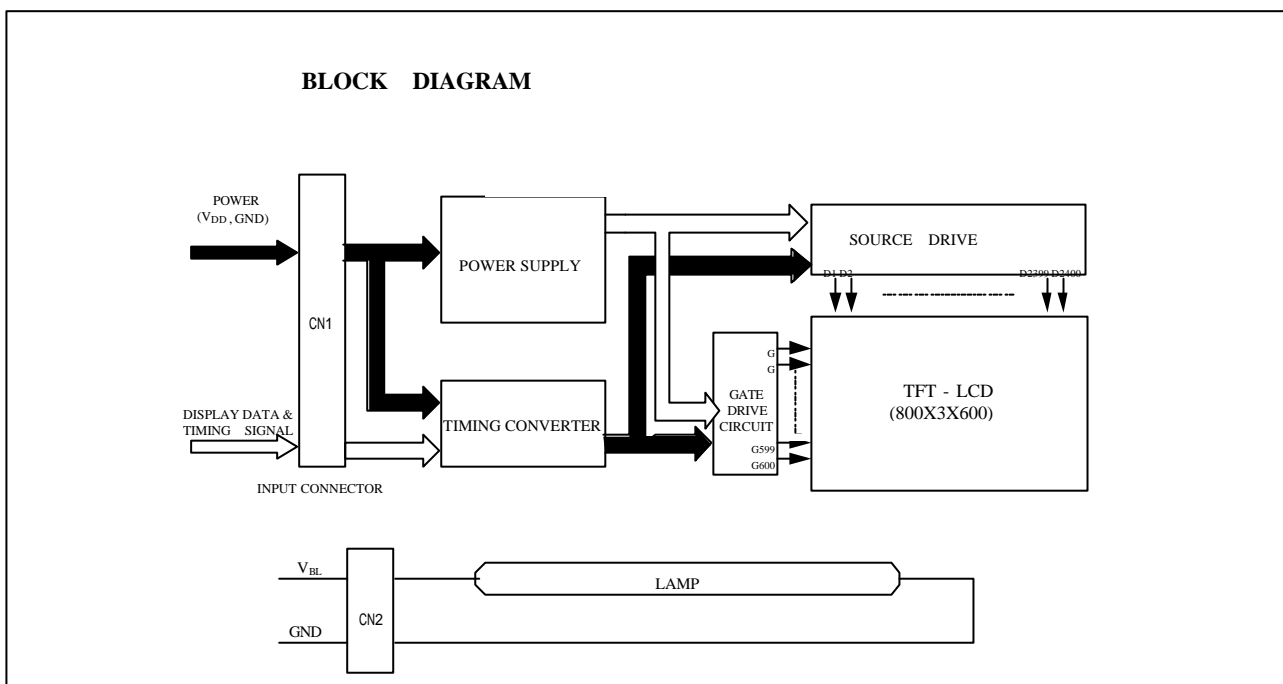


## 1. General Description

The LG.Philips LCD Co.,Ltd. LP121S4 LCD is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Tube(CCFT) back light system. The matrix employs aSi Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 12.1 inch diagonally measured active display area with SVGA resolution(600 vertical by 800 horizontal pixel array). 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 6bit gray scale signal for each dot, thus, presenting a pallet of more than 262,144 colors.

The LP121S4 LCD is intended to support applications where low power consumption, weight and thickness are critical factors and graphic displays are important. In combination with the vertical arrangement of the sub-pixels, the LP121S4 characteristics provide an excellent flat panel display for office automation products such as portable computers.



## General Display Characteristics

The following are general feature of the model LP121S4 LCD;

Active display area	12.1 inches(30.75cm) diagonal
Outside dimensions	261 W x 199 H x 6.0 D mm Typ.
Pixel pitch	0.3075 mm x 0.3075 mm
Pixel format	800 horiz. By 600 vert. pixels
Color depth	RGB stripe arrangement
Display operating mode	6-bit
Surface treatment	Transmissive mode, normally white
	Hard coating(3H),
	Anti-glare treatment of the front polarizer

## 2. Electrical Specifications

### 2-1. Electrical Characteristics

The LP121S4 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input which powers the CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

**Table 1 ELECTRICAL CHARACTERISTICS:**

Parameter	Symbol	Values			Units	Notes
		Min.	Typ.	Max.		
<b>MODULE:</b>						
Power Supply Input Voltage	$V_{DD}$	3.0	3.3	3.6	Vdc	
Power Supply Input Current	$I_{DD}$	215	235	265	mA	1
Ripple/Noise	-	-	50	-	mV	
Logic Input Level, High	$V_{IH}$	$0.6V_{DD}$	-	$V_{DD}$	Vdc	
Logic Input Level, Low	$V_{IL}$	-	-	$0.3V_{DD}$	Vdc	
Power Consumption	$P_c$	0.71	0.77	0.88	W	1
<b>LAMP</b>						
Operating Voltage	$V_L$	595(6mA)	630(5mA)	715(3mA)	Vrms	2
Operating Current	$I_L$	3.0	5.0	6.0	mA	
Established Starting Voltage	$V_s$					3
at 25		-	-	960	Vrms	
at 0		-	-	1280	Vrms	
Operating Frequency	$F_L$	45	55	80	kHz	4
Discharge Stabilization Time	$T_s$			3	Minutes	5
Power Consumption	$P_L$	2.15	3.15	3.57	W	6
Life Time					Hours	7
		10,000	-	-		$I_L=6mA$ rms

**Note)The design of the inverter must have specifications for the lamp in LCD Assembly.**

The performance of the Lamp in LCM, for example life time or brightness is extremely influenced by the characteristics of the DC-AC Inverter. So all the parameters of an inverter should be carefully designed so as not to produce too much leakage current from high-voltage output of the inverter.

When you design or order the inverter, please make sure unwanted lighting caused by the mismatch of the lamp and the inverter(no lighting, flicker, etc) never occurs. When you confirm it, the LCD Assembly should be operated in the same condition as installed in your instrument.

Notes: 1. The current draw and power consumption specified is for 3.3 Vdc at 25 and 38.5MHz (at 64 Gray pattern displayed).

2. The variance of the voltage is  $\pm 10\%$ .

3. The voltage above  $V_s$  should be applied to the lamps for more than 1second for start-up.

Otherwise, the lamps may not be turned on.

4. The output of the inverter must have symmetrical(negative and positive) voltage waveform and symmetrical current waveform.(Unsymmetrical ratio is less than 10%) Please do not use the inverter which has unsymmetrical voltage and unsymmetrical current and spike wave. Lamp frequency may produce interference with horizontal synchronous frequency and as a result this may cause beat on the display. Therefore lamp frequency shall be as away as possible from the horizontal synchronous frequency and from its harmonics in order to prevent interference.

5. Let's define the brightness of the lamp after being lighted for 5 minutes as 100%.

$T_s$  is the time required for the brightness of the center of the lamp to be not less than 95%.

6. The lamp power consumption shown above does not include loss of external inverter.

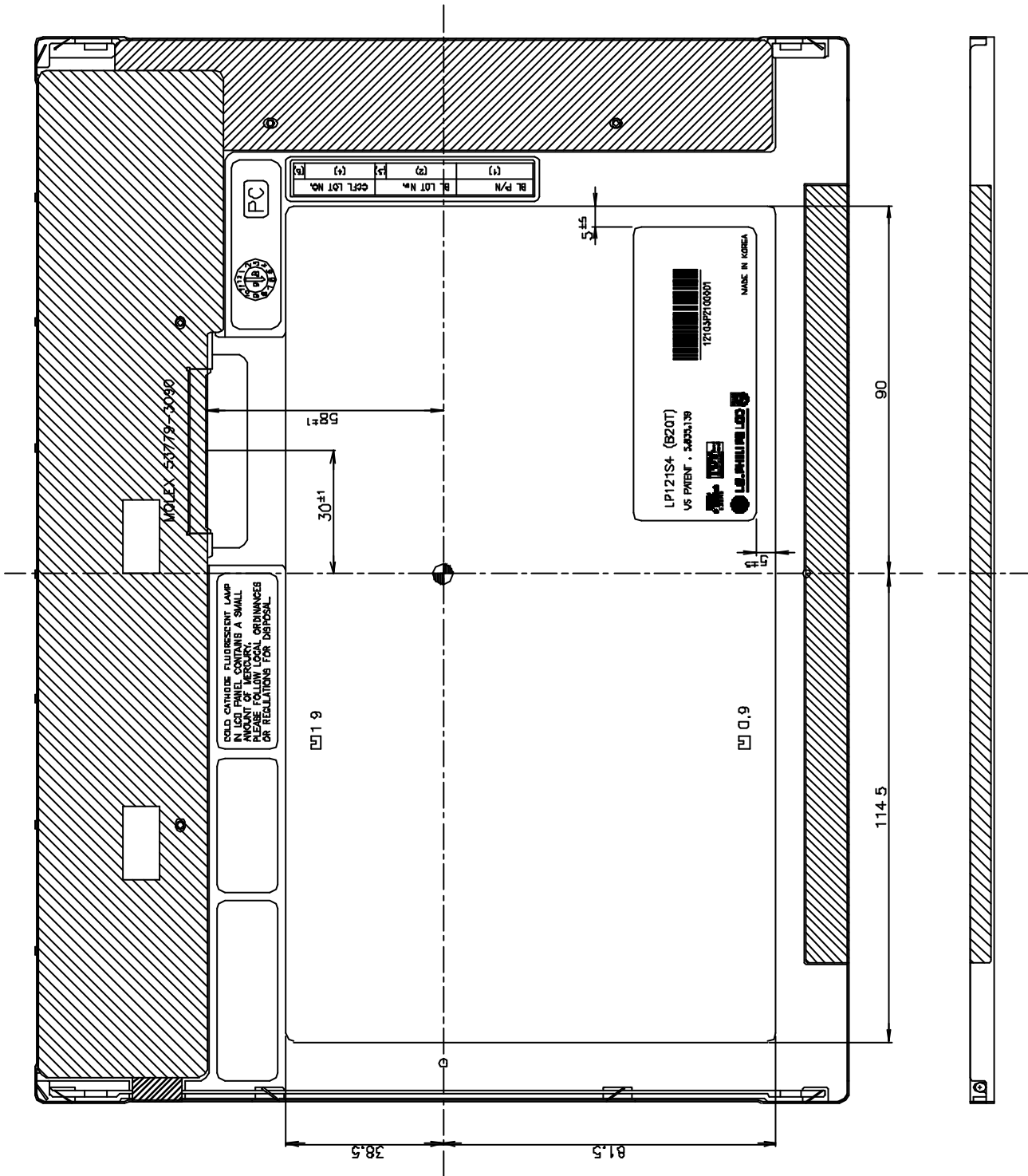
7. The life time is determined as the time at which brightness of lamp is 50% compared to that of initial value at the typical lamp current on condition of continuous operating at 25  $\pm 2$ .

### 2-2. Interface Connections





Product General Specification



### **3.PRECAUTIONS**

The LCD Products listed on this documents are not suitable for use of Military,Industry,Medical etc. system.

If customers intend to use these LCD products for above application, Please contact ours sales people in advance.