LG.PHILIPS LCD

Product General Specification

1. General Description

The LP150X1 is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Tube(CCFL) back light system. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 15.0 inch diagonally measured active display area with XGA resolution(768 vertical by 1024 horizontal pixel array). Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale of the brightness of the sub-pixel color is determined with a 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262,144 colors.

  The LP150X1 has been designed to apply the interface method that enables low power, high speed low EMI. Flat Link must be used as a LVDS(Low Voltage Differential Signaling) chip.

  The LP150X1 is intended to support applications where thin thickness, low power are critical factors and graphic displays are important. In combination with the vertical arrangement of the sub-pixels, the LP150X1 characteristics provide an excellent flat panel display for office automation products such as Notebook PC.
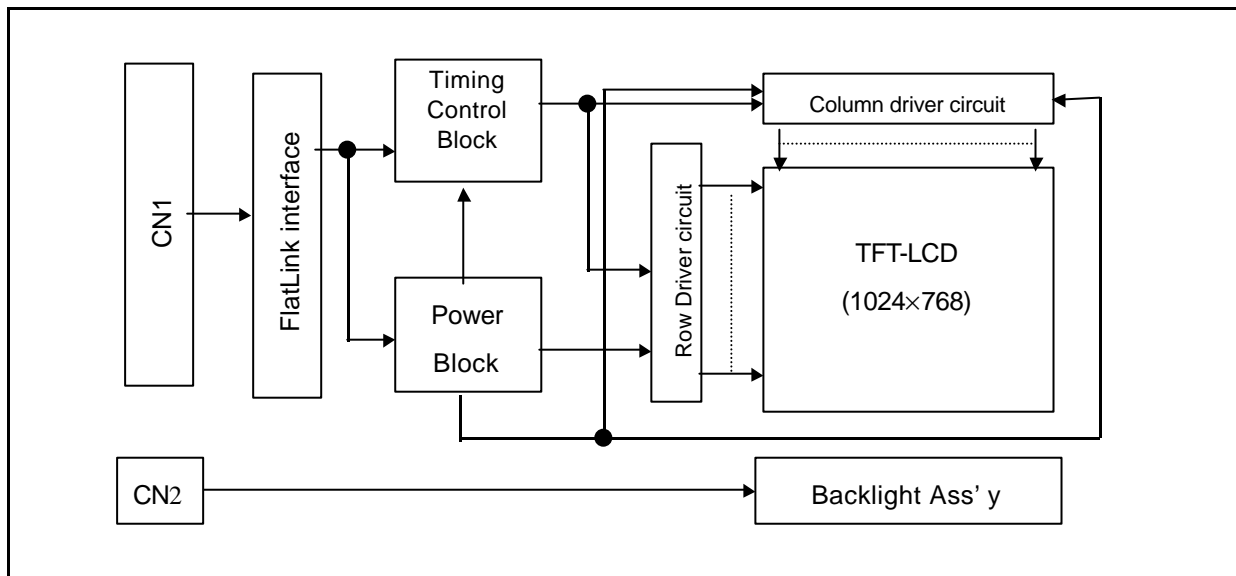
General Features

Active screen size	15.0 inches (38.1cm) diagonal
Outline dimensions	315.5(H) × 242.3(V) × 7.0(D) mm (typ)
Pixel pitch	0.297 mm × 0.297 mm
Pixel format	1024 horiz. By 768 vert. pixels
	RGB stripe arrangement
Color depth	6-bit, 262,144 colors
Luminance,White	120 cd/m^2 (typ) (5 point average)
Power Consumption	Total 4.7Watt(typ) (1.1Watt @VCC, 3.6Watt@120nit,Lamp)
Weight	685g (typ)
Display operating mode	transmissive mode, normally white
Surface treatments	hard coating(3H),
	anti-glare treatment of the front polarizer

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2. Electrical Specifications

2-1. Electrical Characteristics

The LP150X1 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	Min.	Typ.	Max.	Units	Note 2
			Values			
MODULE:						
Power Supply Input Voltage	V_{CC}	3.0	3.3	3.6	Vdc	
Power Supply Input Current	I_{CC}	-	0.330	0.380	A	1
Differential Impedance	Zm	90	100	110	ohm	2
Power Consumption	P_c	-	1.15	2.2	Watts	1
Rush current	I_{RUSH}	-	1.5	1.8	A	3
LAMP						
Operating Voltage	V_{BL}	600(7mA)	650(5.5mA)	740(3mA)	V_{RMS}	4
Operating Current	I_{BL}	3.0	5.5	7.0	mA	
Established Starting Voltage						5
at 25		-	-	1100	V_{RMS}	
at 0		-	-	1300	V_{RMS}	
Operating Frequency	f_{BL}	40	55	70	KHz	
Discharge Stabilization Time	T_s	-	-	3	Minutes	5
Power Consumption	P_{BL}	-	3.6	4.2	Watts	7
Life Time		10,000	-	-	Hrs	@5.5mA ,25

Note 1:

   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.

Note 2:

   1. The specified current and power consumption are under the Vcc = 3.3V , 25   , fv = 60Hz condition

      where white 64 gray pattern is displayed.

   2. This impedance value is needed to proper display and measured form LVDS Tx to the mating

      connector.

  3. The duration of rush current is about 20ms.

   4. The variance of the voltage is ± 10%.

   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 transformer output voltage in the inverter must be high considering the loss of the ballast

      capacitor in the inverter.

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

   8. The life time is determined as the time at which brightness of lamp is 50% compared to that of initial

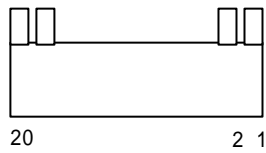   value at the typical lamp current.

2-2. Interface Connections

Interface chip must be used FlatLink , part No. SN75LVDS84(Transmitter) made by Texas Instrument Inc.

This LCD employs two interface connections, a 20 pin connector is used for the module electronics and the other connector is used for the integral backlight system.

The electronics interface connector is a model FI-SEB20P-HF13 manufactured by JAE. The pin configuration for the connector is shown in the table below.

Table 2 MODULE CONNECTOR PIN CONFIGURATION (LVDS)

Pin	Symbol	Description	Notes
1	Vcc	Power (3.3V)	1. Interface chips
2	Vcc	Power (3.3V)	1.1 LCD : KZ4E038C12 one-chip ASIC
3	GND	Ground	including LVDS Receiver
4	GND	Ground	1.2 System : SN75LVDS84 or equivalent
5	A1M	Differential Signal	* Pin to Pin compatible with THINE LVDS
6	A1P	Differential Signal	
7	GND	Ground	2. Connector
8	A2M	Differential Signal	2.1 LCD : FI-SEB20P-HF13(JAE)
9	A2P	Differential Signal	or equivalent
10	GND	Ground	2.2 Mating : FI-SEB20S(JAE) or equivalent
11	A3M	Differential Signal	2.3 Connector pin arrangement
12	A3P	Differential Signal	
13	GND	Ground	
14	CLKM	Differential Signal	
15	CLKP	Differential Signal	
16	GND	Ground	
17	NC	No Connection	20 2 1
18	NC	No Connection	< BOTTOM VIEW
19	GND	Ground	
20	GND	Ground	

The backlight interface connector is a model BHSR-02VS-1, manufactured by JST. The mating connector part number is SM02B-BHSS-1 or equivalent. The pin configuration for the connector is shown in the table below.

Table 3 BACKLIGHT CONNECTOR PIN CONFIGURATION

Pin	Symbol	Description	Notes
1	HV	Lamp power input	1
2	LV	Ground	2

Notes: 1. The input power terminal is colored white. Ground pin color is black.

2. The lamp ground should be common with GND.

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Product General Specification

< FRONT VIEW >

NOTES
1. UNSPECIFIED DEMENSION TOLERANCES ±0.5mm.
2. THE SCREW TORQUE FIXING USER MOUNTING
   IS FROM 1.3 TO 1.5Kg f.cm

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< REAR VIEW >

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.