

LP140WH7  
Liquid Crystal Display

## Product Specification

SPECIFICATION  
FOR  
APPROVAL

( ) Preliminary Specification

(◆) Final Specification

Title	14.0" HD TFT LCD
-------	------------------

Customer	Acer
MODEL	

SUPPLIER	LG Display Co., Ltd.
*MODEL	LP140WH7
Suffix	TSA1

\*When you obtain standard approval,  
please use the above model name without suffix

APPROVED BY	SIGNATURE
/	
/	
/	

Please return 1 copy for your confirmation with your signature and comments.

APPROVED BY	SIGNATURE
Do Young Kim / Manager	
<b>REVIEWED BY</b>	
Dong Yong Kim / Engineer	
<b>PREPARED BY</b>	
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K. T. Baek / Engineer	

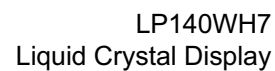
**Products Engineering Dept.**  
**LG Display Co., Ltd**

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## Product Specification

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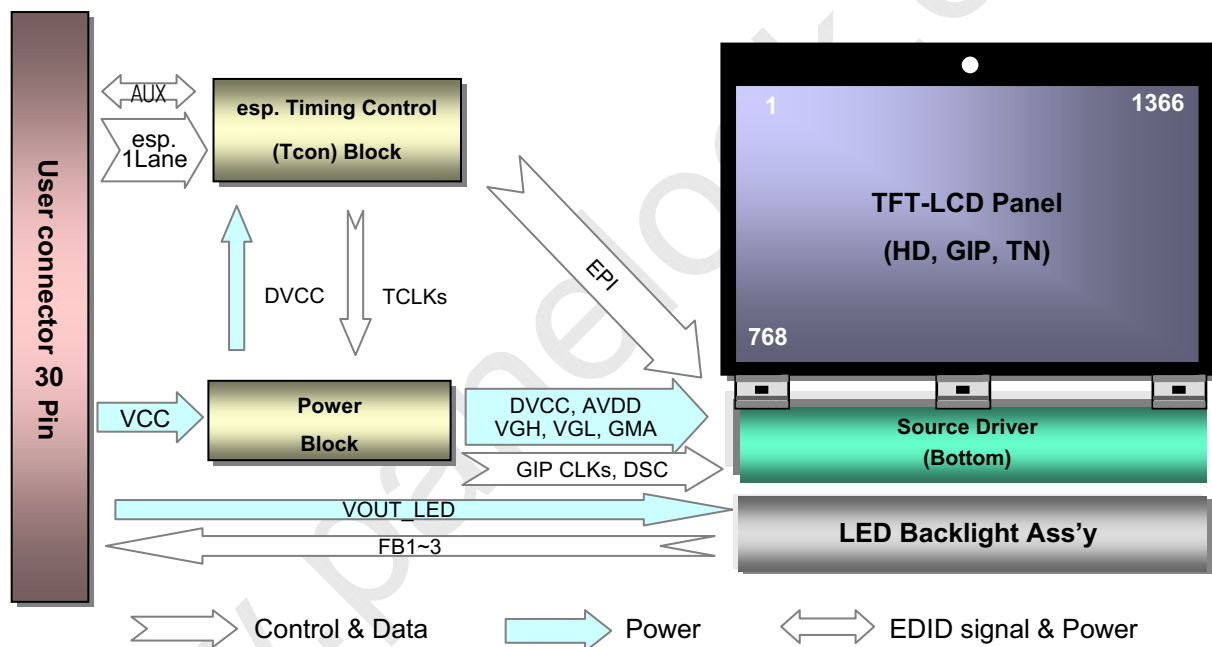
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## Product Specification

## 1. General Description

The LP140WH7 is a Color Active Matrix Liquid Crystal Display with an internal 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 14.0 inches diagonally measured active display area with HD resolution (1366 horizontal by 768 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 LP140WH7 has been designed to apply the interface method that enables low power, high speed, low EMI. The LP140WH7 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 LP140WH7 characteristics provide an excellent flat display for office automation products such as Notebook PC.



## General Features

Active Screen Size	14.0 inches diagonal
Outline Dimension	1) Panel (W/O PCB) : 324.0(H, Typ.) × 200.2(V, Typ.) [mm] 2) Panel (With PCB) : 324.0(H, Typ.) × 213.0(V, Typ.) [mm]
Pixel Pitch	0.2265mm × 0.2265 mm
Pixel Format	1366 horiz. by 768 vert. Pixels RGB strip arrangement
Color Depth	6-bit, 262,144 colors
Power Consumption	Total 3.1 W (Typ.) Logic : 0.75 W (Typ.@ Mosaic), B/L : 2.35 W
Luminance, white	200cd/m2 (Typ. 5 point)
Weight	320 g (Max.)
Display Operating Mode	Transmissive mode, normally white
Surface Treatment	Glare treatment (3H) of the front Polarizer
RoHS Compliance	Yes
BFR / PVC / As Free	Yes for all



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### 2. Absolute Maximum Ratings

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

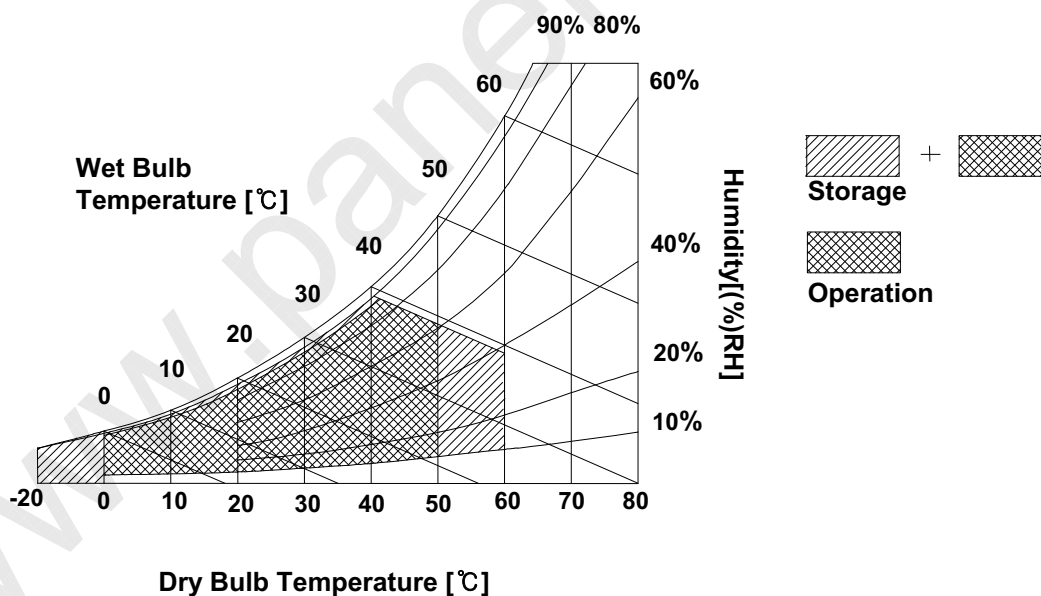
**Table 1. ABSOLUTE MAXIMUM RATINGS**

Parameter	Symbol	Values		Units	Notes
		Min	Max		
Power Input Voltage	VCC	-0.3	4.0	Vdc	at 25 ± 5°C
Operating Temperature	TOP	0	50	°C	1
Storage Temperature	HST	-20	60	°C	1,2
Operating Ambient Humidity	HOP	10	90	%RH	1
Storage Humidity	HST	10	90	%RH	1,2

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.

Note : 2. Storage Condition is guaranteed under packing condition.





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### 3. Electrical Specifications

#### 3-1. Electrical Characteristics

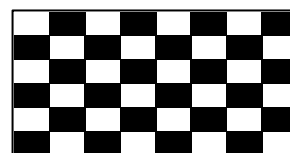
The LP140WH7 requires one power inputs. The first logic is employed to power the LCD electronics and to drive the TFT array and liquid crystal.

Table 2. ELECTRICAL CHARACTERISTICS

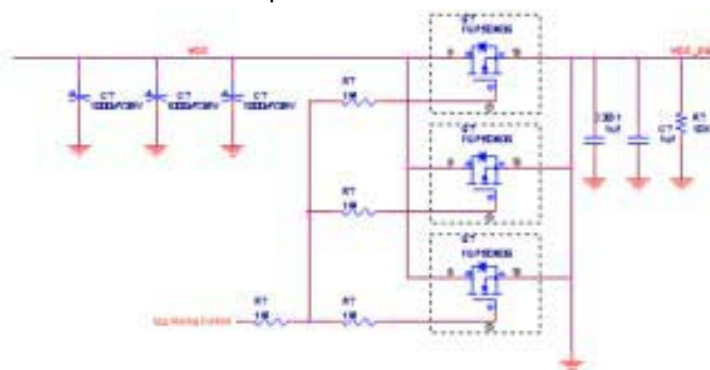
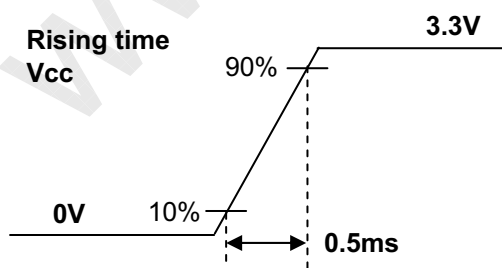
Parameter	Symbol	Values			Unit	Notes
		Min	Typ	Max		
LOGIC :						
Power Supply Input Voltage	V <sub>CC</sub>	3.0	3.3	3.6	V	1
Power Supply Input Current	I <sub>CC</sub>	-	226	260	mA	2
Power Consumption	P <sub>CC</sub>	-	0.75	0.85	W	
Power Supply Inrush Current	I <sub>CC_P</sub>	-	-	1500	mA	3
esp. Impedance	Z <sub>eDP</sub>	90	100	110	Ω	4
LED : W/O LED Driver						
LED Output Voltage	V <sub>OUT</sub>		32	34	V	
LED Output Current	I <sub>OUT</sub>		72	73.5	mA	1string 24mA
LED Power Consumption	P <sub>OUT</sub>		2.35	2.5	W	

Note)

1. The measuring position is the connector of Board Ass'y and the test conditions are under 25°C, f<sub>v</sub> = 60Hz, Black pattern.
  2. The specified I<sub>CC</sub> current and power consumption are under the V<sub>CC</sub> = 3.3V, 25°C, f<sub>v</sub> = 60Hz condition.
  3. This Spec. is the max load condition for the cable impedance designing.
  4. This impedance value is needed for proper display and measured form esp. Tx to the mating connector.
- \*\* The below figures are the measuring V<sub>CC</sub> condition and the V<sub>CC</sub> control block LGD used.  
The V<sub>CC</sub> condition is same as the minimum of T1 at Power on sequence.



Mosaic Pattern



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### 3-2. Interface Connections

This LCD employs two interface connections, a 30 pin connector is used for the module electronics interface and the other connector is used for the integral backlight system.

The electronics interface connector is a model CABLINE-VS RECE ASS'Y.

**Table 3. MODULE CONNECTOR PIN CONFIGURATION (CN1)**

Pin	Symbol	Description	Notes
1	NC	No Connection (Reserved)	<b>[Interface Chip]</b> 1, Interface chips 1.1 LCD :SiW, SW0661 (LCD Controller) including esp. Receiver 1.2 System : GM60028 or ANX9804 or equivalent * Pin to Pin compatible with esp.
2	H_GND	High Speed (Main Link) Ground	
3	NC	No Connection (Reserved)	
4	NC	No Connection (Reserved)	<b>[Connector]</b> <b>HD2S030HA1</b> , JAE or I-PEX(CABLINE-VS)
5	H_GND	High Speed (Main Link) Ground	
6	ML0-	Complement Signal-Lane 0	
7	ML0+	True Signal-Main Lane 0	<b>[Mating Connector]</b> CABLINE-VS PLUG CABLE ASS'Y or equivalent.
8	H_GND	High Speed (Main Link) Ground	
9	AUX+	True Signal-Auxiliary Channel	
10	AUX-	Complement Signal-Auxiliary Channel	<b>[LED Block]</b> LED block move to system set base
11	H_GND	High Speed (Main Link) Ground	
12	VCC	LCD Logic and driver power (3.3V Typ.)	
13	VCC	LCD Logic and driver power (3.3V Typ.)	<b>[Connector pin arrangement]</b> Check LCM drawing (Page 18)
14	BIST	Built-In Self Test (active high)	
15	GND	Ground	
16	GND	Ground	
17	HPD	HPD signal pin	
18	GND	Ground	
19	GND	Ground	
20	NC	No Connection (Reserved)	
21	FB3	Regulated Current sink	
22	FB2	Regulated Current sink	
23	FB1	Regulated Current sink	
24	NC	No Connection (Reserved – Use P-vcom)	
25	NC	No Connection (Reserved – Use P-vcom)	
26	VOUT	Boost output voltage	
27	VOUT	Boost output voltage	
28	VOUT	Boost output voltage	
29	NC	No Connection (Reserved)	
30	NC	No Connection (Reserved)	

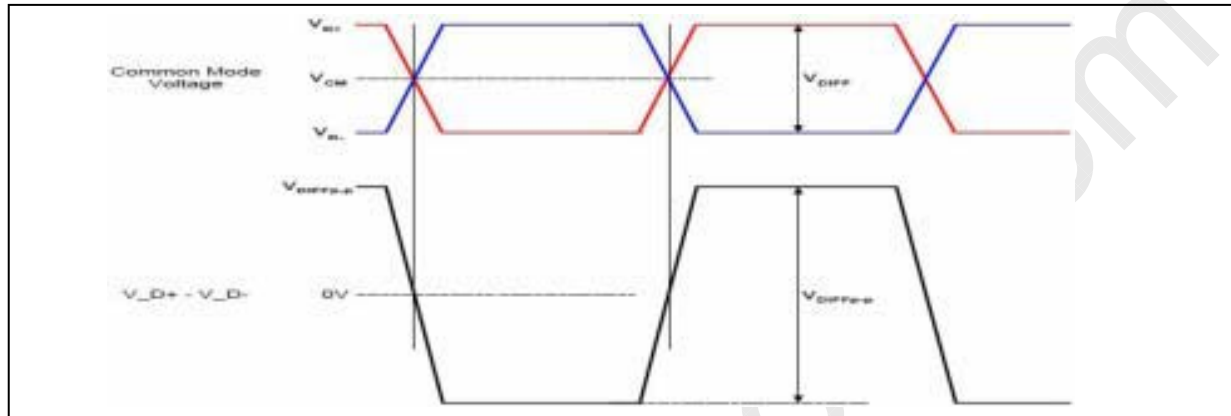
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## 3-3. esp. Signal Timing Specifications

## 3-3-1. DC Specification

The VESA Display Port related AC specification is compliant with the VESA Display Port Standard.



Description	Symbol	Min	Max	Unit	Notes
Differential peak-to-peak Input voltage	VDIFF p-p	120	-	mV	For high bit rate
		40	-		For reduced bit rate
Rx DC common mode voltage	VCM	0	2.0	V	-

## 3-3-2. AC Specification

The VESA Display Port related AC specification is compliant with the VESA Display Port Standard.

Description	Symbol	Min	Typ	Max	Unit	Notes
Unit Interval for high bit rate (2.7Gbps/lane)	UI_High_Rate	-	370	-	ps	Range is nominal $\pm 350$ ppm. DisplayPort Link Rx does not require local crystal for link clock generation
Unit Interval for high bit rate (1.62Gbps/lane)	UI_Low_Rate	-	617	-	ps	
Lane-to-Lane skew	V Rx-SKEW-INTER_PAIR	-	-	5200	ps	-
Lane intra-pair skew	V Rx-SKEW-INTRA_PAIR	-	-	100	ps	For high bit rate
		-	-	300	ps	For reduced bit rate





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### 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 esp. Tx/Rx for its proper operation.

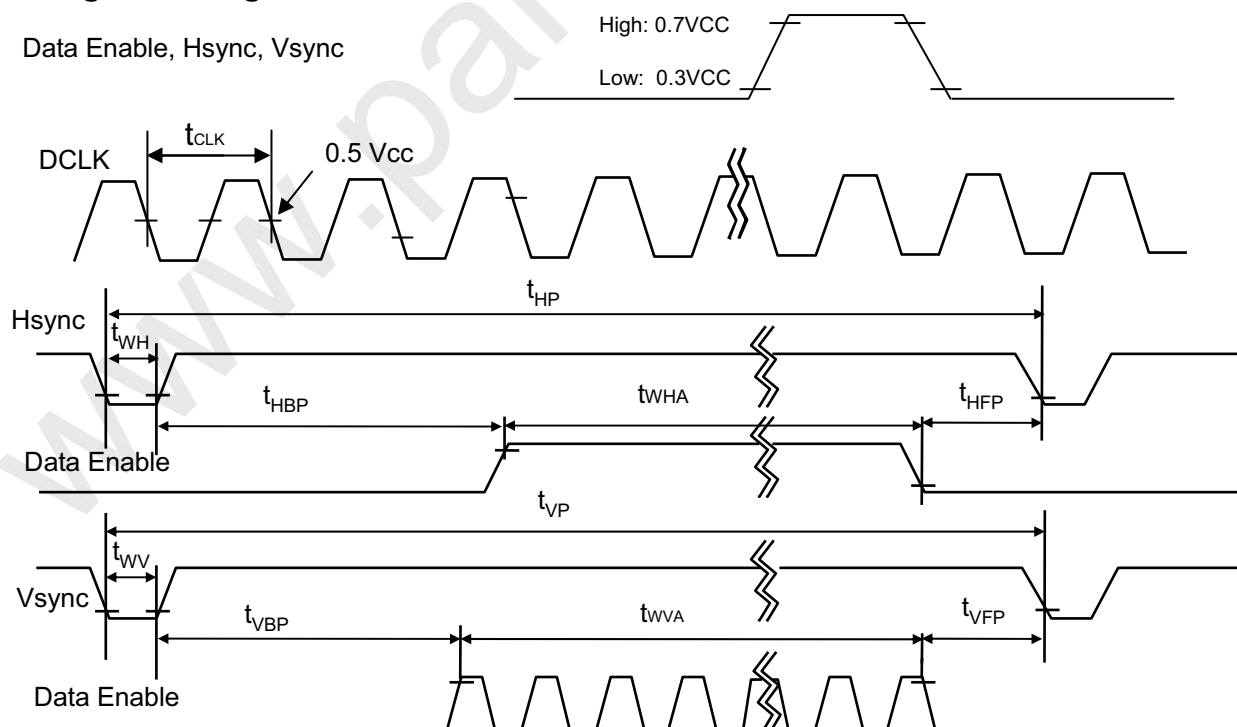
**Table 4. TIMING TABLE**

ITEM	Symbol		Min	Typ	Max	Unit	Note
DCLK	Frequency	$f_{CLK}$	68.1	70.0	73.0	MHz	
Hsync	Period	$t_{HP}$	1462	1492	1536	tCLK	
	Width	$t_{WH}$	32	48	62		
	Width-Active	$t_{WHA}$	1366	1366	1366		
Vsync	Period	$t_{VP}$	776	782	792	tHP	
	Width	$t_{WV}$	2	5	8		
	Width-Active	$t_{WVA}$	768	768	768		
Data Enable	Horizontal back porch	$t_{HBP}$	32	42	68	tCLK	
	Horizontal front porch	$t_{HFP}$	32	36	40		
	Vertical back porch	$t_{VBP}$	4	6	12	tHP	
	Vertical front porch	$t_{VFP}$	2	3	4		

### 3-5. Signal Timing Waveforms

Condition : VCC =3.3V

Data Enable, Hsync, Vsync



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## 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 5. COLOR DATA REFERENCE

Color		Input Color Data																	
		RED						GREEN						BLUE					
		MSB			LSB			MSB			LSB			MSB			LSB		
		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	B 3	B 2	B 1	B 0
Basic Color	Black	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	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	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	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 (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	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 (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	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 (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



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### 3-7. Power Sequence

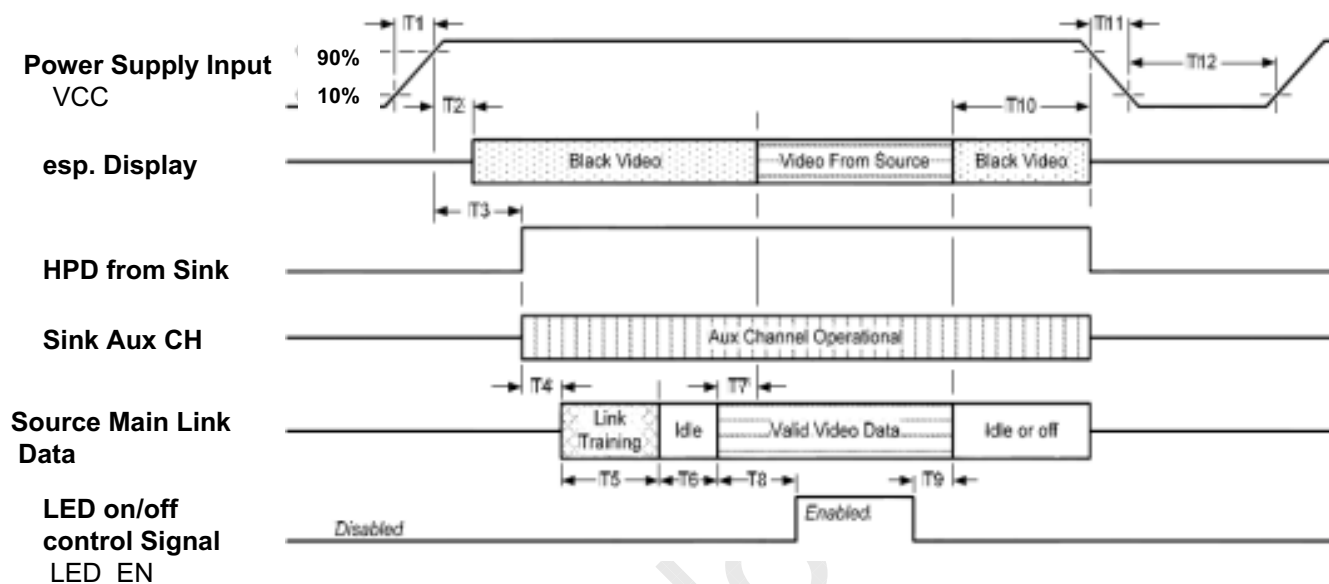


Table 6-1. POWER SEQUENCE TABLE

Parameter	Values			Units
	Min	Typ	Max	
T1	0.5	-	10	ms
T2	0	-	200	ms
T3	0	-	200	ms
T4	-	-	-	ms
T5	-	-	-	ms
T6	-	-	-	ms
T7	0	-	50	ms
T8	200	-	-	ms
T9	200	-	-	ms
T10	0	-	500	ms
T11	3	-	10	ms
T12	500	-	-	ms

Note)

1. AUX Channel communication between source and sink must be operational after or upon HPD high.
2. Do not insert the mating cable when system turn on.
3. Valid Data have to meet "3-3. esp. Signal Timing Specifications"



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### 4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 20 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  $\Phi$  and  $\Theta$  equal to 0°.

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

FIG. 1 Optical Characteristic Measurement Equipment and Method

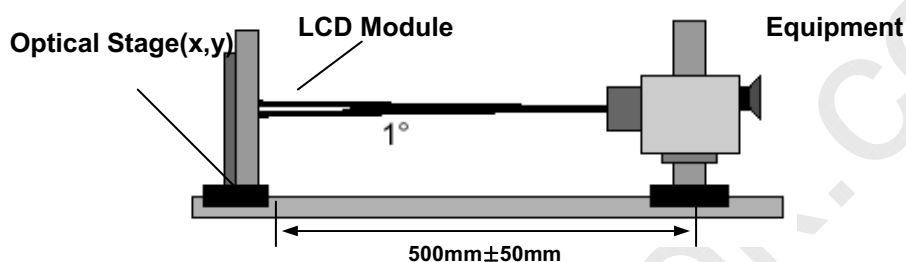


Table 7. OPTICAL CHARACTERISTICS

Ta=25°C, VCC=3.3V, fv=60Hz, fCLK= 70 MHz

Parameter	Symbol	Values			Units	Notes
		Min	Typ	Max		
Contrast Ratio	CR	400	500	-		1
Surface Luminance, white	L <sub>WH</sub>	170	200			2
Luminance Variation(13points)	δ <sub>WHITE</sub>		1.4	1.6		3
Response Time	Tr <sub>R</sub> + Tr <sub>D</sub>	-	16	25	ms	4
Color Coordinates						
RED	RX	0.554	0.584	0.614		
	RY	0.319	0.349	0.379		
GREEN	GX	0.309	0.339	0.369		
	GY	0.532	0.562	0.592		
BLUE	BX	0.129	0.159	0.189		
	BY	0.084	0.114	0.144		
WHITE	WX	0.283	0.313	0.343		
	WY	0.299	0.329	0.359		
Viewing Angle						
x axis, right(Φ=0°)	Θ <sub>r</sub>	40	45	-	degree	5
	Θ <sub>l</sub>	40	45	-	degree	
	Θ <sub>u</sub>	10	15	-	degree	
	Θ <sub>d</sub>	30	35	-	degree	
Gray Scale						
Color Gamut	C/G	-	45	-	%	6



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### Notes)

1. Contrast Ratio(CR) is defined mathematically as

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

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

When  $I_{LED} = \text{TBD mA}$ ,  $L_{WH} = 200\text{cd/m}^2(\text{Typ.})$

3. The variation in surface luminance , The panel total variation ( $\delta_{\text{WHITE}}$ ) 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.

$$\delta_{\text{WHITE}} = \frac{\text{Maximum}(L_1, L_2, \dots L_{13})}{\text{Minimum}(L_1, L_2, \dots L_{13})}$$

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

\*  $f_v = 60\text{Hz}$

Gray Level	Luminance [%] (Typ)
L0	0.2
L7	1.2
L15	4.8
L23	10.9
L31	21.0
L39	34.8
L47	52.5
L55	74.2
L63	100



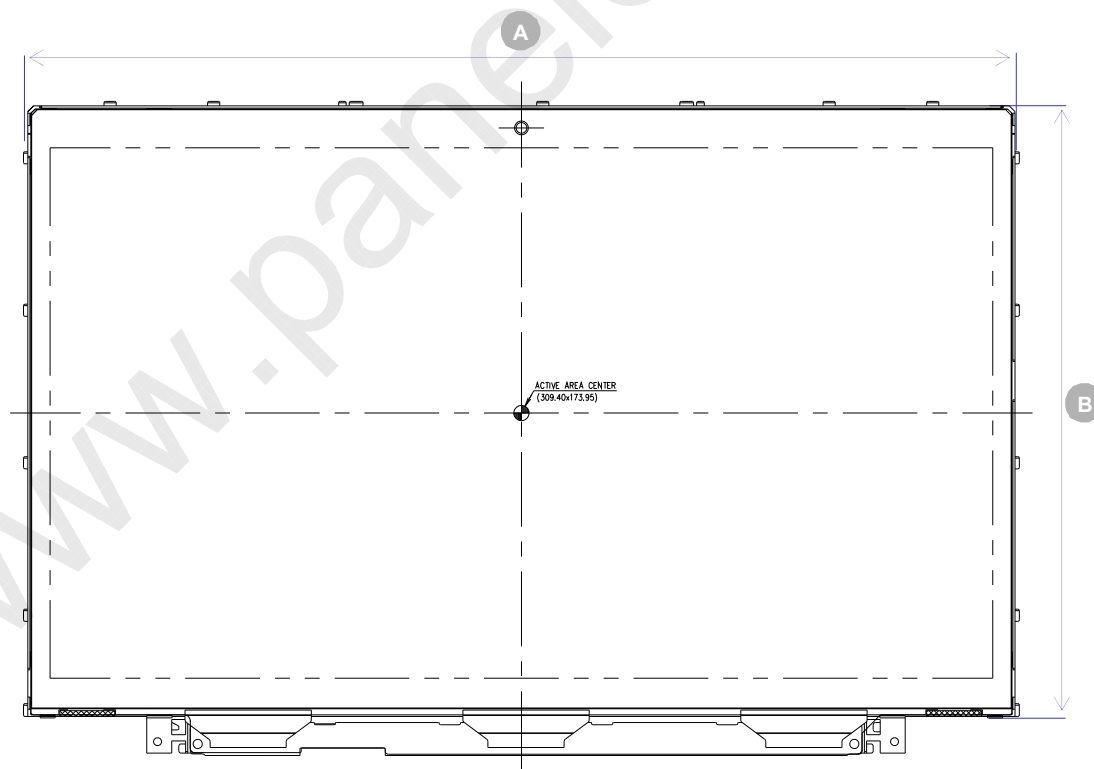
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## 5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model LP140WH7. In addition the figures in the next page are detailed mechanical drawing of the LCD Module.

Outline Dimension (Without PCB)	Horizontal (A)	324 ± 0.3mm
	Vertical (B)	200.2± 0.3mm
	Thickness	3.8mm (Typ.) 4.1mm (Max.)
Active Display Area	Horizontal	309.40 mm
	Vertical	173.95 mm
Weight	320 g (Max.)	
Surface Treatment	Hard Coating(3H), Glare treatment of the front polarizer	



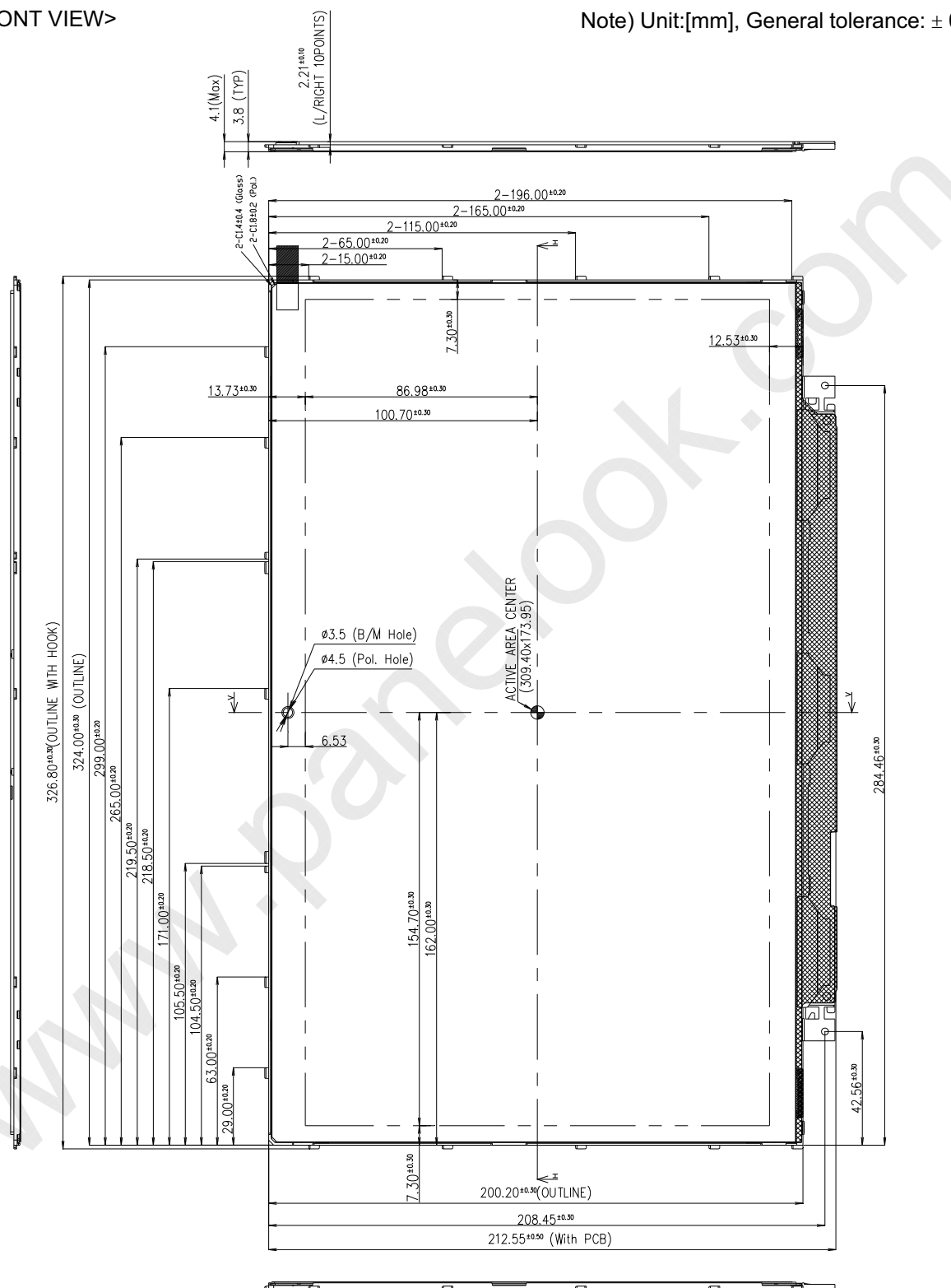


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### Product Specification

<FRONT VIEW>

Note) Unit:[mm], General tolerance:  $\pm 0.3\text{mm}$





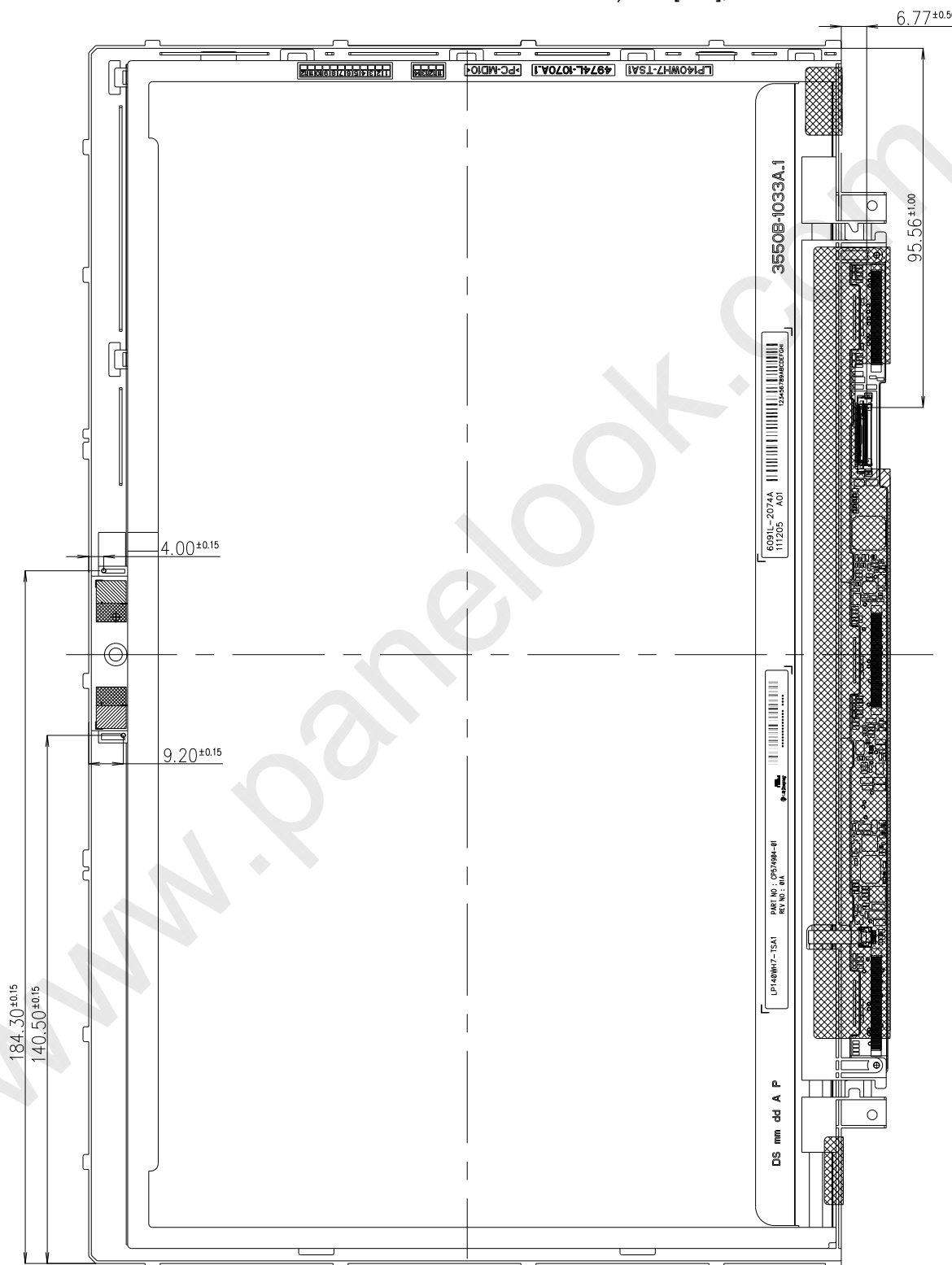


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Product Specification

<SECTION VIEW>

Note) Unit:[mm], General tolerance:  $\pm 0.3\text{mm}$



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## 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)	Sine wave, 5 ~ 150Hz, 1.5G, 0.37oct/min, 3 axis, 30min/axis
6	Shock test (non-operating)	- No functional or cosmetic defects following a shock to all 6 sides delivering at least 180 G in a half sine pulse no longer than 2 ms to the display module - No functional defects following a shock delivering at least 200 g in a half sine pulse no longer than 2 ms to each of 6 sides. Each of the 6 sides will be shock tested with one each display, for a total of 6 displays
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

- UL 60950-1, Underwriters Laboratories Inc.  
Information Technology Equipment - Safety - Part 1 : General Requirements.
- CAN/CSA C22.2 No.60950-1-07, Canadian Standards Association.  
Information Technology Equipment - Safety - Part 1 : General Requirements.
- EN 60950-1, European Committee for Electrotechnical Standardization (CENELEC).  
Information Technology Equipment - Safety - Part 1 : General Requirements.
- IEC 60950-1, The International Electrotechnical Commission (IEC).  
Information Technology Equipment - Safety - Part 1 : General Requirements.

### 7-2. EMC

- ANSI C63.4 "American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."  
American National Standards Institute (ANSI), 2003.
- CISPR 22 "Information technology equipment – Radio disturbance characteristics – Limit and methods of measurement." International Special Committee on Radio Interference (CISPR), 2005.
- CISPR 13 "Sound and television broadcast receivers and associated equipment – Radio disturbance characteristics – Limits and method of measurement." International Special Committee on Radio Interference (CISPR), 2006.

### 7-3. Environment

- RoHS, Directive 2002/95/EC of the European Parliament and of the council of 27 January 2003

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## 8. Packing

### 8-1. Designation of Lot Mark

#### a) Lot Mark

A	B	C	D	E	F	G	H	I	J	K	L	M
---	---	---	---	---	---	---	---	---	---	---	---	---

A,B,C : SIZE(INCH)  
E : MONTHD : YEAR  
F ~ M : SERIAL NO.

#### Note

##### 1. YEAR

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Mark	A	B	C	D	E	F	G	H	J	K

##### 2. MONTH

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mark	1	2	3	4	5	6	7	8	9	A	B	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

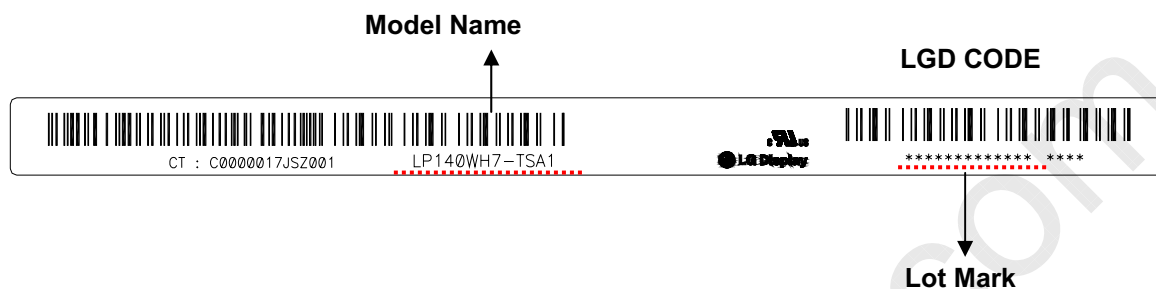
b) Box Size : 478 mm X 365 mm X 288 mm



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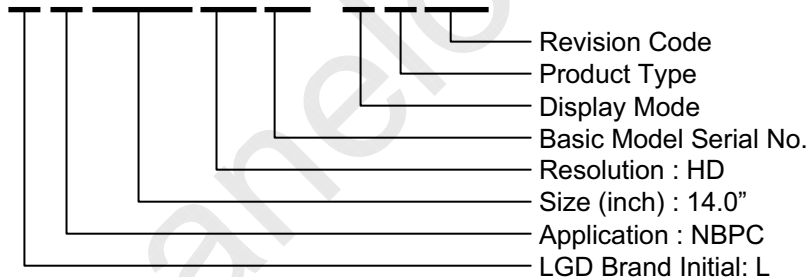
### Product Specification

## 8-3. Label Description

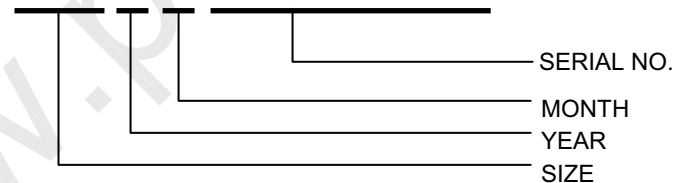


### LGD Code

(1) Model Name : L P 1 4 0 W H 7 - T S A 1



(2) Lot Mark : 1 4 0 A B C 0 0 0 0 0 1



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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 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.
- (10) When handling the LCD module, it needs to handle with care not to give mechanical stress to the PCB and Mounting Hole area."

### 9-2. OPERATING PRECAUTIONS

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage :  
 $V = \pm 200\text{mV}$  (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 minimize the interference.

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### 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.

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

	Byte (Dec)	Byte (Hex)	Field Name and Comments	Value (Hex)	Value (Bin)
Header	0	00	Header	00	00000000
	1	01	Header	FF	11111111
	2	02	Header	FF	11111111
	3	03	Header	FF	11111111
	4	04	Header	FF	11111111
	5	05	Header	FF	11111111
	6	06	Header	FF	11111111
Vendor / Product EDID Version	7	07	Header	00	00000000
	8	08	ID Manufacture Name LGD	30	00110000
	9	09	ID Manufacture Name	E4	11100100
	10	0A	ID Product Code 0375h	75	01110101
	11	0B	( Hex. LSB first )	03	00000011
	12	0C	ID Serial No. - Optional ("00h" If not used, Number Only and LSB First)	00	00000000
	13	0D	ID Serial No. - Optional ("00h" If not used, Number Only and LSB First)	00	00000000
	14	0E	ID Serial No. - Optional ("00h" If not used, Number Only and LSB First)	00	00000000
	15	0F	ID Serial No. - Optional ("00h" If not used, Number Only and LSB First)	00	00000000
	16	10	Week of Manufacture - Optinal 00 weeks	00	00000000
	17	11	Year of Manufacture 2012 years	16	00010110
Display Parameters	18	12	EDID structure version # = 1	01	00000001
	19	13	EDID revision # = 4	04	00000100
	20	14	Video input Definition = Input is a Digital Video signal Interface , Colo Bit Depth : 6 Bits per Primary Color , Digital Video Interface Standard Supported: DisplayPort is supported	95	10010101
	21	15	Horizontal Screen Size (Rounded cm) = 31 cm	1F	00011111
	22	16	Vertical Screen Size (Rounded cm) = 17 cm	11	00010001
Panel Color Coordinates	23	17	Display Transfer Characteristic (Gamma) = (gamma*100)-100 = Example:(2.2*100)-100=120	78	01111000
	24	18	Feature Support [ Display Power Management(DPM) : Standby Mode is not supported, Suspend Mode is not supported, Active Off= Very Low Power is not supported ,Supported Color Encoding Formats : RGB 4:4:4 & YCrCb 4:4:4 ,Other Feature Support Flags : No_sRGB, Preferred Timing Mode, No_Display is continuous frequency (Multi-mode_Base EDID and Extension Block).]	0A	00001010
	25	19	Red/Green Low Bits (RxRy/GxGy)	9F	10011111
	26	1A	Blue/White Low Bits (BxBw/WxWy)	D5	11010101
	27	1B	Red X Rx = 0.584	95	10010101
	28	1C	Red Y Ry = 0.349	59	01011001
	29	1D	Green X Gx = 0.339	56	01010110
	30	1E	Green Y Gy = 0.562	8F	10001111
	31	1F	Blue X Bx = 0.159	28	00101000
	32	20	Blue Y By = 0.114	1D	00011101
Establi shed Timing	33	21	White X Wx = 0.313	50	01010000
	34	22	White Y Wy = 0.329	54	01010100
Standard Timing ID	35	23	Established timing 1 ( Optional_00h if not used)	00	00000000
	36	24	Established timing 2 ( Optional_00h if not used)	00	00000000
	37	25	Manufacturer's timings ( Optional_00h if not used)	00	00000000
	38	26	Standard timing ID1 ( Optional_01h if not used)	01	00000001
	39	27	Standard timing ID1 ( Optional_01h if not used)	01	00000001
	40	28	Standard timing ID2 ( Optional_01h if not used)	01	00000001
	41	29	Standard timing ID2 ( Optional_01h if not used)	01	00000001
	42	2A	Standard timing ID3 ( Optional_01h if not used)	01	00000001
	43	2B	Standard timing ID3 ( Optional_01h if not used)	01	00000001
	44	2C	Standard timing ID4 ( Optional_01h if not used)	01	00000001
	45	2D	Standard timing ID4 ( Optional_01h if not used)	01	00000001
	46	2E	Standard timing ID5 ( Optional_01h if not used)	01	00000001
	47	2F	Standard timing ID5 ( Optional_01h if not used)	01	00000001
	48	30	Standard timing ID6 ( Optional_01h if not used)	01	00000001
	49	31	Standard timing ID6 ( Optional_01h if not used)	01	00000001
	50	32	Standard timing ID7 ( Optional_01h if not used)	01	00000001

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

	Byte (Dec)	Byte (Hex)	Field Name and Comments	Value (Hex)	Value (Bin)
Timing Descriptor #1	54	36	Pixel Clock/10,000 (LSB) 70 MHz @ 60 Hz	58	01011000
	55	37	Pixel Clock/10,000 (MSB)	1B	00011011
	56	38	Horizontal Active (HA) (lower 8 bits) 1366 pixels	56	01010110
	57	39	Horizontal Blanking (HB) (lower 8 bits) 126 pixels	7E	01111110
	58	3A	Horizontal Active (HA) / Horizontal Blanking (HB) (upper 4:4bits)	50	01010000
	59	3B	Vertical Active (VA) 768 lines	00	00000000
	60	3C	Vertical Blanking (VB) (DE Blanking typ.for DE only panels) 14 lines	0E	00001110
	61	3D	Vertical Active (VA) / Vertical Blanking (VB) (upper 4:4bits)	30	00110000
	62	3E	Horizontal Front Porch in pixels (HF) (lower 8 bits) 36 pixels	24	00100100
	63	3F	Horizontal Sync Pulse Width in pixels (HS) (lower 8 bits) 48 pixels	30	00110000
	64	40	Vertical Front Porch in lines (VF) : Vertical Sync Pluse Width in lines (VS) (lower 4 bits) 3 lines : 5 lines	35	00110101
	65	41	Horizontal Front Porch/ Sync Pulse Width/ Vertical Front Porch/ Sync Pulse Width (upper 2bits)	00	00000000
	66	42	Horizontal Vedio Image Size (mm) (lower 8 bits) 309 mm	35	00110101
	67	43	Vertical Vedio Image Size (mm) (lower 8 bits) 174 mm	AE	10101110
	68	44	Horizontal Image Size / Vertical Image Size (upper 4 bits)	10	00010000
	69	45	Horizontal Border = 0 (Zero for Notebook LCD)	00	00000000
Timing Descriptor #2	70	46	Vertical Border = 0 (Zero for Notebook LCD)	00	00000000
	71	47	Non-Interlace, Normal display, no stereo, Digital Separate [ Vsync_NEG, Hsync_NEG (outside of V-sync) ]	19	00011001
	72	48	Flag	00	00000000
	73	49	Flag	00	00000000
	74	4A	Flag	00	00000000
	75	4B	Data Type Tag (Descriptor Defined by manufacturer )	00	00000000
	76	4C	Flag	00	00000000
	77	4D	Descriptor Defined by manufacturer	00	00000000
	78	4E	Descriptor Defined by manufacturer	00	00000000
	79	4F	Descriptor Defined by manufacturer	00	00000000
	80	50	Descriptor Defined by manufacturer	00	00000000
	81	51	Descriptor Defined by manufacturer	00	00000000
	82	52	Descriptor Defined by manufacturer	00	00000000
	83	53	Descriptor Defined by manufacturer	00	00000000
	84	54	Descriptor Defined by manufacturer	00	00000000
	85	55	Descriptor Defined by manufacturer	00	00000000
Timing Descriptor #3	86	56	Descriptor Defined by manufacturer	00	00000000
	87	57	Descriptor Defined by manufacturer	00	00000000
	88	58	Descriptor Defined by manufacturer	00	00000000
	89	59	Descriptor Defined by manufacturer	00	00000000
	90	5A	Flag	00	00000000
	91	5B	Flag	00	00000000
	92	5C	Flag	00	00000000
	93	5D	Data Type Tag ( Alphanumeric Data String (ASCII String) )	FE	11111110
	94	5E	Flag	00	00000000
	95	5F	Alphanumeric Data String (ASCII String) L	4C	01001100
	96	60	Alphanumeric Data String (ASCII String) G	47	01000111
	97	61	Alphanumeric Data String (ASCII String)	20	00100000
	98	62	Alphanumeric Data String (ASCII String) D	44	01000100
	99	63	Alphanumeric Data String (ASCII String) i	69	01101001
	100	64	Alphanumeric Data String (ASCII String) s	73	01110011
	101	65	Alphanumeric Data String (ASCII String) p	70	01110000
	102	66	Alphanumeric Data String (ASCII String) l	6C	01101100
	103	67	Alphanumeric Data String (ASCII String) a	61	01100001
	104	68	Alphanumeric Data String (ASCII String) y	79	01111001
	105	69	Manufacturer P/N(IF<13 char--> 0Ah, then terminate with ASC II code 0Ah,set remaining char to 00h)	00	00000010
	106	6A	Manufacturer P/N(IF<13 char--> 0Ah, then terminate with ASC II code 0Ah,set remaining char to 00h)	00	00000010

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

	Byte (Dec)	Byte (Hex)	Field Name and Comments	Value (Hex)	Value (Bin)
Timing Descriptor #4	108	6C	Flag	00	00000000
	109	6D	Flag	00	00000000
	110	6E	Flag	00	00000000
	111	6F	Data Type Tag ( Alphanumeric Data String (ASCII String) )	FE	11111110
	112	70	Flag	00	00000000
	113	71	Alphanumeric Data String (ASCII String) L	4C	01001100
	114	72	Alphanumeric Data String (ASCII String) P	50	01010000
	115	73	Alphanumeric Data String (ASCII String) 1	31	00110001
	116	74	Alphanumeric Data String (ASCII String) 4	34	00110100
	117	75	Alphanumeric Data String (ASCII String) 0	30	00110000
	118	76	Alphanumeric Data String (ASCII String) W	57	01010111
	119	77	Alphanumeric Data String (ASCII String) H	48	01001000
	120	78	Alphanumeric Data String (ASCII String) 7	37	00110111
	121	79	Alphanumeric Data String (ASCII String) -	2D	00101101
	122	7A	Alphanumeric Data String (ASCII String) T	54	01010100
	123	7B	Alphanumeric Data String (ASCII String) S	53	01010011
	124	7C	Alphanumeric Data String (ASCII String) A	41	01000001
	125	7D	Alphanumeric Data String (ASCII String) 1	31	00110001
Check	126	7E	Extension flag (# of optional 128 panel ID extension block to follow, Typ = 0)	00	00000000
	127	7F	Check Sum (The 1-byte sum of all 128 bytes in this panel ID block shall = 0)	52	01010010