

SPECIFICATION FOR APPROVAL

Titla

() Final Specification

Tille			.1 W3VGA 11 1	LOD
Customer	LGE		SUPPLIER	LG Display Co., Ltd.
MODEL		1	*MODEL	LP101WSA

^{*}When you obtain standard approval, please use the above model name without suffix

TLN1

10 1" WSVGA TET LCD

Suffix

	APPROVED BY	SIGNATURE
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APPROVED BY SIGNATURE	Ē				
C. J. Jun / Manager REVIEWED BY					
S. W. Paeng / Manager PREPARED BY					
M. G. Park / Engineer					
Products Engineering Dept. LG Display Co., Ltd					

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RECORD OF REVISIONS

Revision No	Revision Date	Page	Description	EDID ver
0.0	Oct. 30. 2008	All	First Draft (Preliminary Specification)	-

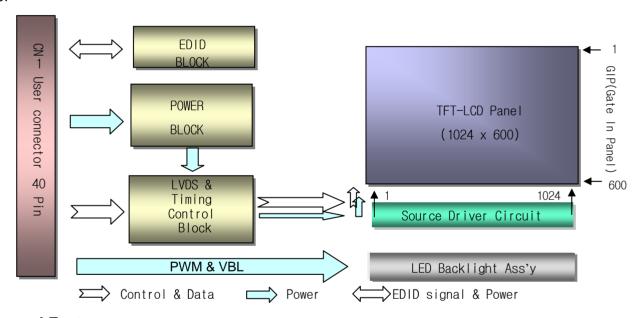


1. General Description

The LP101WSVGA is a Color Active Matrix Liquid Crystal Display with an integral LED backlight 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 10.1inches diagonally measured active display area with WSVGA resolution(1024 horizontal by 600 vertical 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 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262.144 colors.

The LP101WSA has been designed to apply the interface method that enables low power, high speed, low EMI.

The LP101WSA 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 LP101WS1 characteristics provide an excellent flat display for office automation products such as Notebook PC.



General Features

Active Screen Size	10.1 inches diagonal
Outline Dimension	$235.0(H) \times 143.0(V) \times 5.2(D,Max.)$ [mm]
Pixel Pitch	0.2175mmx0.2088mm
Pixel Format	1024 horiz. By 600 vert. Pixels RGB strip arrangement
Color Depth	6-bit, 262,144 colors
Luminance, White	200 cd/m ² (Typ.5 point)
Power Consumption	Total 2.6 Watt(Typ.) @ LCM circuit 0.8 Watt(typ.), B/L input 1.8 Watt(Typ.)
Weight	190g (Max.)
Display Operating Mode	Transmissive mode, normally white
Surface Treatment	Glare treatment of the front polarizer
RoHS Comply	Yes



2. Absolute Maximum Ratings

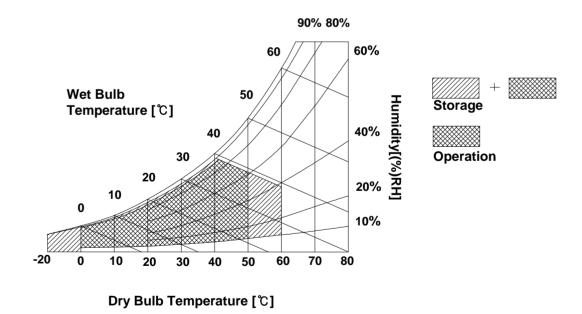
The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Table 1. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Val	ues	Units	Notes	
Farameter	Syllibol	Min	Max	Offics		
Power Input Voltage	VCC	-0.3	4.0	Vdc	at 25 ± 5°C	
Operating Temperature	Тор	0	50	°C	1	
Storage Temperature	Нѕт	-20	60	°C	1	
Operating Ambient Humidity	Нор	10	90	%RH	1	
Storage Humidity	Нѕт	10	90	%RH	1	

Note: 1. Temperature and relative humidity range are shown in the figure below.

Wet bulb temperature should be 39°C Max, and no condensation of water.



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3. Electrical Specifications

3-1. Electrical Characteristics

The LP101WH1 requires two power inputs. The first logic is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second backlight is the input about LED BL with LED Driver.

Table 2. ELECTRICAL CHARACTERISTICS

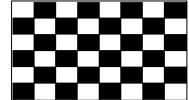
Parameter		0		Values	Unit	Notes	
		Symbol	Min	Тур	Max	Unit	Notes
LOGIC:							
Power Supply Input Voltage		Vcc	3.0	3.3	3.6	V	1
Dower Supply Input Current	Mosaic	Icc	-	240	270	mA	2
Power Supply Input Current	Black	ICC_max	-	270	300	mA	3
Power Consumption		Pcc	-	0.8	1.0	W	2
Power Supply Inrush Current		Icc_p	-	-	1500	mA	4
LVDS Impedance		ZLVDS	90	100	110	Ω	5
BACKLIGHT : (with LED Drive	er)						
LED Power Input Voltage		VLED	7.0	12.0	21.0	V	6
LED Power Input Current		ILED	-	150	170	mA	7
LED Power Consumption		PLED	-	1.8	2.1	W	7
LED Power Inrush Current		ILED_P	-	-	1600	mA	8
PWM Duty Ratio			5	-	100	%	9
PWM Jitter		-	0	-	0.3	%	10
PWM Impedance		Zpwm	20	40	60	kΩ	
PWM Frequency		FPWM	1000	-	5000	Hz	11
PWM High Level Voltage		V _{PWM_H}	1.7	-	5.0	V	
PWM Low Level Voltage		V _{PWM_L}	0	-	0.5	V	
LED_EN Impedance		ZPWM	20	40	60	kΩ	
LED_EN High Voltage		VLED_EN _H	3.0	-	5.3	V	
LED_EN Low Voltage		VLED_EN _L	0	-	0.5	V	
Life Time			10,000	-	-	Hrs	12

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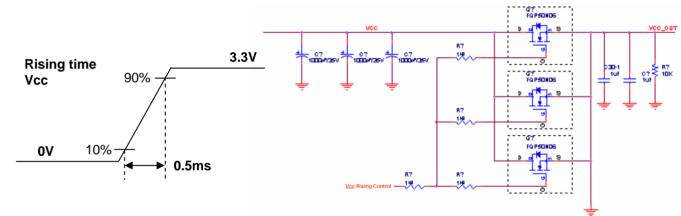


Note)

- 1. The measuring position is the connector of LCM and the test conditions are under 25 ℃, fv = 60Hz, Black pattern.
- 2. The specified Icc current and power consumption are under the Vcc = 3.3V, $25^{\circ}C$, fv = 60Hz condition whereas Mosaic pattern is displayed and fv is the frame frequency.

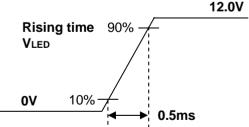


- 3. This Spec. is the max load condition for the cable impedance designing.
- 4. The below figures are the measuring Vcc condition and the Vcc control block LGD used. The Vcc condition is same the minimum of T1 at Power on sequence.



- 5. This impedance value is needed to proper display and measured form LVDS Tx to the mating connector.
- 6. The measuring position is the connector of LCM and the test conditions are under 25 ℃.
- 7. The current and power consumption with LED Driver are under the Vled = 12.0V, 25°C, Dimming of Max luminance whereas White pattern is displayed and fv is the frame frequency.
- 8. The below figures are the measuring VIed condition and the VIed control block LGD used.

VLED control block is same with Vcc control block.



- 9. The operation of LED Driver below minimum dimming ratio may cause flickering or reliability issue.
- 10. If Jitter of PWM is bigger than maximum. It may cause flickering.
- 11. This Spec. is not effective at 100% dimming ratio as an exception because it has DC level equivalent to 0Hz. In spite of acceptable range as defined, the PWM Frequency should be fixed and stable for more consistent brightness control at any specific level desired.
- 12 The life time is determined as the time at which the typical brightness of LCD is 50% compare to that of initial value at the typical LED current. These LED backlight has 3 strings on it and the typical current of LED's string is base on 20mA.



3-2. Interface Connection

This LCD employs one interface connection, a 40 pin connector is used for the module electronics interface.

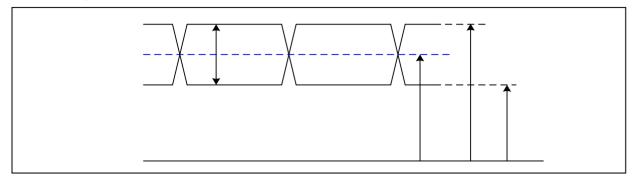
Table 3. MODULE CONNECTOR PIN CONFIGURATION (CN1)

Pin	Symbol	Description	Notes
1	CT1/NC	Connector Test/No Connection(Reserved)	INOIGO
2	VDD	+3.3V Power Supply	
3	VDD	+3.3V Power Supply	
4	V _{EDID}	+3.3V EDID Power	1, Interface chips 1.1 LCD: SiW, 1port including
5	NC	No Connection	LVDS Receiver
6	CLK _{EDID}	EDID Clock Input	1.2 System :
7	DATA _{EDID}	EDID Data Input	* Pin to Pin compatible with LVDS
8	RxIN0-	LVDS differential data input	2. Connector
9	RxIN0+	LVDS differential data input	2.1 LCD :LSM GT05Q-40S-H10
10	GND	Ground	(Locking type)
11	RxIN1-	LVDS differential data input	or equivalent
12	RxIN1+	LVDS differential data input	2.2 Mating:
13	GND	Ground	2.3 Connector pin arrangement
14	RxIN2-	LVDS differential data input	
15	RxIN2+	LVDS differential data input	40 ПППП
16	GND	Ground	
17	RxCLKIN-	LVDS differential clock input	
18	RxCLKIN+	LVDS differential clock input	[LCD Module Rear View]
19	GND	Ground	[LOD Module Real View]
20	NC NC	No Connection	
21	NC NC	No Connection	
22	GND	Ground	
23	NC	No Connection	
24	NC	No Connection	
25	GND	Ground	
26	NC	No Connection	
27	NC	No Connection	
28	GND	Ground	
29	NC	No Connection	
30	NC	No Connection	
31	VLED_GND	LED Ground	
32	VLED_GND VLED_GND	LED Ground	
33	VLED_GND VLED_GND	LED Ground	
34		Occasion Total (No. Occasion (December 1))	
35	S_PWMIN	Connector Test/No Connection(Reserved)	
		System PWM signal input	
36	BL_ON	LED Enable[Note 1]	
37	NC	No Connection	
38	VLED	+5V~+21V LED Power Supply	[Note 1]
39	VLED	+5V~+21V LED Power Supply	On: 2.0V↑,Off:0~0.4V
40	VLED	+5V~+21V LED Power Supply	



3-3. LVDS Signal Timing Specifications

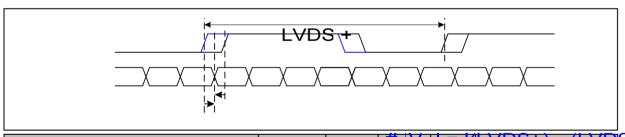
3-3-1. DC Specification



Description	Symb ol	Min	Max	Unit	Notes
LVDS Differential Voltage	V _{ID}	100	600	mV	-
LVDS Common mode Voltage	V _{CM}	0.6	1.8	V	-
LVDS Input Voltage Range	VIN	os _{0.3}	2.1	V	-

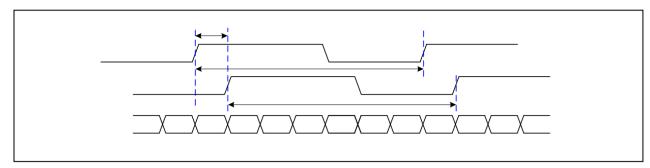
 $|V_{ID}|$

3-3-2. AC Specification

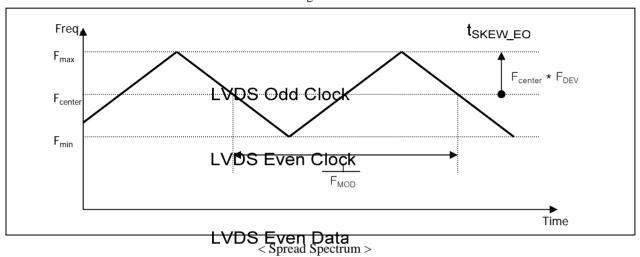


Description	Symbol	Min			LVDS+)- (LVDS-)
LVDS Clock to Data Skow Margin	t _{SKEW} O	V ^{- 400}	# V _{CI} + 400	_V = {(100es LVDS+) + (LVDS-)} 85MHz > Fclk ≥ 65MHz
LVDS Clock to Data Skew Margin	t _{SKEW}	- 600	+ 600	ps	65MHz > Fclk ≥ 25MHz
LVDS Clock to Clock Skew Margin (Even to Odd)	t _{SKEW_EO}	- 1/7	+ 1/7	T _{clk}	-
Maximum deviation of input clock frequency during SSC	F _{DEV}	-	± 3	%	-
Maximum modulation frequency of input clock during SSC	F _{MOD}	-	200	KHz	-



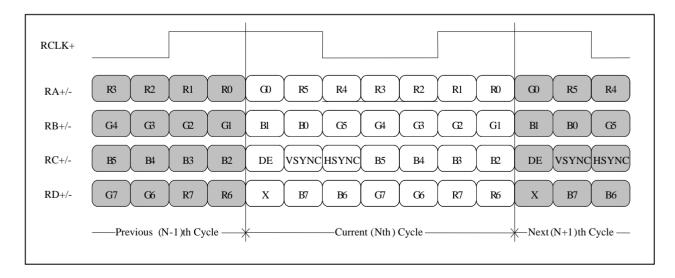


< Clock skew margin between channel >



3-3-3. Data Format

- LVDS 1 Port



< LVDS Data Format >



3-4. Signal Timing Specifications

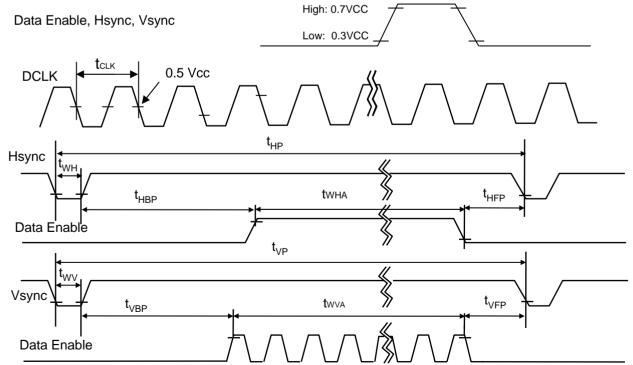
This is the signal timing required at the input of the User connector. All of the interface signal timing should be satisfied with the following specifications and specifications of LVDS Tx/Rx for its proper operation.

Table 5. TIMING TABLE

			mito iA				
ITEM	Symbol		Min	Тур	Max	Unit	Note
DCLK	Frequency	f _{CLK}	-	50.4	-	MHz	
	Period	Thp	1320	1344	1362		
Hsync	Width	t _{WH}	132	136	150	tCLK	
	Width-Active	t _{WHA}	1024	1024	1024		
	Period	t _{VP}	621	625	632		
Vsync	Width	t _{wv}	1	3	5	tHP	
	Width-Active	t _{wva}	600	600	600		
	Horizontal back porch	t _{HBP}	144	160	160	+CL IV	
Data	Horizontal front porch	t _{HFP}	20	24	28	tCLK	
Enable	Vertical back porch	t _{VBP}	20	22	24	HIID	
	Vertical front porch	t _{VFP}	0	0	3	tHP	









3-6. Color Input Data Reference

The brightness of each primary color (red,green and blue) is based on the 6-bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

Table 7. COLOR DATA REFERENCE

									Inp	out Co	olor D	ata							
	Color			RE	D					GRE	EN					BL	UE		
		MSE						MSE						MSE					LSB
	I	R 5	R 4	R 3	R 2	R 1	R 0	G 5	G 4	G 3	G 2	G 1	G 0	B 5	B 4	В3	B 2	B 1	B 0
	Black	0	0				0	0	0		0	0		0	0	0	0	0	0
	Red	1 	1	1	1	1	1	0	0		0	0	0	0		0		0	0
	Green	0	0				0	1 	1			1	1	0	0			0	0
Basic	Blue	0	0	0		0	0	0	0	0	0	0	0	1	. 1 	.1	. 1 		1
Color	Cyan	0	0	0		0	0	1	1			1	1	1		.1	. 1		1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	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
	RED (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (01)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
RED																			
	RED (62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN (01)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
GREEN		ļ							••••										
	GREEN (62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	BLUE (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE (01)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
BLUE		ļ						ļ									 		
	BLUE (62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	 1	1	1



3-7. Power Sequence

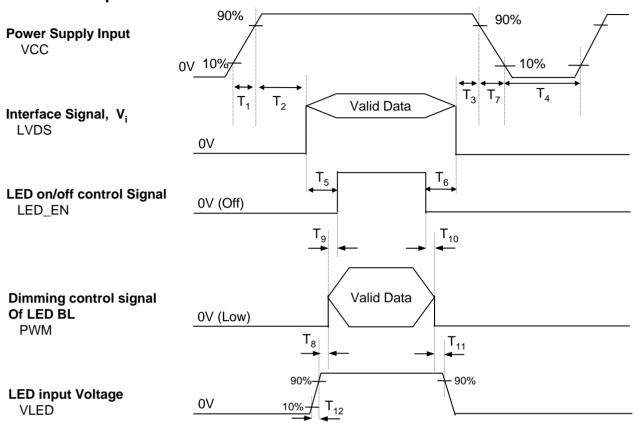


Table 6. POWER SEQUENCE TABLE

Logic		Value		Lloito	LED		Value		Linita
Parameter	Min.	Тур.	Max.	Units	Parameter	Min.	Тур.	Max.	Units
T ₁	0.5	-	10	ms	T ₈	10	-	-	ms
T ₂	0	-	50	ms	T ₉	0	-	-	ms
T ₃	0	-	50	ms	T ₁₀	0	-	-	ms
T ₄	400	-	-	ms	T ₁₁	10	-	-	ms
T ₅	200	-	-	ms	T ₁₂	0.5	-	-	ms
T ₆	200	-	-	ms					
T ₇	3	-	10	ms					

Note)

- 1. Do not insert the mating cable when system turn on.
- 2. Valid Data have to meet "3-3. LVDS Signal Timing Specifications"
- 3. LVDS, LED_EN and PWM need to pull-down condition on invalid status.
- 4. LGD recommend the rising sequence of VLED after the Vcc and valid status of LVDS turn on.



4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25°C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and Θ equal to 0° .

FIG. 1 presents additional information concerning the measurement equipment and method.

FIG. 1 Optical Characteristic Measurement Equipment and Method

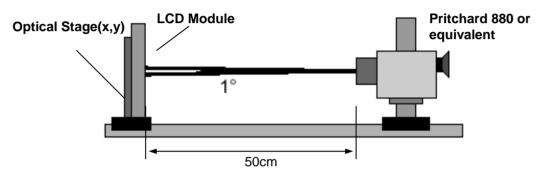


Table 8. OPTICAL CHARACTERISTICS

Ta=25°C, VCC=3.3V, $f_{V}=60Hz$, $f_{CLK}=50.8MHz$, $I_{BL}=19$ mA

Dozomator	C. mah al		Values		Linita	Notes
Parameter	Symbol	Min	Тур	Max	Units	Notes
Contrast Ratio	CR	300	-	-	I	1
Surface Luminance, white	L_WH	170	200		cd/m ²	2
Luminance Variation	δ_{WHITE}	-	1.4	1.6	1	3
Response Time	Tr_{R} + Tr_{D}	-	16	25	ms	4
Color Coordinates						
RED	RX		T.B.D		1	
	RY		T.B.D			
GREEN	GX		T.B.D			
	GY		T.B.D			
BLUE	BX		T.B.D		. [
	BY		T.B.D		. [
WHITE	WX	0.283	0.313	0.343		
	WY	0.299	0.329	0.359	1	
Viewing Angle					1	5
x axis, right(Φ=0°)	Θr	30	-	-	degree	
x axis, left (Ф=180°)	Θl	30	-	-	degree	
y axis, up (Φ=90°)	Θu	10		-	degree	
y axis, down (Φ=270°)	Θd	20	-	-	degree	
Gray Scale			2.2			6

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Note)

1. Contrast Ratio(CR) is defined mathematically as

Contrast Ratio =

Surface Luminance with all black pixels

2. Surface luminance is the average of 5 point across the LCD surface 50cm from the surface with all pixels displaying white. For more information see FIG 1.

$$L_{WH} = Average(L_1, L_2, ... L_5)$$

3. The variation in surface luminance , The panel total variation (δ_{WHITE}) is determined by measuring L_N at each test position 1 through 13 and then defined as followed numerical formula. For more information see FIG 2.

$$\delta_{\text{ WHITE}} = \frac{\text{Maximum}(\textbf{L}_{1}, \textbf{L}_{2}, \ \dots \ \textbf{L}_{13})}{\text{Minimum}(\textbf{L}_{1}, \textbf{L}_{2}, \ \dots \ \textbf{L}_{13})}$$

- 4. Response time is the time required for the display to transition from white to black (rise time, Tr_R) and from black to white(Decay Time, Tr_D). For additional information see FIG 3.
- 5. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 4.
- 6. Gray scale specification

*
$$f_{V} = 60 Hz$$

Gray Level	Luminance [%] (Typ)
LO	T.B.D
L7	T.B.D
L15	T.B.D
L23	T.B.D
L31	T.B.D
L39	T.B.D
L47	T.B.D
L55	T.B.D
L63	100



FIG. 2 Luminance

<measuring point for surface luminance & measuring point for luminance variation>

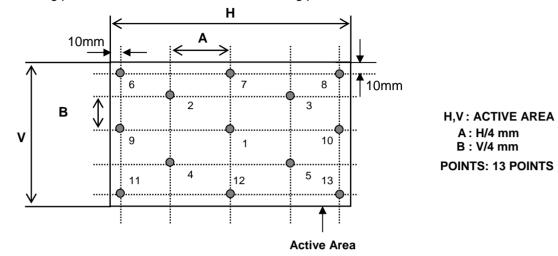


FIG. 3 Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".

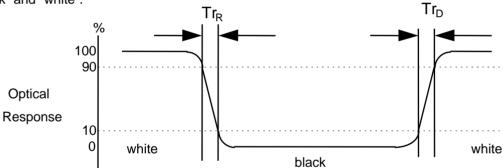
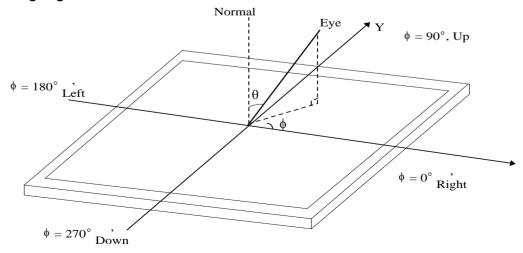


FIG. 4 Viewing angle





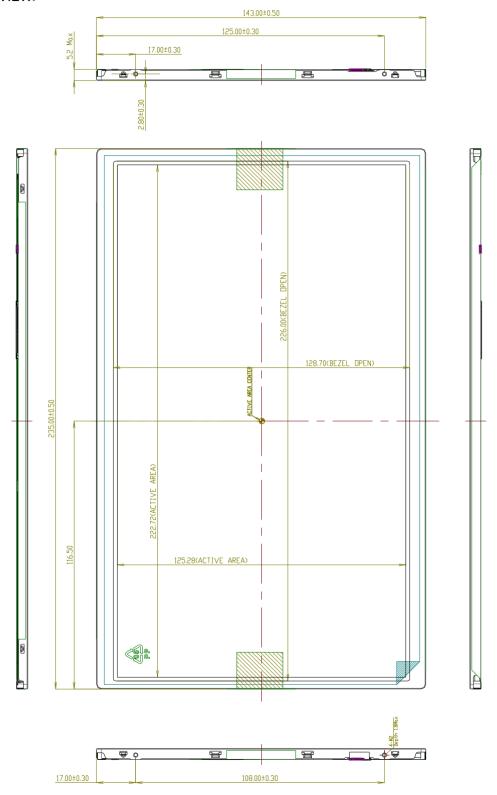
5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model LP101WSA. In addition the figures in the next page are detailed mechanical drawing of the LCD.

	Horizontal	235.0 ± 0.5 mm				
Outline Dimension	Vertical	143.0 ± 0.5 mm				
	Thickness	5.2mm (max)				
Dorol Area	Horizontal	226.0 ± 0.5 mm				
Bezel Area	Vertical	128.7 ± 0.5 mm				
Active Display Area	Horizontal	222.72 ± 0.3 mm				
Active Display Area	Vertical	125.28 ± 0.3 mm				
Weight	190.0g (Max.)					
Surface Treatment	Glare treatment of the front polarizer					

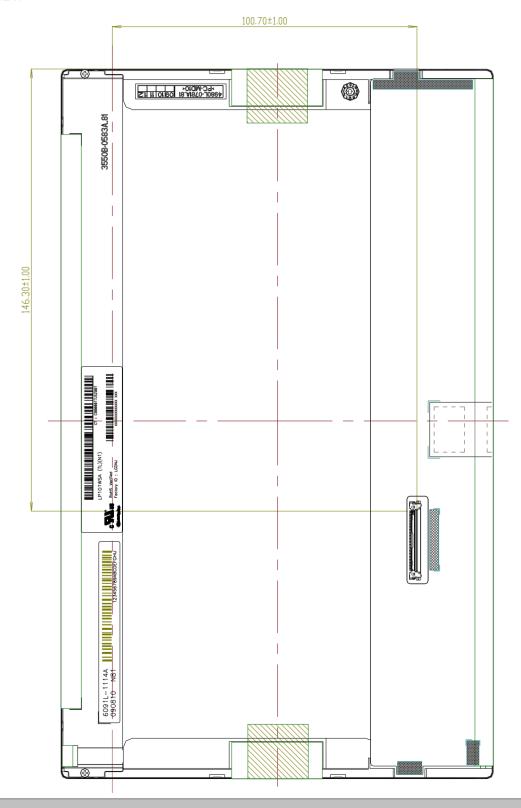


<FRONT VIEW>



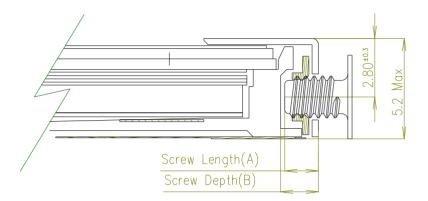


<REAR VIEW>





[DETAIL DESCRIPTION OF SIDE MOUNTING SCREW]



Section A-A

- * Mounting Screw Length (A) = 1.5(Min) /1.8(Max)
- * Mounting Screw Hole Depth (B) = 1.8(Min)
- * Mounting hole location : 2.8(typ.)
- * Torque : 2.0 kgf.cm(Max)

(Measurement gauge: torque meter)

Notes: 1. Screw plated through the method of non-electrolytic nickel plating is preferred to reduce possibility that results in vertical and/or horizontal line defect due to the conductive particles from screw surface.



6. Reliability

Environment test condition

No.	Test Item	Conditions					
1	High temperature storage test	Ta= 60°C, 240h					
2	Low temperature storage test	Ta= -20°C, 240h					
3	High temperature operation test	Ta= 50°C, 50%RH, 240h					
4	Low temperature operation test	Ta= 0°C, 240h					
5	Vibration test (non-operating)	Random, 1.0Grms, X,Y,Z Direction Test time : each direction 1hour					
6	Shock test (non-operating)	Half sine wave, 180G, 2ms one shock of each six faces(I.e. run 180G 6ms for all six faces)					
7	Altitude operating storage / shipment	0 ~ 10,000 feet (3,048m) 24Hr 0 ~ 40,000 feet (12,192m) 24Hr					

[{] Result Evaluation Criteria }

There should be no change which might affect the practical display function when the display quality test is conducted under normal operating condition.



7. International Standards

7-1. Safety

a) UL 60950-1:2003, First Edition, Underwriters Laboratories, Inc.,

Standard for Safety of Information Technology Equipment.

b) CAN/CSA C22.2, No. 60950-1-03 1st Ed. April 1, 2003, Canadian Standards Association,

Standard for Safety of Information Technology Equipment.

c) EN 60950-1:2001, First Edition,

European Committee for Electrotechnical Standardization(CENELEC)

European Standard for Safety of Information Technology Equipment.

7-2. EMC

- a) ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electrical Equipment in the Range of 9kHZ to 40GHz. "American National Standards Institute(ANSI), 1992
- b) C.I.S.P.R "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." International Special Committee on Radio Interference.
- c) EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." European Committee for Electrotechnical Standardization.(CENELEC), 1998 (Including A1: 2000)



8. Packing

8-1. Designation of Lot Mark

a) Lot Mark

Α	В	С	D	Е	F	G	Н	I	J	К	L	М	
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A,B,C : SIZE(INCH) D : YEAR

E: MONTH $F \sim M$: SERIAL NO.

Note

1. YEAR

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mark	1	2	3	4	5	6	7	8	9	0

2. MONTH

N	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ı	Mark	1	2	3	4	5	6	7	8	9	Α	В	C

b) Location of Lot Mark

Serial No. is printed on the label. The label is attached to the backside of the LCD module. This is subject to change without prior notice.

8-2. Packing Form

a) Package quantity in one box: 30 pcs

b) Box Size: TBD

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9. PRECAUTIONS

Please pay attention to the followings when you use this TFT LCD module.

9-1. MOUNTING PRECAUTIONS

- (1) You must mount a module using holes arranged in four corners or four sides.
- (2) You should consider the mounting structure so that uneven force (ex. Twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.
- (3) Please attach the surface transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to the resist external force.
- (4) You should adopt radiation structure to satisfy the temperature specification.
- (5) Acetic acid type and chlorine type materials for the cover case are not desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.
- (6) Do not touch, push or rub the exposed polarizers with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment.
 Do not touch the surface of polarizer for bare hand or greasy cloth.(Some cosmetics are detrimental
 - to the polarizer.)
- (7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.
- (8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.
- (9) Do not open the case because inside circuits do not have sufficient strength.

9-2. OPERATING PRECAUTIONS

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage : $V=\pm~200mV$ (Over and under shoot voltage)
- (2) Response time depends on the temperature.(In lower temperature, it becomes longer.)
- (3) Brightness depends on the temperature. (In lower temperature, it becomes lower.)

 And in lower temperature, response time(required time that brightness is stable after turned on) becomes longer.
- (4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.
- (5) When fixed patterns are displayed for a long time, remnant image is likely to occur.
- (6) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimized the interference.



9-3. ELECTROSTATIC DISCHARGE CONTROL

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc. And don't touch interface pin directly.

9-4. PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5. STORAGE

When storing modules as spares for a long time, the following precautions are necessary.

- (1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the temperature between 5°C and 35°C at normal humidity.
- (2) The polarizer surface should not come in contact with any other object. It is recommended that they be stored in the container in which they were shipped.

9-6. HANDLING PRECAUTIONS FOR PROTECTION FILM

- (1) When the protection film is peeled off, static electricity is generated between the film and polarizer. This should be peeled off slowly and carefully by people who are electrically grounded and with well ion-blown equipment or in such a condition, etc.
- (2) The protection film is attached to the polarizer with a small amount of glue. If some stress is applied to rub the protection film against the polarizer during the time you peel off the film, the glue is apt to remain on the polarizer.
 - Please carefully peel off the protection film without rubbing it against the polarizer.
- (3) When the module with protection film attached is stored for a long time, sometimes there remains a very small amount of glue still on the polarizer after the protection film is peeled off.
- (4) You can remove the glue easily. When the glue remains on the polarizer surface or its vestige is recognized, please wipe them off with absorbent cotton waste or other soft material like chamois soaked with normal-hexane.



APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 1/3

T.B.D



APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 2/3

T.B.D



APPENDIX A. Enhanced Extended Display Identification Data (EEDID™) 3/3

T.B.D