remark
V1.0	4/27/2011	Initial Release	

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## 1.0 GENERAL DESCRIPTION

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### 1.1 OVERVIEW

The SSD1712 is a 17.2 inch color TFT-LCD display with special aspect ratio 16:3 and WXGA wide resolution 1366 x 512 (1366 horizontal by 512 vertical pixel array). It is Litemax's Spanpixel series product which designed for high brightness 1000 nits sunlight readable display, power efficiency LED backlight system and fanless display.

Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 8-bit gray scale signal for each dot. It is intended to support display where wide viewing angle, high color saturation, and high color depth.

### 1.2 FEATURES

- 17.2" SXGA TFT LCD
- LED backlight
- 500 nits Sunlight Readable
- Long Life Time
- Thin and Light
- DC 12V input

### 1.3 APPLICATION

- Out/Indoor Display
- Out/Indoor Digital Signage
- Quick Service Restaurant Display Product
- Transportation

### 1.4 GENERAL SPECIFICATIONS

Model No.	SSD1712
LCD Display	17.2" Wide LED Backlight LCD
Display Area (mm)	409.8 (H) x 153.6 (V)
Display Surface	Non-glare hard coated
Luminance	500 cd/m <sup>2</sup>
Resolution	1366 x 512
Contrast Ratio	1000 : 1 (Typ)
Display Colors	16.7M colors
Pixel Arrangement	RGB (Red, Green, Blue) vertical stripe
Pixel Pitch (mm)	0.3mm
Response Time	3.7ms (Typ.)
Signal Connector	15 Pin D-sub, 29 Pin DVI
F/R Control Button	Power Switch, Menu, Select (+,-)
OSD Menu	Brightness, Contrast, H/V Position, Color, Phase, Clock, Language, Management
Power Consumption	17W
Option	Touch for customize (Resistive/ Capacitive)

※ Specifications subject to change without notice.

## 2.0 ELECTRICAL CHARACTERISTICS

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### 2.1 ELECTRICAL CHARACTERISTICS

#### Control circuit driving

Item	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Remark
Input Voltage	Vin		10	12	14	V	DC
Input Current (Low Brightness)	IinL	VIN=12V,Vadj=5V 0%	0.0	-----	-----	mA	
Input Current (High Brightness)	IinH	VIN=12V,Vadj= 0V	320	270	230	mA	
LED Current (Low Brightness)	IoutL	VIN=12V,Vadj==5V	0.0	-----	-----	Arms	
LED Current (High Brightness)	IoutH	VIN=12V,Vadj= 0V	127	127	127	mA	
Working Frequency	Freq	VIN=12V,Vadj=0V	539.55	545	550.45	KHZ	
PWM Frequency	Freq	VIN=12V	180	200	220	HZ	
Brightness Control	Vadj	Connection of Voltage	0.5	-----	4.8	V	DC
ON/OFF Control	Von/off	Normal Operation	1.5	-----	5	V	DC
Output Voltage	Vout	VIN=12V,Vadj=0V	20.47	20.539	20.541	V	DC
Efficiency	$\eta$	VIN=12V,Vadj=0V	81.24	80.51	81.02	%	

## 2.2 ABSOLUTE RATINGS OF ENVIRONMENT

High temperature or humidity may reduce the performance of panel. Please store LCD panel within the specified storage conditions.

Storage Condition: With packing.

Storage temperature range: 25±5 °C.

Storage humidity range: 50±10%RH.

Shelf life: 30days

## 2.3 ELECTRICAL ABSOLUTE RATINGS

Item	Symbol	Value		Unit	Note
		Min	Max		
Power Supply Voltage	V <sub>CC</sub>	-0.3	+6.0	V	(1)

Note (1) Permanent damage might occur if the module is operated at conditions exceeding the maximum values.

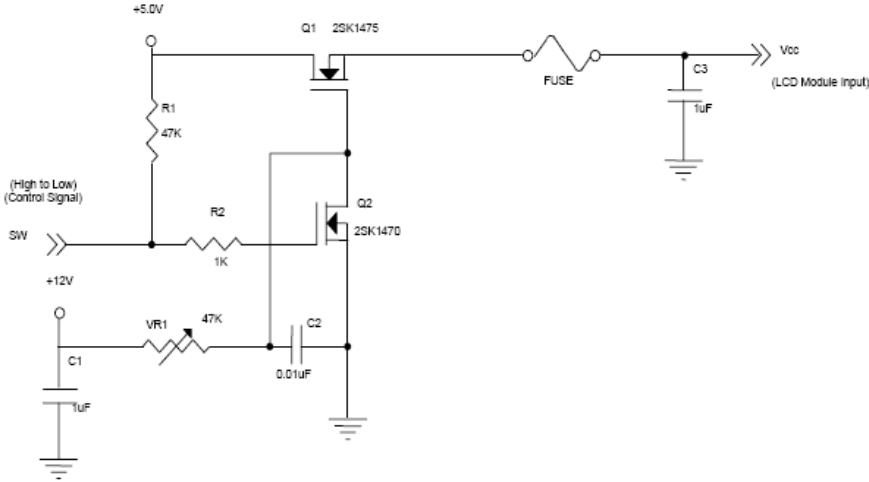
## 2.4 TFT LCD

Ta = 25 ± 2 °C

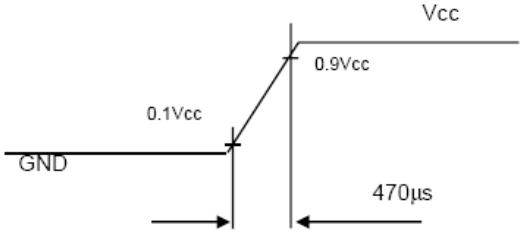
Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
Power Supply Voltage	V <sub>CC</sub>	4.5	5.0	5.5	V	-
Ripple Voltage	V <sub>RP</sub>	-	-	100	mV	-
Power On Rush Current	I <sub>RUSH</sub>	-	-	3	A	(2)
Power Supply Current	White	-	0.44	0.6	A	(3)a
	Black	-	0.58	0.9	A	(3)b
	Vertical Stripe	-	0.6	0.9	A	(3)c
Power Consumption	P <sub>LCD</sub>	-	6	-	Watt	(4)
LVDS differential input voltage	V <sub>id</sub>	100	-	600	mW	-
LVDS common input voltage	V <sub>ic</sub>	-	1.2	-	V	-
Logic "L" input voltage	V <sub>il</sub>	V <sub>SS</sub>	-	0.8	V	-

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

Note (2) Power On Rush Current Measurement Conditions: (must follow power sequence)

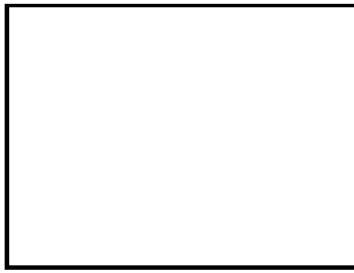


**Vcc rising time is 470μs**



Note (3) The specified power supply current is under the conditions at  $V_{cc} = 5.0\text{ V}$ ,  $T_a = 25 \pm 2\text{ }^\circ\text{C}$ ,  $F_v = 60\text{ Hz}$ , whereas a power dissipation check pattern below is displayed.

a. White Pattern



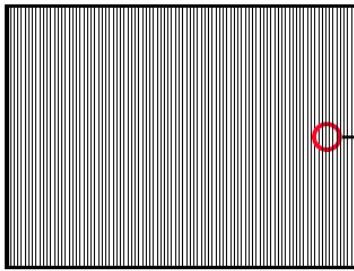
Active Area

b. Black Pattern

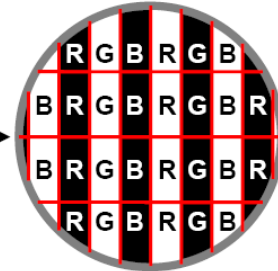


Active Area

c. Vertical Stripe Pattern

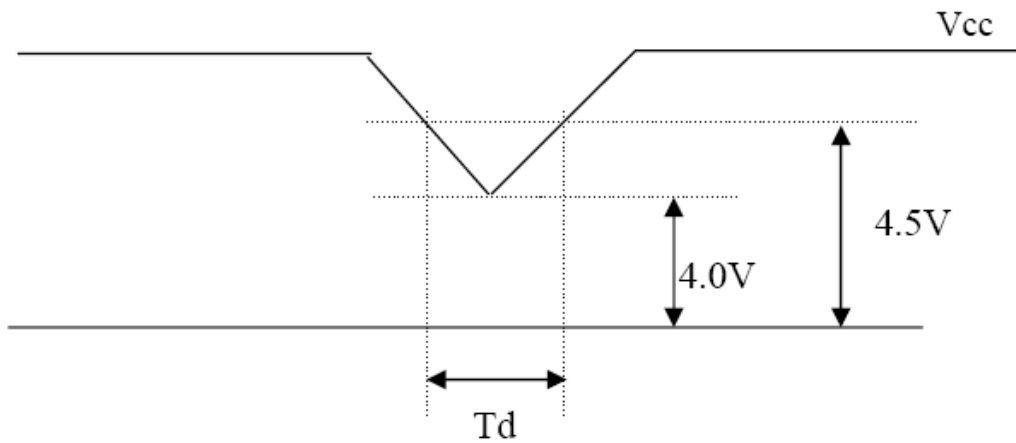


Active Area



Note (4) The power consumption is specified at the pattern with the maximum current.

**2.5  $V_{cc}$  POWER DIP CONDITION:**



Dip condition:  $4.0V \leq V_{cc} \leq 4.5V, T_d \leq 20ms$

## 2.6 TFT LCD

Pin	Name	Description
1	NC	Not connection, this pin should be open.
2	NC	Not connection, this pin should be open.
3	NC	Not connection, this pin should be open.
4	GND	Ground
5	RX0-	Negative LVDS differential data input. Channel 0
6	RX0+	Positive LVDS differential data input. Channel 0
7	GND	Ground
8	RX1-	Negative LVDS differential data input. Channel 1
9	RX1+	Positive LVDS differential data input. Channel 1
10	GND	Ground
11	RX2-	Negative LVDS differential data input. Channel 2
12	RX2+	Positive LVDS differential data input. Channel 2
13	GND	Ground
14	RXCLK-	Negative LVDS differential clock input.
15	RXCLK+	Positive LVDS differential clock input.
16	GND	Ground
17	RX3-	Negative LVDS differential data input. Channel 3
18	RX3+	Positive LVDS differential data input. Channel 3
19	GND	Ground
20	NC	Not connection, this pin should be open.
21	NC	Not connection, this pin should be open.
22	NC	Not connection, this pin should be open.
23	GND	Ground
24	GND	Ground
25	GND	Ground
26	Vcc	+5.0V power supply
27	Vcc	+5.0V power supply
28	Vcc	+5.0V power supply
29	Vcc	+5.0V power supply
30	Vcc	+5.0V power supply

Note (1) Connector Part No.: STM MSAKT2407P30A or equivalent.

## 2.7 LVDS DATA MAPPING TABLE

LVDS Channel 0	LVDS output	D7	D6	D4	D3	D2	D1	D0
	Data order	G0	R5	R4	R3	R2	R1	R0
LVDS Channel 1	LVDS output	D18	D15	D14	D13	D12	D9	D8
	Data order	B1	B0	G5	G4	G3	G2	G1
LVDS Channel 2	LVDS output	D26	D25	D24	D22	D21	D20	D19
	Data order	DE	NA	NA	B5	B4	B3	B2
LVDS Channel 3	LVDS output	D23	D17	D16	D11	D10	D5	D27
	Data order	NA	B7	B6	G7	G6	R7	R6

## 2.8 COLOR DATA INPUT ASSIGNMENT

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

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

Note (1) 0: Low Level Voltage, 1: High Level Voltage

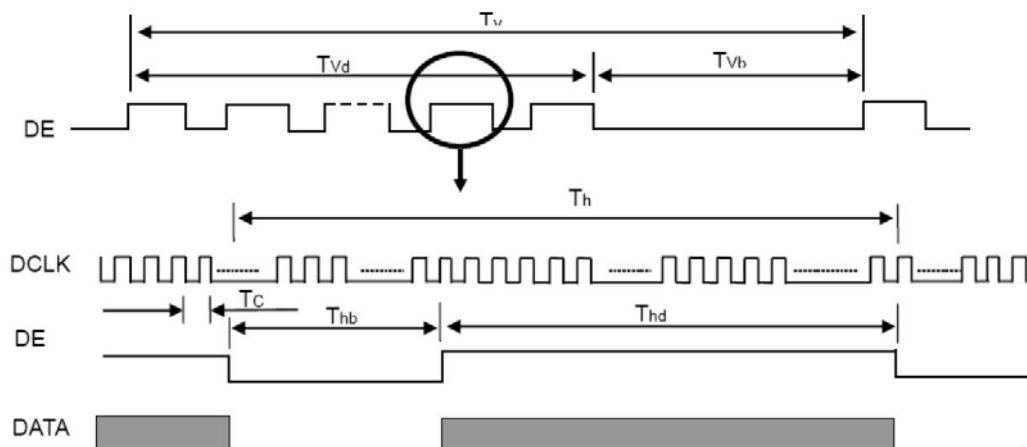
## 2.9 INPUT SIGNAL TIMING SPECIFICATIONS

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

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Clock	Frequency	Fc	50	76	95	MHz	-
	Period	Tc	10.5	13.2	20	ns	-
	High Time	Tch	-	4/7	-	Tc	-
	Low Time	Tcl	-	3/7	-	Tc	-
LVDS Data	Setup Time	Tlvs	600	-	-	ps	-
	Hold Time	Tlvh	600	-	-	ps	-
Vertical Active Display Term	Frame Rate	Fv	40	60	75	Hz	-
	Total	Tv	266	294	376	Th	Tv=Tvd+Tvb
	Display	Tvd	256	256	256	Th	-
	Blank	Tvb	Tv-Tvd	38	Tv-Tvd	Th	-
Horizontal Active Display Term	Total	Th	1446	1560	1936	Tc	Th=Thd+Thb
	Display	Thd	1366	1366	1366	Tc	-
	Blank	Thb	Th-Thd	194	Th-Thd	Tc	-

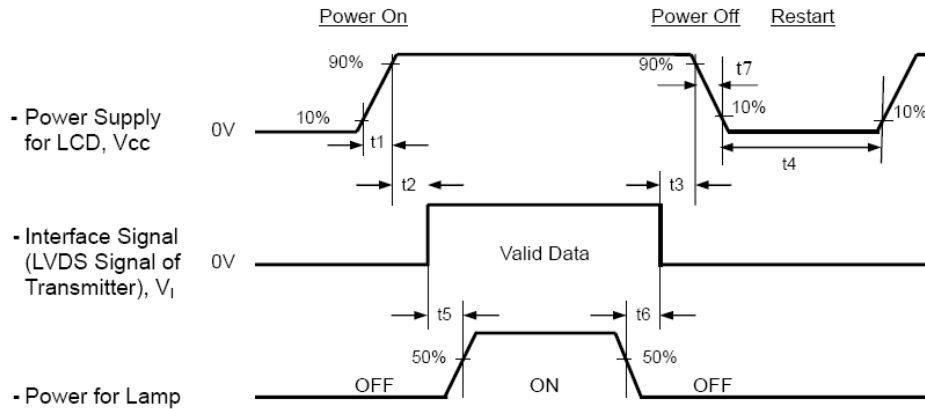
Note: Because this module is operated by DE only mode, Hsync and Vsync input signals should be set to low logic level or ground. Otherwise, this module would operate abnormally.

### INPUT SIGNAL TIMING DIAGRAM



## 2.10 POWER ON/OFF SEQUENCE

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



### Timing Specifications:

- $0.5 < t_1 \leq 5 \text{ msec}$
- $0 < t_2 \leq 50 \text{ msec}$
- $0 < t_3 \leq 50 \text{ msec}$
- $t_4 \geq 500 \text{ msec}$
- $t_5 \geq 450 \text{ msec}$
- $t_6 \geq 90 \text{ msec}$
- $5 \leq t_7 \leq 100 \text{ msec}$

### Note.

- (1) The supply voltage of the external system for the module input should be the same as the definition of V<sub>cc</sub>.
- (2) Apply the lamp voltage within the LCD operation range. When the backlight turns on before the LCD operation of the LCD turns off, the display may momentarily become abnormal screen.
- (3) In case of VCC = off level, please keep the level of input signals on the low or keep a high impedance.
- (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.
- (6) The company will not guarantee or compensate for the product damage caused by not following the Power Sequence.

### 3.0 OPTICAL CHARACTERISTICS

#### 3.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Supply Voltage	V <sub>CC</sub>	5.0	V
Input Signal	According to typical value in "3. ELECTRICAL CHARACTERISTICS"		
Inverter Current	I <sub>L</sub>	7.0±0.5	mA
Inverter Driving Frequency	F <sub>L</sub>	55±5	KHz
Inverter	Darfon VK.13165.101		

#### 3.2 OPTICAL SPECIFICATIONS

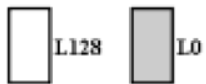
The relative measurement methods of optical characteristics are shown as below. The following items should be measured under the test conditions described in 7.1 and stable environment shown in Note (6).

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note	
Color Chromaticity	Red	$\theta_x=0^\circ, \theta_y=0^\circ$ CS-1000T Standard light source "C"	Typ - -0.03	0.652	Typ + 0.03	-	(0),(6)	
				0.330		-		
	Green			0.275		-		
				0.590		-		
	Blue			0.148		-		
				0.107		-		
	White			0.320		-		
				0.360		-		
Center Transmittance	T%	$\theta_x=0^\circ, \theta_y=0^\circ$	5.4	6.0	-	%	(1), (5)	
Contrast Ratio	CR	CS-1000T, CMO BLU	-	500	-	-	(1), (3)	
Response Time	T <sub>R</sub>	$\theta_x=0^\circ, \theta_y=0^\circ$	-	1.3	3.2	ms	(4)	
	T <sub>F</sub>		-	3.7	6.8	ms		
Transmittance uniformity	$\delta T$	$\theta_x=0^\circ, \theta_y=0^\circ$ CS-1000T	-	1.3	1.42	-	(1), (7)	
Viewing Angle	Horizontal	CR≥10 USB-2000	75	85	-	Deg.	(1), (2) (6)	
				75	85			-
	Vertical			70	80			-
				70	80			-

### 3.3 Flicker Adjustment

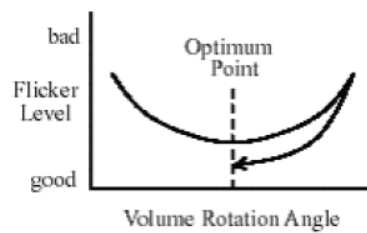
(1) Adjustment Pattern: 2H1V checker pattern as follows.

R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B	R	G	B



(2) Adjustment Method:

Flicker should be adjusted by turning the volume for flicker adjustment by the ceramic driver. It is adjusted to the point with least flickering of the whole screen. After making it surely overrun at once, it should be adjusted to the optimum point.

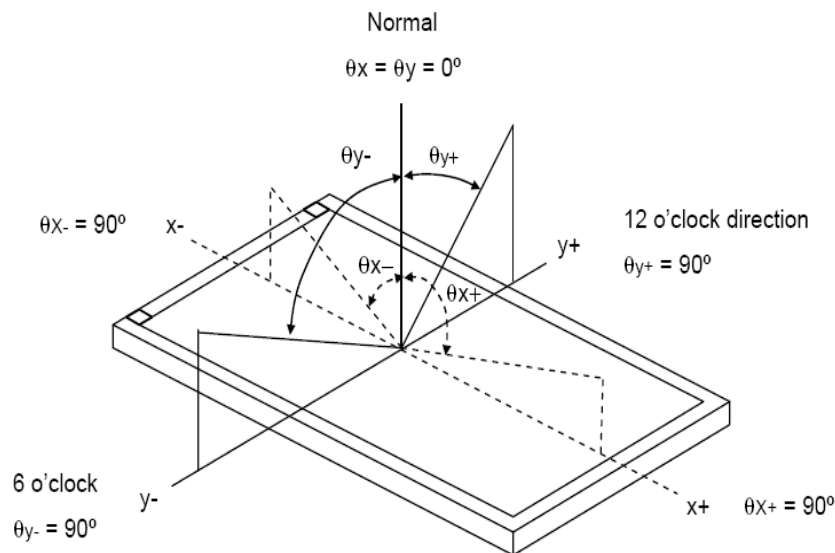


Note (0) Light source is the standard light source “C” which is defined by CIE and driving voltages are based on suitable gamma voltages. The calculating method is as following :

1. Measure Module's and BLU's spectrums. White is without signal input and R, G, B are with signal input. BLU(for M185B1-L01) is supplied by CMO.
2. Calculate cell's spectrum.
3. Calculate cell's chromaticity by using the spectrum of standard light source “C”

Note (1) Light source is the BLU which is supplied by CMO and driving voltages are based on suitable gamma voltages.

Note (2) Definition of Viewing Angle ( $\theta_x, \theta_y$ ):



Note (3) : Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

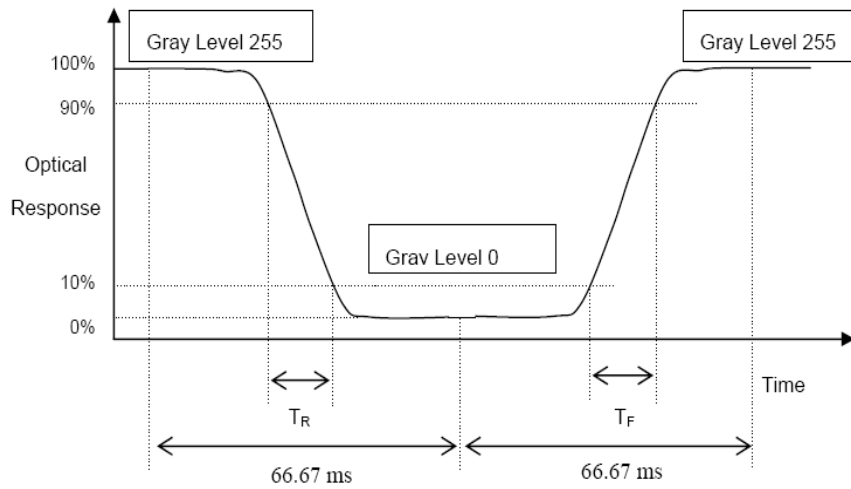
L255: Luminance of gray level 255

L 0: Luminance of gray level 0

$$CR = CR (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (7).

Note (4) Definition of Response Time ( $T_R$ ,  $T_F$ ):



Note (5) Definition of Transmittance ( $T\%$ ):

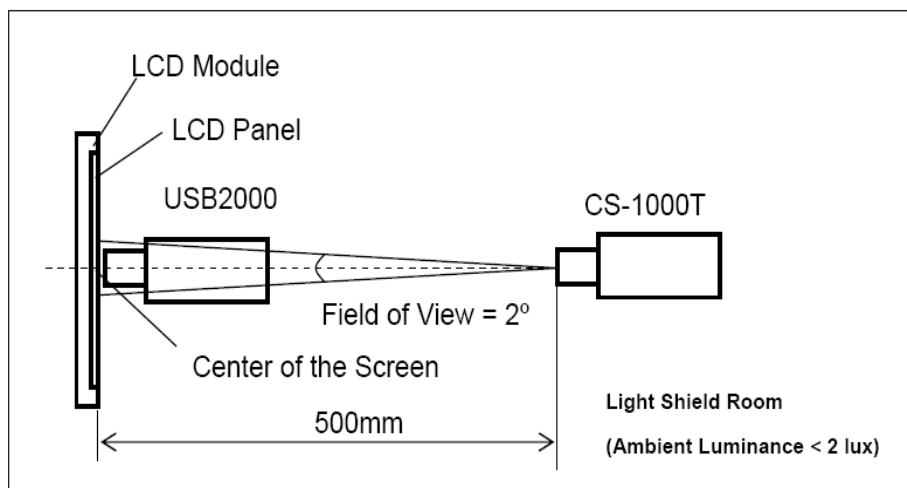
Module is without signal input.

$$\text{Transmittance} = \frac{\text{Luminance of LCD module } L(5)}{\text{Luminance of backlight } L_{BLU}(5)} * 100\%$$

$L(X)$  and  $L_{BLU}(X)$  is corresponding to the luminance of the point X at Figure in Note (7).

Note (6) Measurement Setup:

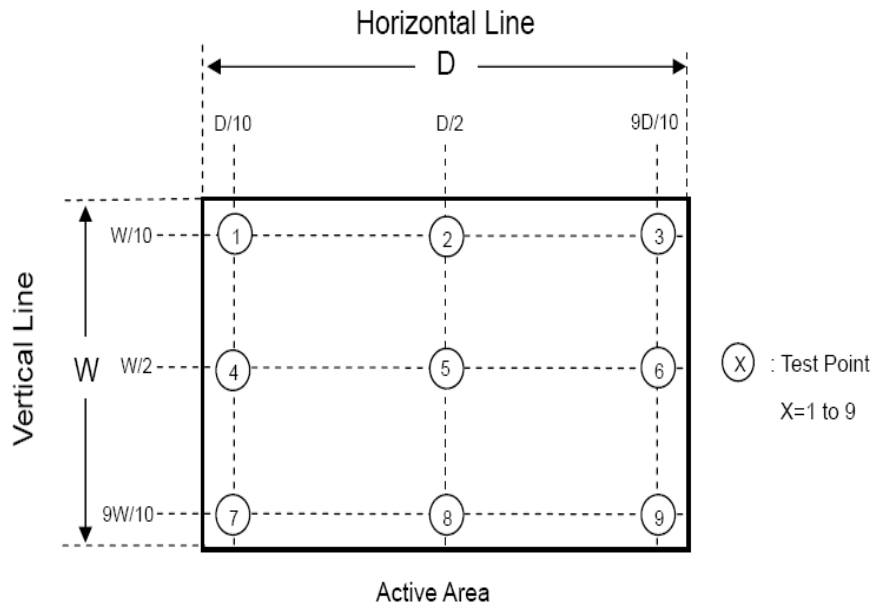
The LCD module should be stabilized at given temperature for 30minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30minutes in a windless room.



Note (7) : Definition of Transmittance Variation ( $\delta T\%$ ):

Measure the transmittance at 9 points

$$\delta T\% = \frac{\text{Maximum } [T\%(1), T\%(2), \dots T\%(9)]}{\text{Minimum } [T\%(1), T\%(2), \dots T\%(9)]}$$





## 5.0 PRECAUTIONS

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### 5.1 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 because the polarizer is very soft and easily scratched.
- (5) 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.
- (6) Wipe off water droplets or oil immediately. Staining and discoloration may occur if they left on panel for a long time.
- (7) 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.
- (8) Protect the module from static electricity, it may cause damage to the C-MOS Gate Array IC.
- (9) Do not disassemble the module.
- (10) Do not pull or fold the lamp wire.
- (11) Pins of I/F connector should not be touched directly with bare hands.

### 5.2 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.

### 5.3 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.

## 6.0 AD Board & OSD Functions

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### 6.1 AD BOARD GENERAL SPECIFICATIONS

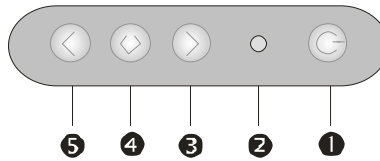
- Max Resolution Up To WXGA 60Hz
- Analog RGB Input
- 1.5Wx2 Audio Out
- LVDS Output
- Support Panel DC5V or 3.3V, 12V Output
- Automatic External Fan Control
- OSD Control
- Inverter 0~5V Dimming Control
- \*External V.R. brightness control (optional)
- \*External light sensor brightness control (optional)
- Input Power 12Vdc

### 6.2 SUPPORTED TIMING (\*by your panel resolution)

The following table displays optimum quality modes that the LCD monitor provides. If the other video modes are used, the monitor will stop working or display a poor quality picture.

TIMMING	
MODE	RESOLUTION
VGA	640x480@60Hz
	640x480@72Hz
	640x480@75Hz
SVGA	800x600@56Hz
	800x600@60Hz
	800x600@72Hz
	800x600@75Hz
XGA	1024x768@60Hz
	1024x768@70Hz
	1024x768@75Hz
SXGA	1280x1024@60Hz
	1280x1024@70Hz
	1280x1024@75Hz
WXGA	1366x768@60Hz

### 6.3 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

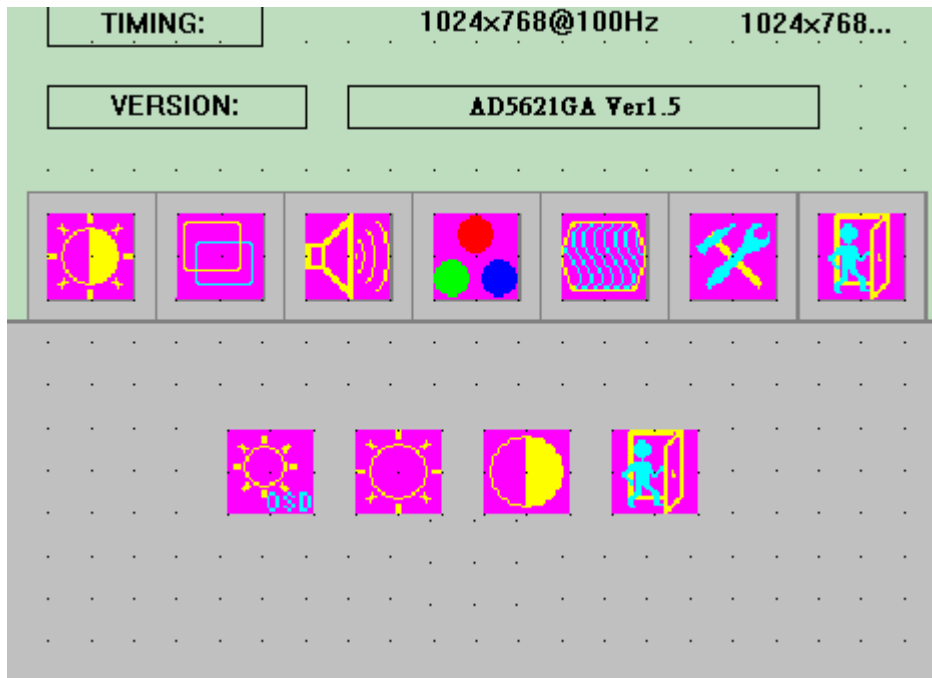
After finishing the adjustment, push the SELECT button to memorize the setting.





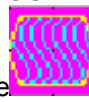
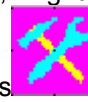

##### 5. Return & Exit the main menu

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.

### 6.4 OSD FUNCTIONS




By pressing the "menu" button, you will see the below picture. Across from timing you will see resolution, frequency, and V-frequency of the panel. Version shows the firmware control version. These cannot be altered by the user.







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


When you press “menu” button, you enter the “Brightness” sub page.  
 You will see 3 selection :




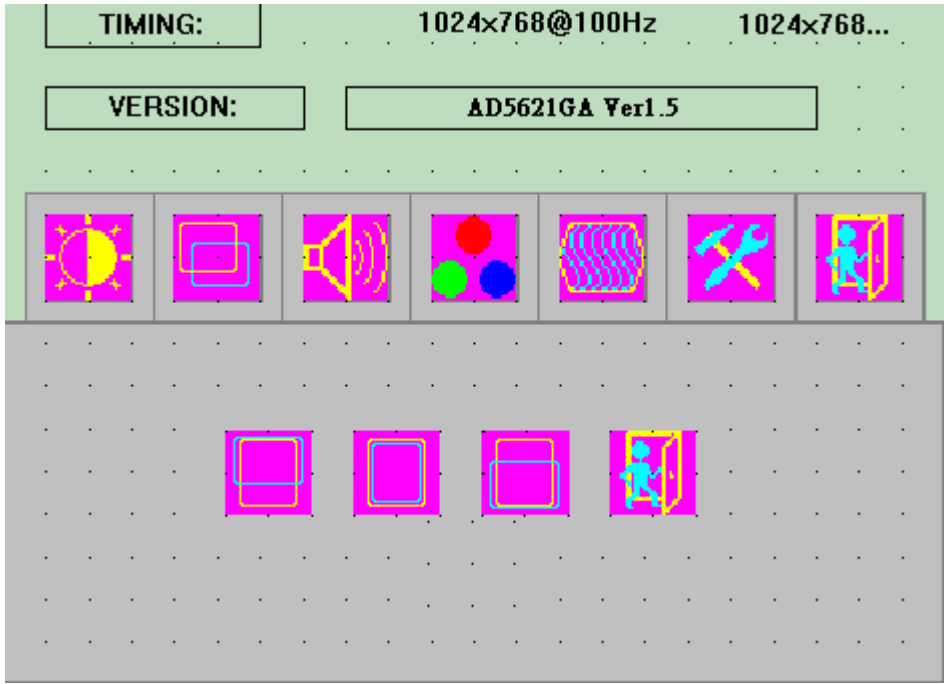
 **OSD Brightness** :  press “right” key  press “menu” once, you can go into adjust the brightness. Press “left” you can dim down the brightness to “0”, while press “right” you can increase the brightness to “100”.

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

 **Ambient light sensor with osd offset** : press this Icon  press “right” key  press “menu” once, you can adjust min. luminance to fit Your applicatio.

 **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.



There are 4 options for "Scaler line" sub page.



**TOP Mode** : press "menu" button, change the display area of the panel.



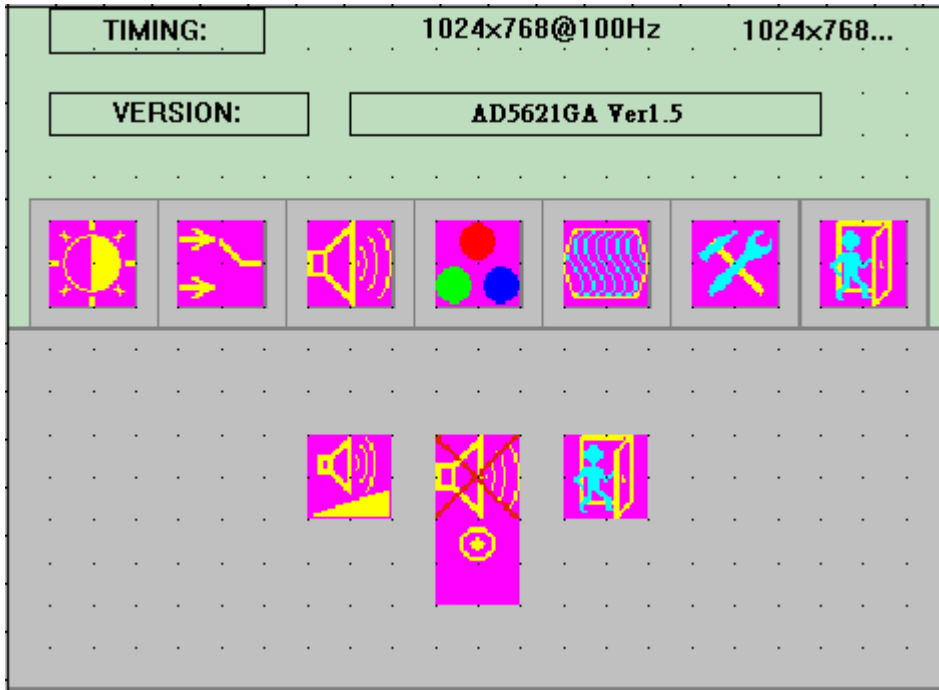
**Compress Mode** : press "menu" button, Compress the display area of the panel.



**BOTTOM Mode** : press “menu” button, change the display area of the panel.



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



There are 3 options for “Sound” sub page.(Optional)



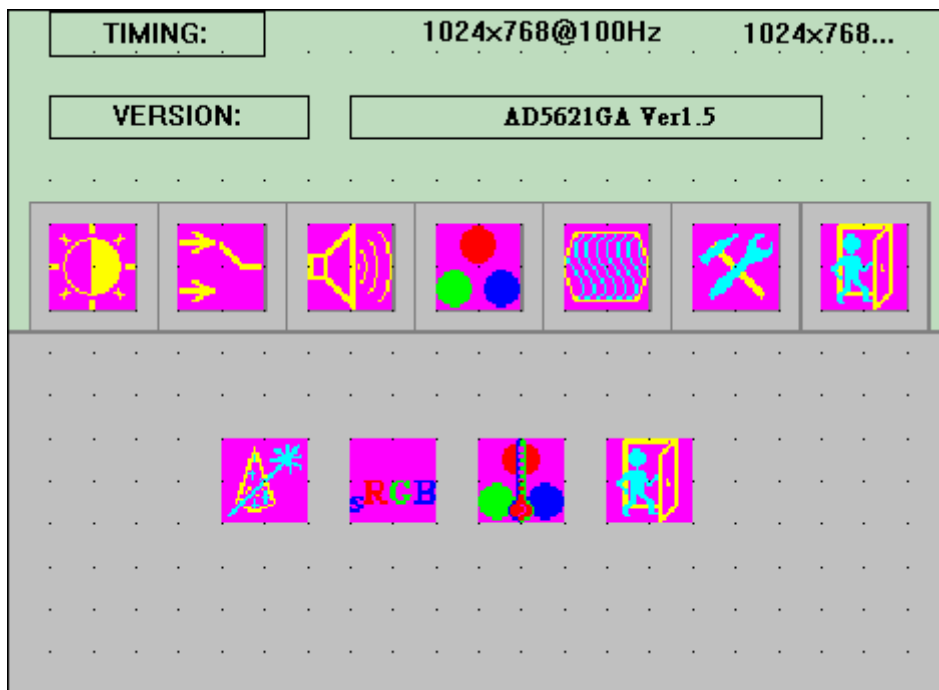
**AudioVolume** : Audio volume adjustment.



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



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



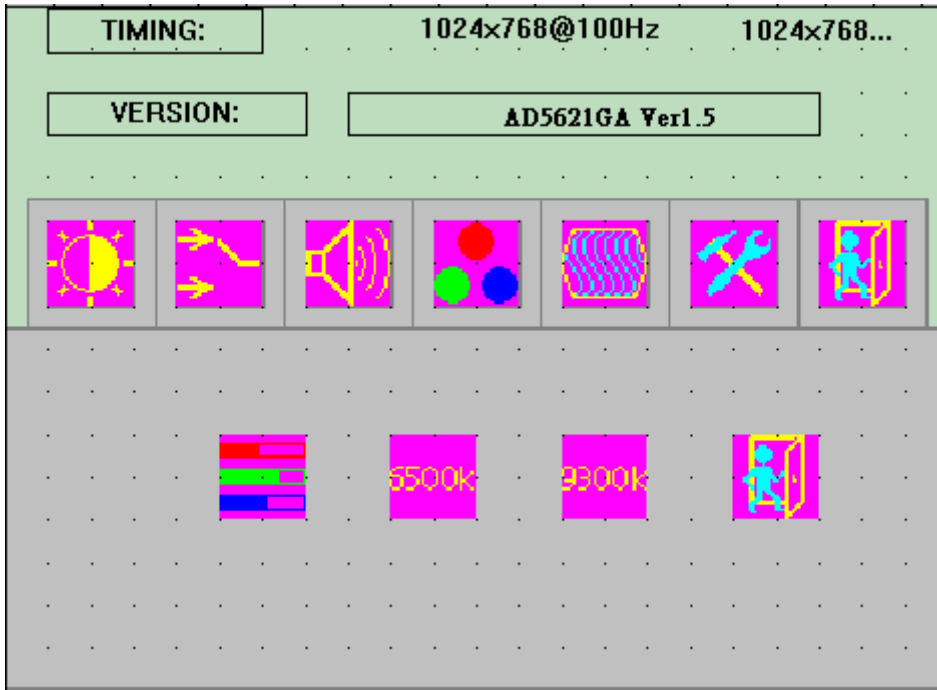
Pressing the ‘menu’ and “right”, you can go to “Color” sub page.



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



**SRGB** : Windows standard color setting.



**ColorTempure** : You can have 3 options in this selection.



**ColorTempure\_User**



**ColorTempure\_6500K**



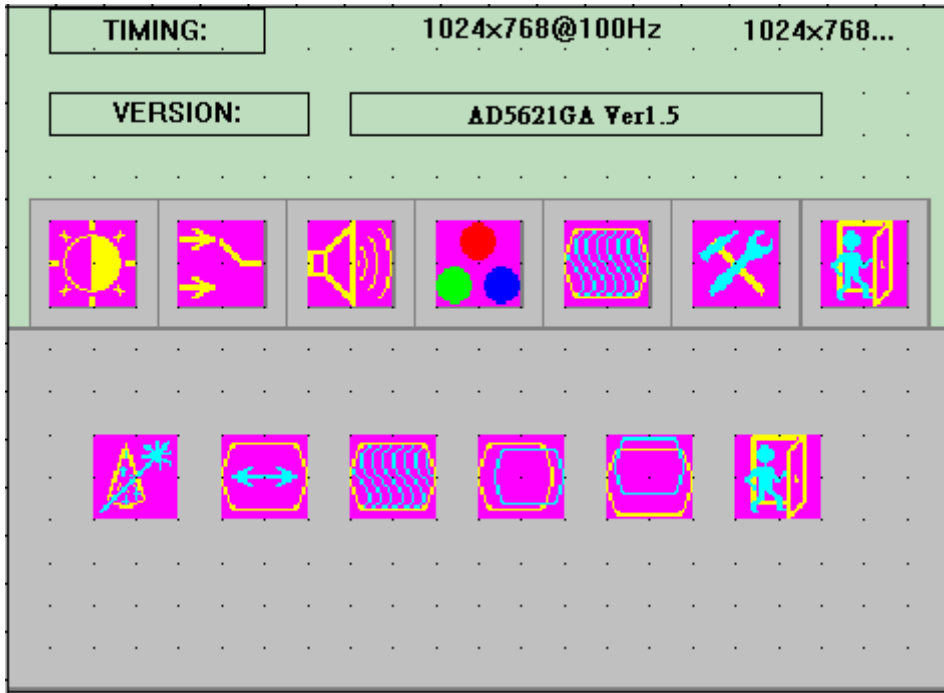
**ColoTempure\_9300K**

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



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

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



**Autojust** : Pressing this option, the AD5621 will adjust the optimal frequency of horizontal and vertical. You will see “Autotune...” 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.



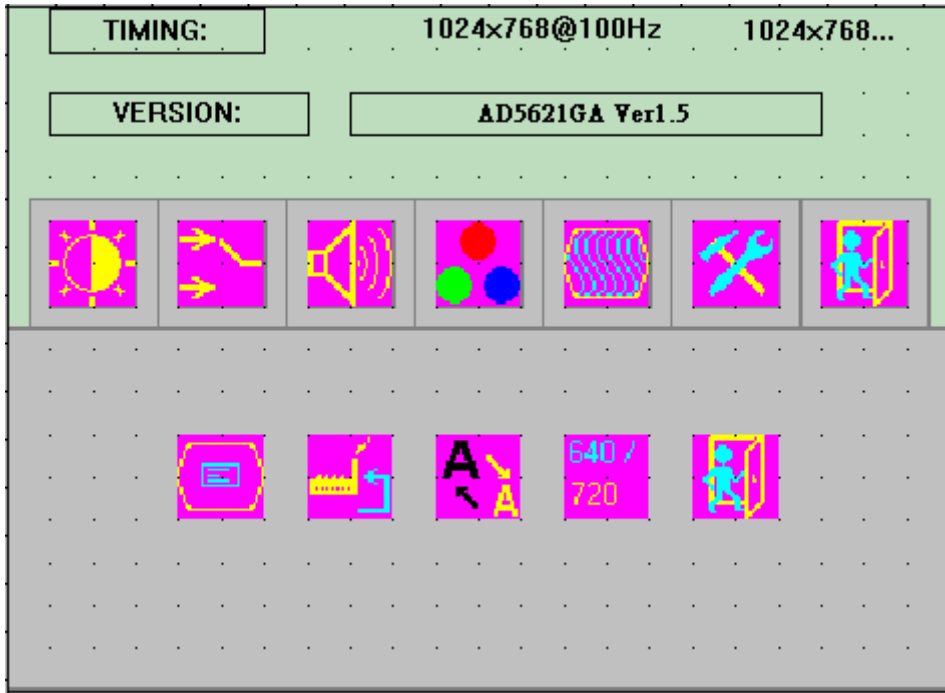
**HPos** : You can shift the screen horizontally by this function.



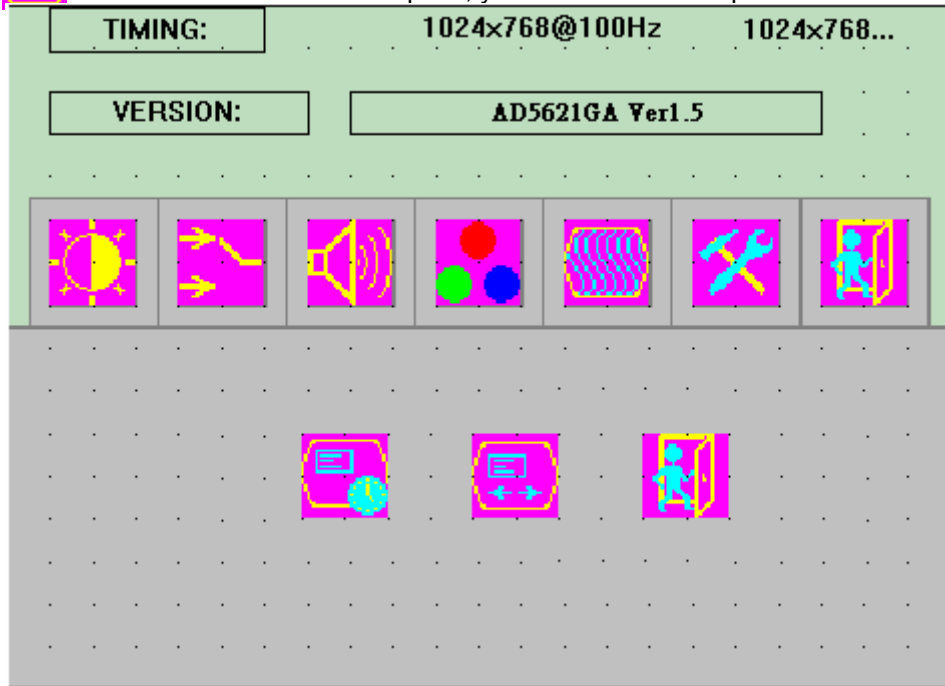
**Vpos** : You can shift the screen vertically by this function.



**Exit** : Back to normal screen. On the “Tools” sub menu, you will see 5 icons.



**Osd Control** : Select this option, you will see 3 more options:



**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.



**Exit** : back to main menu.



**Factory\_Reset** : By pressing this, the screen will be back to the factory setting on very beginning and lost all the personal settings.



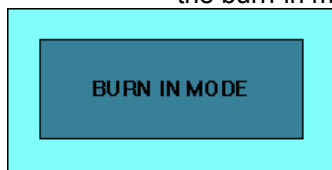
**Sharpness** : You can make the characters looks sharper.



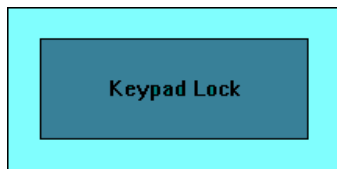
**Dos\_mode / Gxf\_mode** : Some old programs running over 640x400 and 720x400 (DOS Mode and graphics mode), you need to select this option manually.



**Exit** : Factory Burn-in mode: While your VGA cable is connected on the monitor, press "Menu" and Left "<" 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.



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.

