



# Product Specification

AU OPTRONICS CORPORATION

( V ) Preliminary Specifications

( ) Final Specifications

<b>Module</b>	<b>15.6" (15.55") HD Color TFT-LCD with LED Backlight design</b>
<b>Model Name</b>	<b>B156XW03 V1 (H/W:0A)</b>
<b>Note</b> (  )	<b><i>LED Backlight with driving circuit design</i></b>

<b>Customer</b>	<b>Date</b>
<b>Checked &amp; Approved by</b>	<b>Date</b>
Note: This Specification is subject to change without notice.	

<b>Approved by</b>	<b>Date</b>
<b>Prepared by</b>	<b>Date</b>
<b>NBBU Marketing Division / AU Optronics corporation</b>	

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AU OPTRONICS CORPORATION

## Record of Revision

Version and Date	Page	Old description	New Description	Remark
0.1 2008/12/11	All	First Edition for Customer		
0.2 2008/12/15	13,20,24	Spec w/o DCR function	Spec. With DCR function	
0.3 2008/12/22	32	EDID : TBD	EDID updated	
0.4 2009/2/5	5	White Luminance 220 nits (Typ.) 187 nits (min.) <b>(I<sub>LED</sub>=20mA)</b>	White Luminance 200 nits (Typ.) 170 nits (min.) <b>(I<sub>LED</sub>=19mA)</b>	
	6	Color / Chromaticity Coordinates : TBD	Color / Chromaticity Coordinates updated	
	13	Logic power 1.0W (Typ.) 1.2W (Max.)	Logic power 0.8W (Typ.) 1.05W (Max.)	
	16	LED Forward Current : 20 mA	LED Forward Current : 19 mA	
		BLU Power 4.2W Max	BLU Power 4.13W Max	

## 1. Handling Precautions

- 1) Since front polarizer is easily damaged, pay attention not to scratch it.
- 2) Be sure to turn off power supply when inserting or disconnecting from input connector.
- 3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
- 4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
- 5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
- 6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
- 7) Do not open nor modify the Module Assembly.
- 8) Do not press the reflector sheet at the back of the module to any directions.
- 9) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
- 10) After installation of the TFT Module into an enclosure (Notebook PC Bezel, for example), do not twist nor bend the TFT Module even momentary. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.
- 11) Small amount of materials having no flammability grade is used in the LCD Module. The LCD module should be supplied by power complied with requirements of Limited Power Source (IEC60950 or UL1950), or be applied exemption.
- 12) Disconnecting power supply before handling LCD modules, it can prevent electric shock, DO NOT TOUCH the electrode parts, cables, connectors and LED circuit part of TFT module that a LED light bar build in as a light source of back light unit. It can prevent electrostatic breakdown.

## 2. General Description

B156XW03 V1 is a Color Active Matrix Liquid Crystal Display composed of a TFT LCD panel, a driver circuit, and LED backlight system. The screen format is intended to support the HD (1366(H) x 768(V)) screen and 262k colors (RGB 6-bits data driver) with LED backlight driving circuit. All input signals are LVDS interface compatible.

B156XW03 V1 is designed for a display unit of notebook style personal computer and industrial machine.

### 2.1 General Specification

The following items are characteristics summary on the table at 25 °C condition:

Items	Unit	Specifications			
Screen Diagonal	[mm]	394.9 (15.55")			
Active Area	[mm]	344.2 x 193.5			
Pixels H x V		1366x3(RGB) x 768			
Pixel Pitch	[mm]	0.252 x 0.252			
Pixel Format		R.G.B. Vertical Stripe			
Display Mode		Normally White			
White Luminance ( <b>I<sub>LED</sub>=19mA</b> ) ( <b>Note: I<sub>LED</sub> is LED current</b> )	[cd/m <sup>2</sup> ]	200 typ. (5 points average) 170 min. (5 points average)			
Luminance Uniformity		1.25 max. (5 points)			
Contrast Ratio		500 typ			
Response Time	[ms]	8 typ / 15 Max			
Nominal Input Voltage VDD	[Volt]	+3.3 typ.			
Power Consumption	[Watt]	5.4 max. (Include Logic and BLU power)			
Weight	[Grams]	425 max.			
Physical Size <b>without bracket.</b>	[mm]		Min.	Typ.	Max.
		Length	-	-	360
		Width	-	-	218
		Thickne	-	-	3.8
Electrical Interface		1 channel LVDS			
Glass Thickness	[mm]	0.5			
Surface Treatment		Glare, Hardness 3H, Reflection <5%			

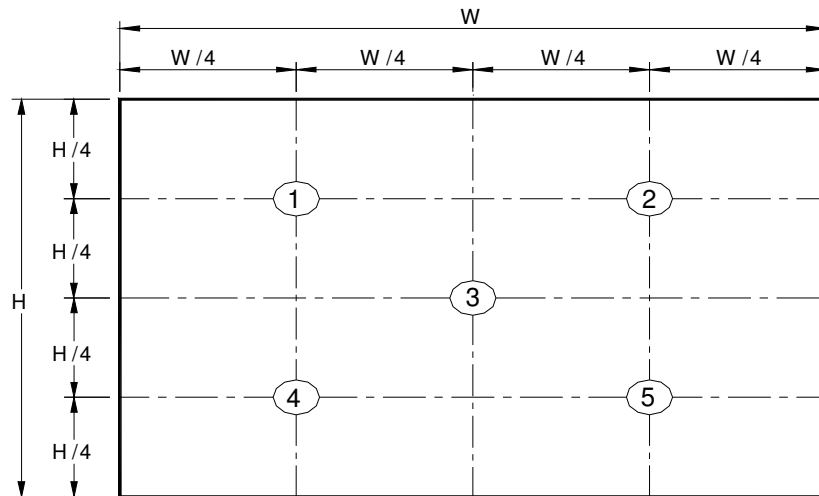
Support Color		262K colors ( RGB 6-bit )
Temperature Range Operating Storage (Non-Operating)	[°C] [°C]	0 to +50 -20 to +60
RoHS Compliance		RoHS Compliance

## 2.2 Optical Characteristics

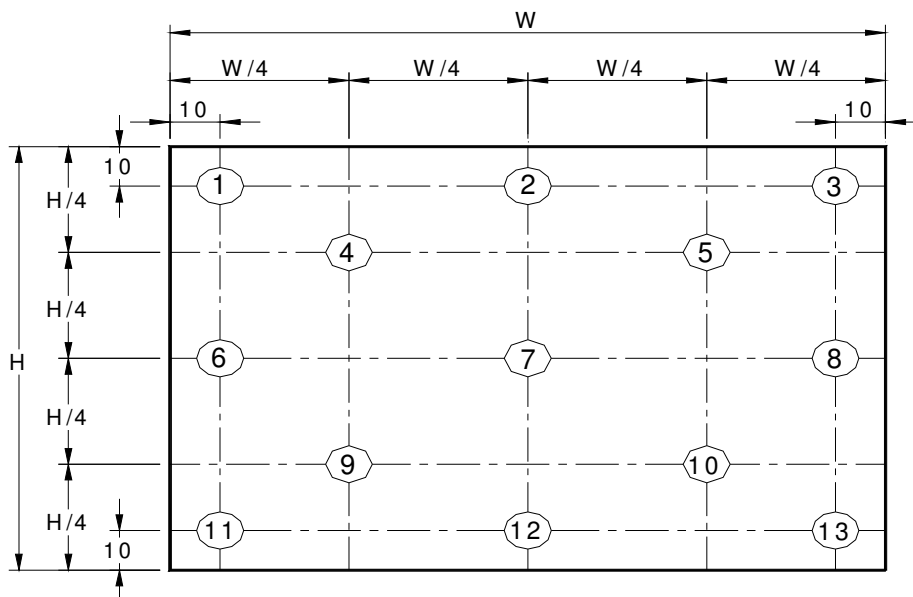
The optical characteristics are measured under stable conditions at 25°C (Room Temperature) :

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
<b>White Luminance</b> $I_{LED}=20mA$		<b>5 points average</b>	<b>170</b>	<b>200</b>	-	<b>cd/m<sup>2</sup></b>	1,4,5
<b>Viewing Angle</b>	$\theta_R$ $\theta_L$	<b>Horizontal (Right)</b> <b>CR = 10 (Left)</b>	<b>40</b> <b>40</b>	<b>45</b> <b>45</b>	- -	<b>degree</b>	4,9
	$\psi_H$ $\psi_L$	<b>Vertical (Upper)</b> <b>CR = 10 (Lower)</b>	<b>10</b> <b>30</b>	<b>15</b> <b>35</b>	- -		
<b>Luminance Uniformity</b>	$\delta_{5P}$	<b>5 Points</b>	-	-	<b>1.25</b>		1,3,4
<b>Luminance Uniformity</b>	$\delta_{13P}$	<b>13 Points</b>	-	-	<b>TBD</b>		2,3,4
<b>Contrast Ratio</b>	<b>CR</b>		<b>400</b>	<b>500</b>	-		4,6
<b>Cross talk</b>	%				<b>4</b>		4,7
<b>Response Time</b>	$T_r$	<b>Rising</b>	-	-	-	<b>msec</b>	4,8
	$T_f$	<b>Falling</b>	-	-	-		
	$T_{RT}$	<b>Rising + Falling</b>	-	<b>8</b>	<b>15</b>		
<b>Color / Chromaticity Coordinates</b>	<b>Red</b>	<b>Rx</b>	<b>CIE 1931</b>	<b>0.590</b>	<b>0.620</b>	<b>0.650</b>	4
		<b>Ry</b>		<b>0.310</b>	<b>0.340</b>	<b>0.370</b>	
	<b>Green</b>	<b>Gx</b>		<b>0.300</b>	<b>0.330</b>	<b>0.360</b>	
		<b>Gy</b>		<b>0.540</b>	<b>0.570</b>	<b>0.600</b>	
	<b>Blue</b>	<b>Bx</b>		<b>0.120</b>	<b>0.150</b>	<b>0.180</b>	
		<b>By</b>		<b>0.030</b>	<b>0.060</b>	<b>0.090</b>	
	<b>White</b>	<b>Wx</b>		<b>0.263</b>	<b>0.313</b>	<b>0.363</b>	
		<b>Wy</b>		<b>0.279</b>	<b>0.329</b>	<b>0.379</b>	
<b>NTSC</b>	%		-	<b>60</b>	-		

**Note 1:** 5 points position (Ref: Active area)



**Note 2:** 13 points position (Ref: Active area)



**Note 3:** The luminance uniformity of 5 or 13 points is defined by dividing the maximum luminance values by the minimum test point luminance

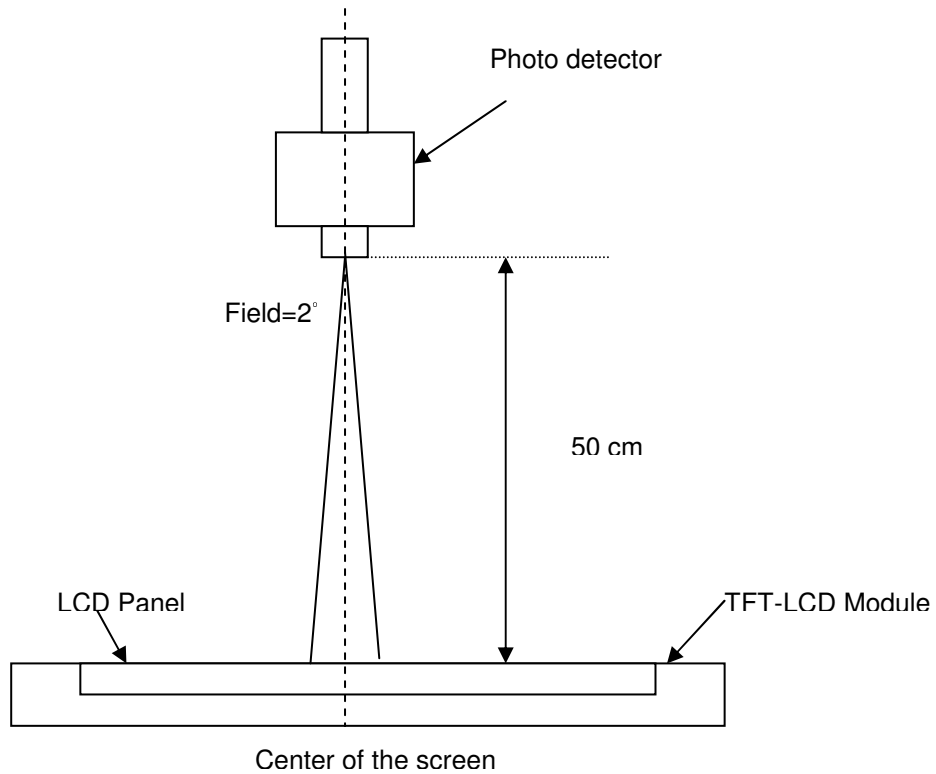
$$\delta_{w5} = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

$$\delta_{w13} = \frac{\text{Maximum Brightness of thirteen points}}{\text{Minimum Brightness of thirteen points}}$$

**Note 4:** Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should

be executed after lighting Backlight for 30 minutes in a stable, windless and dark room, and it should be measured in the center of screen.



**Note 5 :** Definition of Average Luminance of White ( $Y_L$ ):

Measure the luminance of gray level 63 at 5 points ,  $Y_L = [L (1)+ L (2)+ L (3)+ L (4)+ L (5)] / 5$

$L (x)$  is corresponding to the luminance of the point X at Figure in Note (1).

**Note 6 :** Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

$$\text{Contrast ratio (CR)} = \frac{\text{Brightness on the "White" state}}{\text{Brightness on the "Black" state}}$$

**Note 7 :** Definition of Cross Talk (CT)

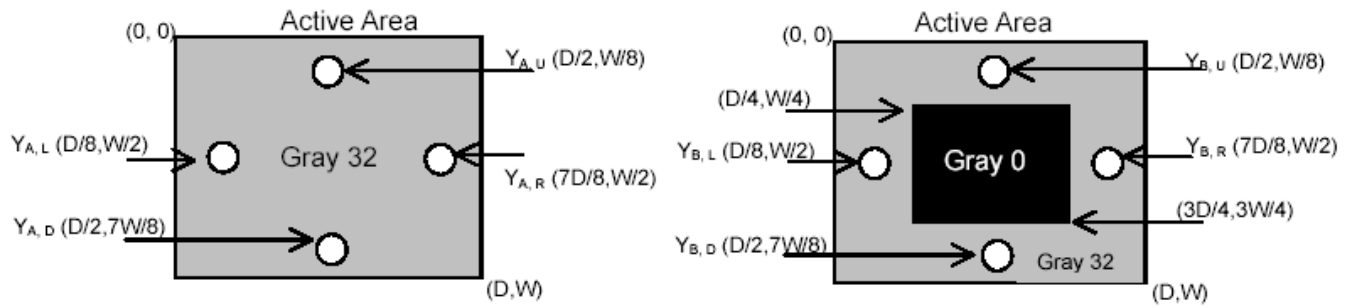
$$CT = | Y_B - Y_A | / Y_A \times 100 (\%)$$

Where

$Y_A$  = Luminance of measured location without gray level 0 pattern (cd/m<sup>2</sup>)

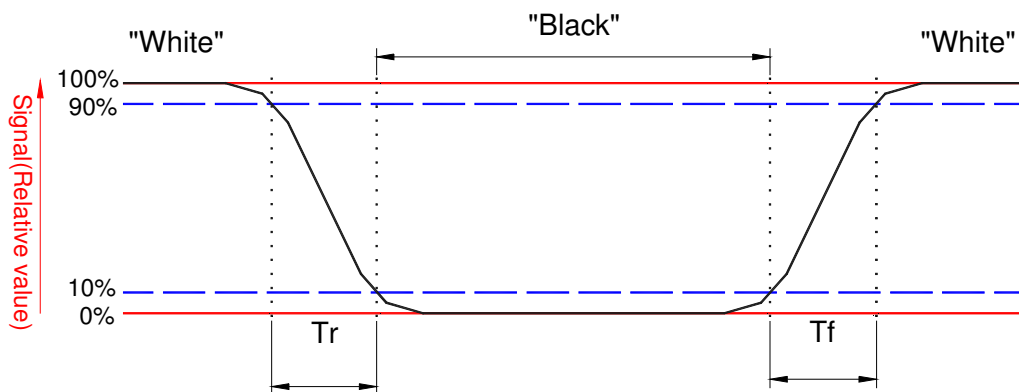
$Y_B$  = Luminance of measured location with gray level 0 pattern (cd/m<sup>2</sup>)





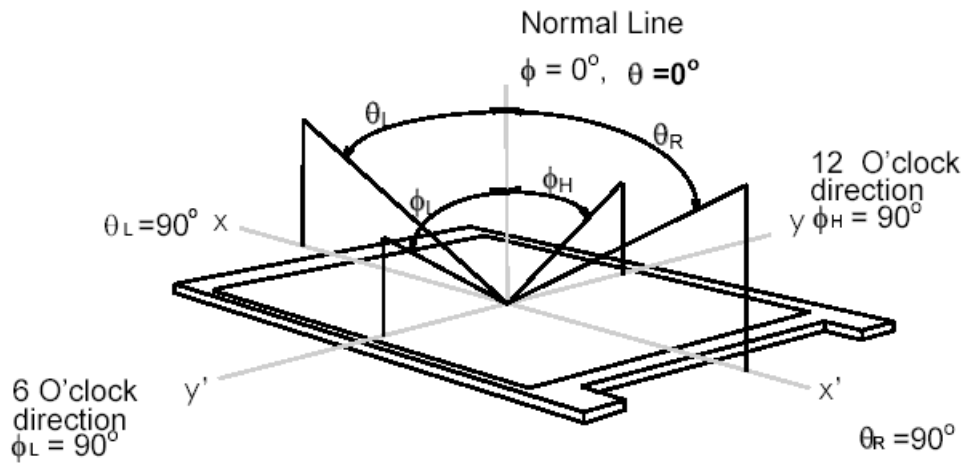
**Note 8:** Definition of response time:

The output signals of BM-7 or equivalent are measured when the input signals are changed from "Black" to "White" (falling time) and from "White" to "Black" (rising time), respectively. The response time interval between the 10% and 90% of amplitudes. Refer to figure as below.



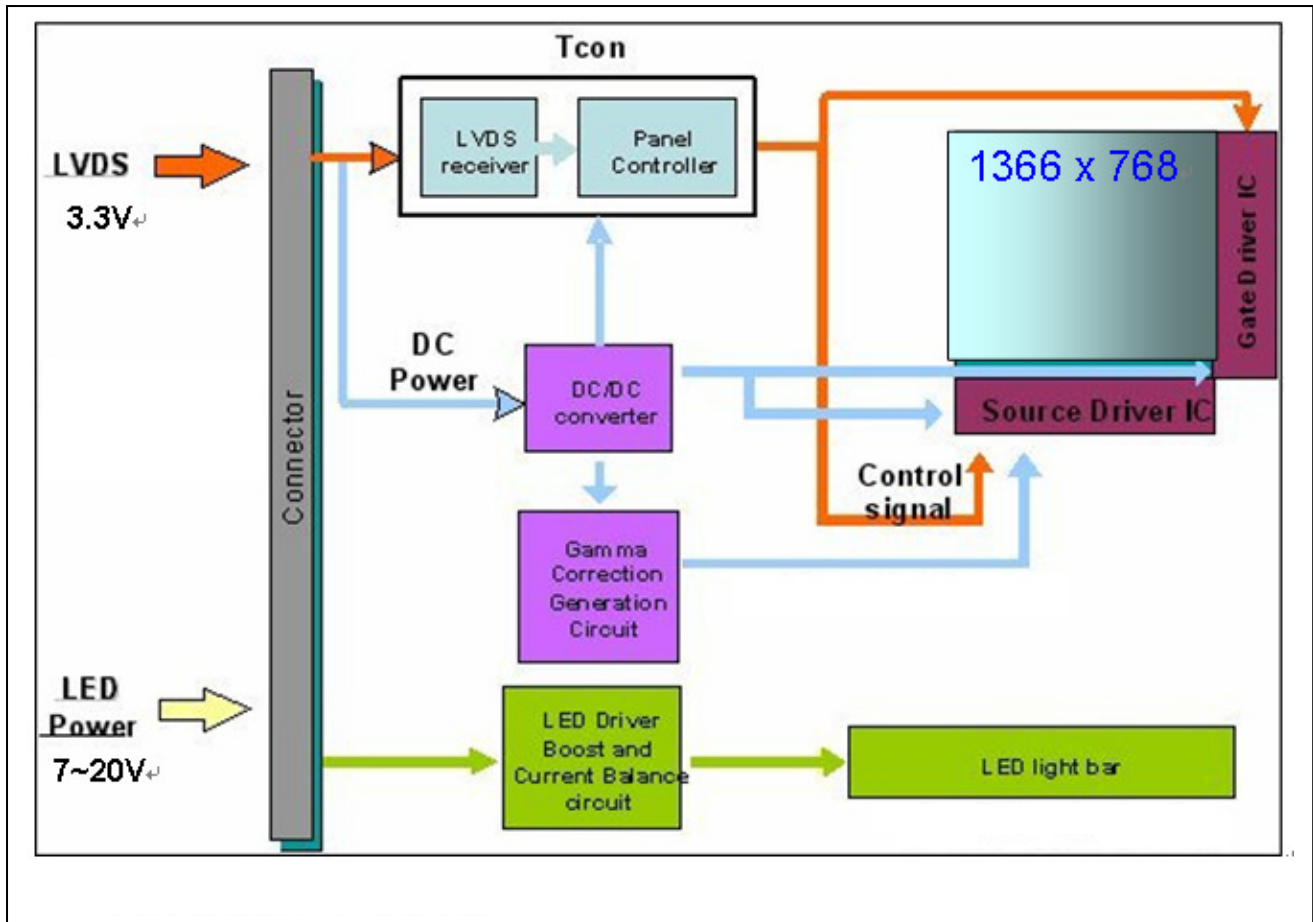
**Note 9.** Definition of viewing angle

Viewing angle is the measurement of contrast ratio  $\geq 10$ , at the screen center, over a  $180^\circ$  horizontal and  $180^\circ$  vertical range (off-normal viewing angles). The  $180^\circ$  viewing angle range is broken down as follows;  $90^\circ$  ( $\theta$ ) horizontal left and right and  $90^\circ$  ( $\phi$ ) vertical, high (up) and low (down). The measurement direction is typically perpendicular to the display surface with the screen rotated about its center to develop the desired measurement viewing angle.



## 3. Functional Block Diagram

The following diagram shows the functional block of the 15.6 inches wide Color TFT/LCD 40 Pin (One CH/connector Module)



## 4. Absolute Maximum Ratings

An absolute maximum rating of the module is as following:

### 4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive	Vin	-0.3	+4.0	[Volt]	Note 1,2

### 4.2 Absolute Ratings of Environment

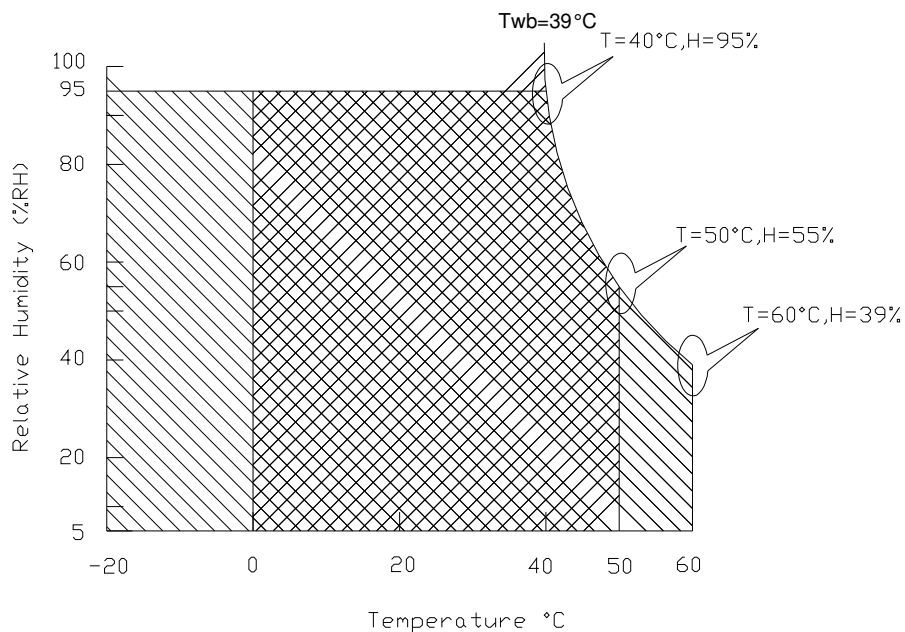
Item	Symbol	Min	Max	Unit	Conditions
Operating	TOP	0	+50	[°C]	Note 4
Operation Humidity	HOP	10	90	[%RH]	Note 4
Storage	TST	-20	+60	[°C]	Note 4
Storage Humidity	HST	10	90	[%RH]	Note 4

Note 1: At Ta (25°C )

Note 2: Permanent damage to the device may occur if exceed maximum values

Note 3: LED specification refer to section 5.2

**Note 4: For quality performance, please refer to AUO IIS (Incoming Inspection Standard).**



Operating Range 

Storage Range  + 

## 5. Electrical characteristics

### 5.1 TFT LCD Module

#### 5.1.1 Power Specification

Input power specifications are as follows;

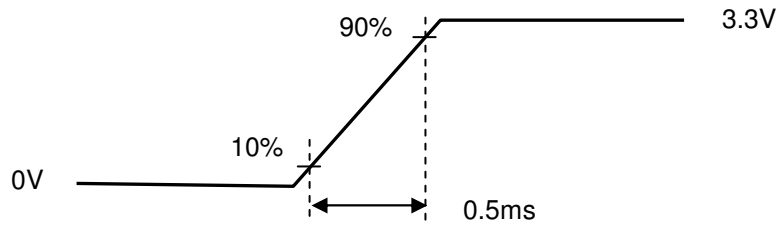
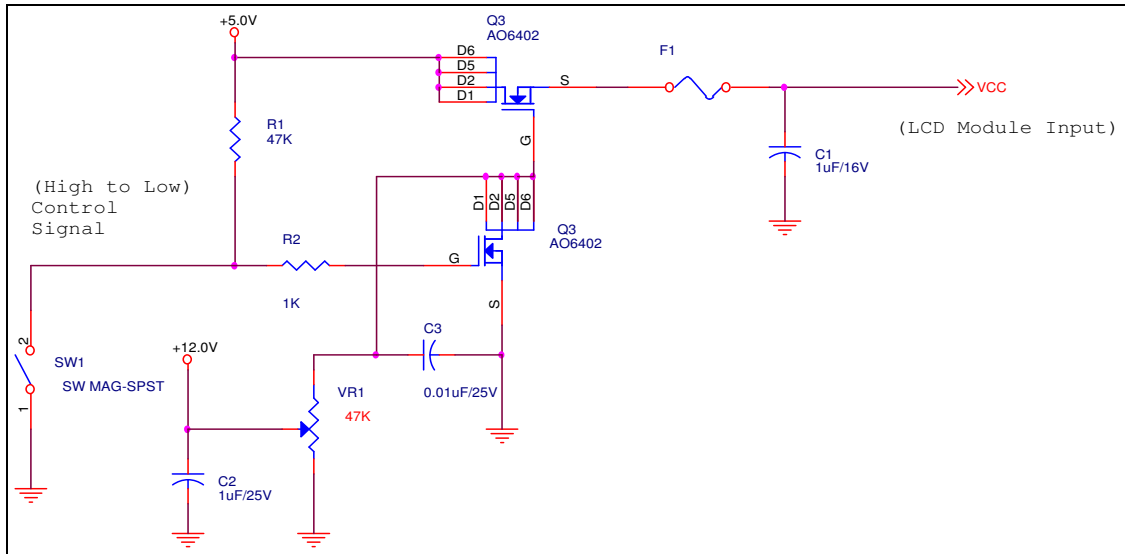
The power specification are measured under 25°C and frame frequency under 60Hz

Symble	Parameter	Min	Typ	Max	Units	Note
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	
PDD	VDD Power	-	0.8	1.05	[Watt]	Note 1/2
IDD	IDD Current	-	303	400	[mA]	Note 1/2
IRush	Inrush Current	-	-	1500	[mA]	Note 3
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	
DCR enable	Input logic high	3.0	-	5.5	[Volt]	
	Input logic low	-	-	0.8	[Volt]	
PWM signal	Input logic high	2.2	-	Vin	[Volt]	
	Input logic low	-	-	0.8	[Volt]	
B/L enable	Input logic high	2.2	-	5.5	[Volt]	
	Input logic low	-	-	0.8	[Volt]	

Note 1 : Maximum Measurement Condition : Black Pattern

Note 2 : Typical Measurement Condition: Mosaic Pattern

Note 3 : Measure Condition



**Vin rising time**

## 5.1.2 Signal Electrical Characteristics

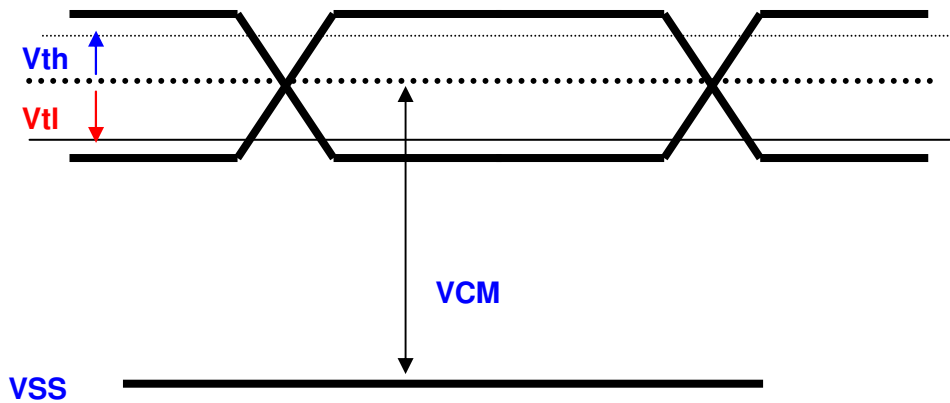
Input signals shall be low or High-impedance state when VDD is off.

It is recommended to refer the specifications of THC63LVDF84A (Thine Electronics Inc.) in detail.

Signal electrical characteristics are as follows;

Parameter	Condition	Min	Max	Unit
Vth	Differential Input High Threshold (Vcm= +1.2V)	-	100	[mV]
Vtl	Differential Input Low Threshold (Vcm= +1.2V)	-100	-	[mV]
Vcm	Differential Input Common Mode Voltage	1.125	1.375	[V]

Note: LVDS Signal Waveform



## 5.2 Backlight Unit

LED Parameter guideline for LED driving selection (Ref. Remark 1)

Parameter	Symbol	Min	Typ	Max	Units	Condition
LED Forward Voltage	$V_F$	3.0	--	3.4	[Volt]	(Ta=25°C)
LED Forward Current	$I_F$		19	30	[mA]	(Ta=25°C)
LED Power consumption	$P_{LED}$		4.07	4.13	[Watt]	(Ta=25°C) Note 1
LED Life-Time	N/A	10,000	--	--	Hour	(Ta=25°C) $I_F=20$ mA Note 2
Output PWM frequency	$F_{PWM}$	100	200	20K	Hz	
Duty ratio	--	5	--	100	%	

**Note 1:** Calculator value for reference

$$P_{LED} = V_F \text{ (Normal Distribution)} * I_F \text{ (Normal Distribution)} / \text{Efficiency}$$

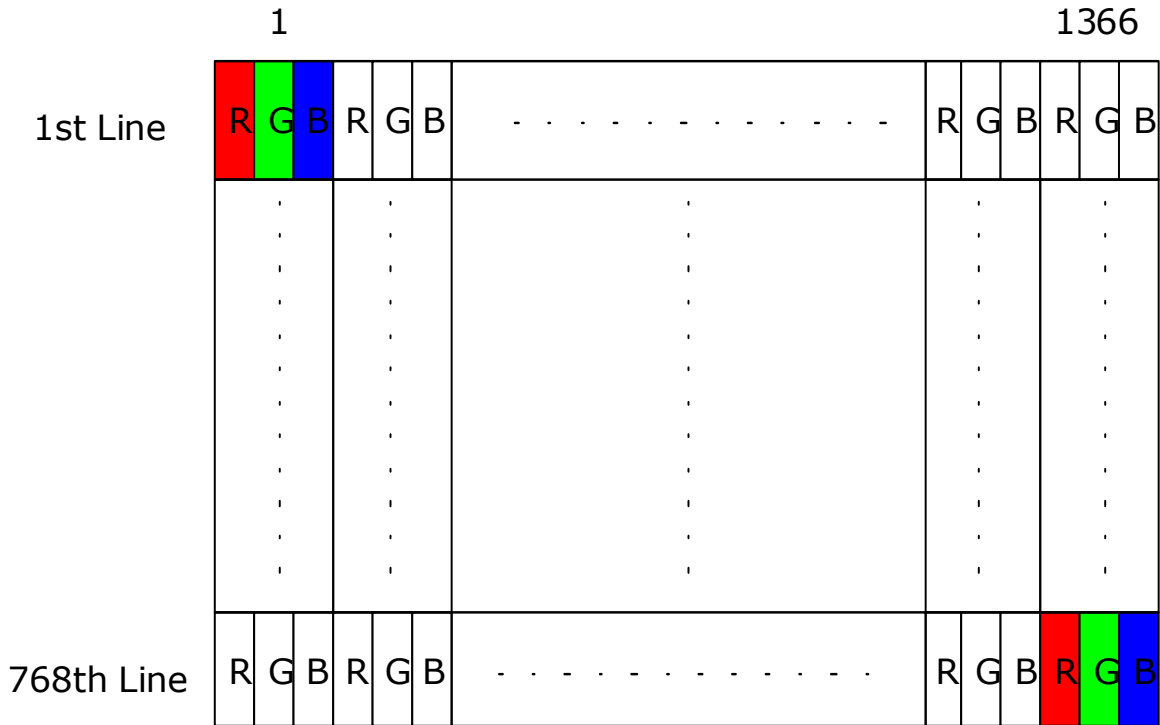
**Note 2:** The LED life-time define as the estimated time to 50% degradation of initial luminous.



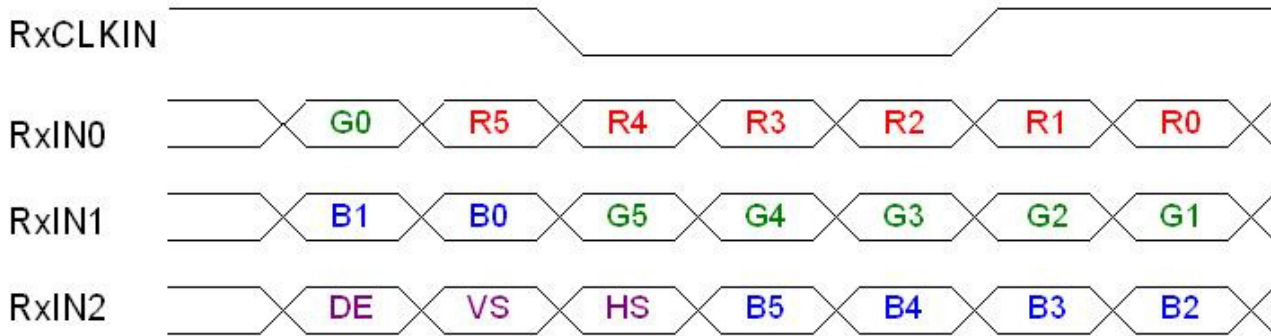
## 6. Signal Characteristic

### 6.1 Pixel Format Image

Following figure shows the relationship of the input signals and LCD pixel format.



## 6.2 The input data format



Signal Name	Description	
R5 R4 R3 R2 R1 R0	Red Data 5 (MSB) Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0 (LSB)	Red-pixel Data Each red pixel's brightness data consists of these 6 bits pixel data.
	Red-pixel Data	
G5 G4 G3 G2 G1 G0	Green Data 5 (MSB) Green Data 4 Green Data 3 Green Data 2 Green Data 1 Green Data 0 (LSB)	Green-pixel Data Each green pixel's brightness data consists of these 6 bits pixel data.
	Green-pixel Data	
B5 B4 B3 B2 B1 B0	Blue Data 5 (MSB) Blue Data 4 Blue Data 3 Blue Data 2 Blue Data 1 Blue Data 0 (LSB)	Blue-pixel Data Each blue pixel's brightness data consists of these 6 bits pixel data.
	Blue-pixel Data	
RxCLKIN	Data Clock	The signal is used to strobe the pixel data and DE signals. All pixel data shall be valid at the falling edge when the DE signal is high.
DE	Display Timing	This signal is strobed at the falling edge of RxCLKIN. When the signal is high, the pixel data shall be valid to be displayed.
VS	Vertical Sync	The signal is synchronized to RxCLKIN .
HS	Horizontal Sync	The signal is synchronized to RxCLKIN .

**Note:** Output signals from any system shall be low or High-impedance state when VDD is off.



## 6.3 Integration Interface and Pin Assignment

LVDS is a differential signal technology for LCD interface and high speed data transfer device.

PIN#	Signal Name	Description
1	NC	No connection
2	VDD	Power Supply +3.3V
3	VDD	Power Supply +3.3V
4	VEDID	EDID +3.3V Power
5	Aging	Aging (AUO reserve)
6	CLKEDID	EDID Clock Input
7	DATAEDID	EDID Data Input
8	RxOIN0-	-LVDS Differential Data INPUT(Odd R0-R5,G0)
9	RxOIN0+	+LVDS Differential Data INPUT(Odd R0-R5,G0)
10	VSS	Ground
11	RxOIN1-	-LVDS Differential Data INPUT(Odd G1-G5,B0-B1)
12	RxOIN1+	+LVDS Differential Data INPUT(Odd G1-G5,B0-B1)
13	VSS	Ground
14	RxOIN2-	-LVDS Differential Data INPUT(Odd B2-B5,HS,VS,DE)
15	RxOIN2+	+LVDS Differential Data INPUT(Odd B2-B5,HS,VS,DE)
16	VSS	Ground
17	RxOCKIN-	-LVDS Odd Differential Clock INPUT
18	RxOCKIN+	-LVDS Odd Differential Clock INPUT
19	VSS	Ground
20	NC	No connection
21	NC	No connection
22	VSS	Ground
23	NC	No connection
24	NC	No connection
25	VSS	Ground
26	NC	No connection
27	NC	No connection
28	VSS	Ground
29	NC	No connection
30	NC	No connection
31	<b>VLED_GND</b>	<b>LED Ground</b>
32	<b>VLED_GND</b>	<b>LED Ground</b>
33	<b>VLED_GND</b>	<b>LED Ground</b>
34	NC	No connection

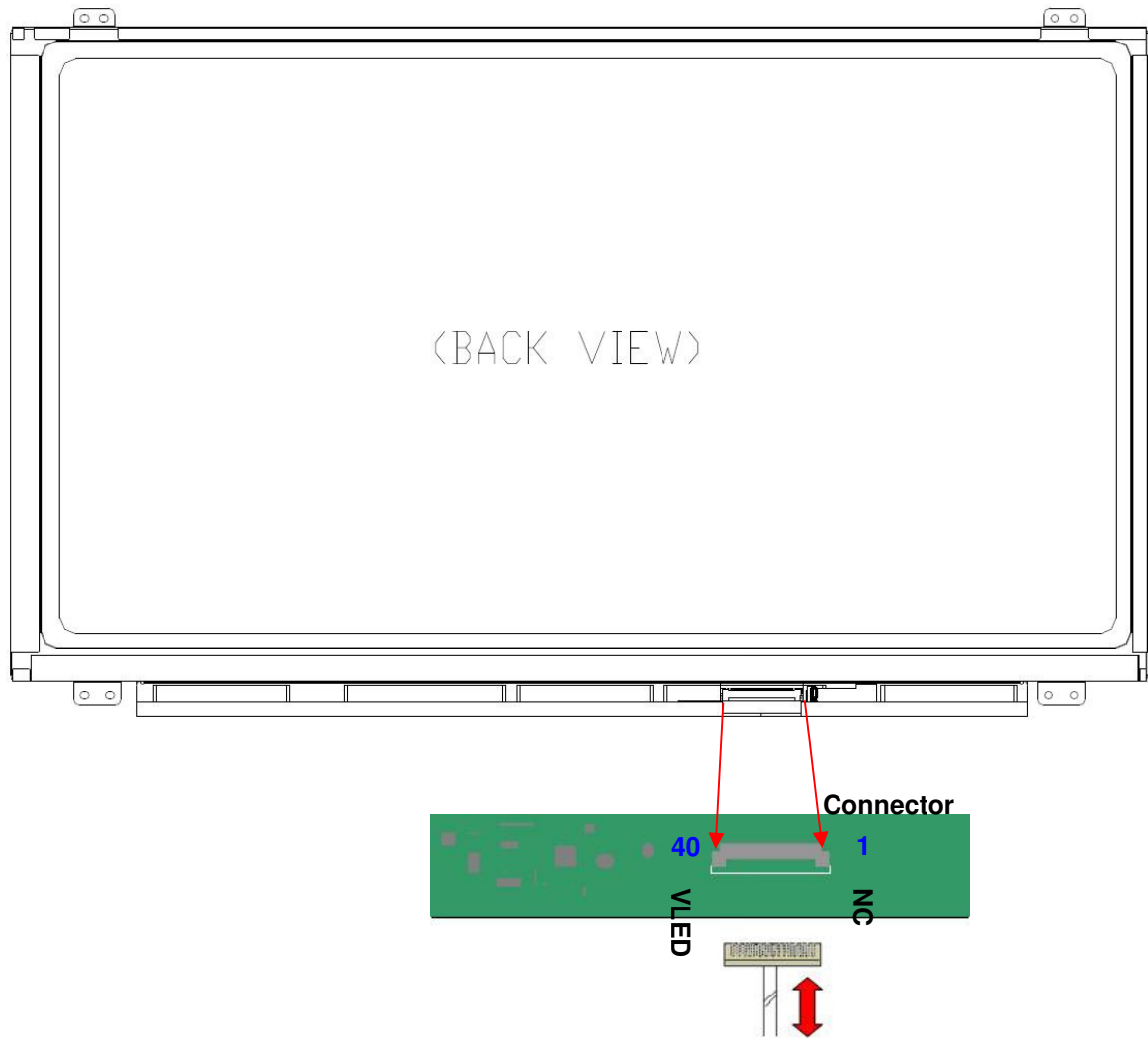


# Product Specification

AU OPTRONICS CORPORATION

35	<b>S_PWMIN</b>	<b>System PWM signal Input</b>
36	<b>BL_ON</b>	<b>LED Enable pin (+3V input, +5V tolerance )</b>
37	<b>DCR_EN</b>	<b>Dynamic Backlight Control (High Enable)</b>
38	<b>VLED</b>	<b>LED Power Supply 7V-20V</b>
39	<b>VLED</b>	<b>LED Power Supply 7V-20V</b>
40	<b>VLED</b>	<b>LED Power Supply 7V-20V</b>

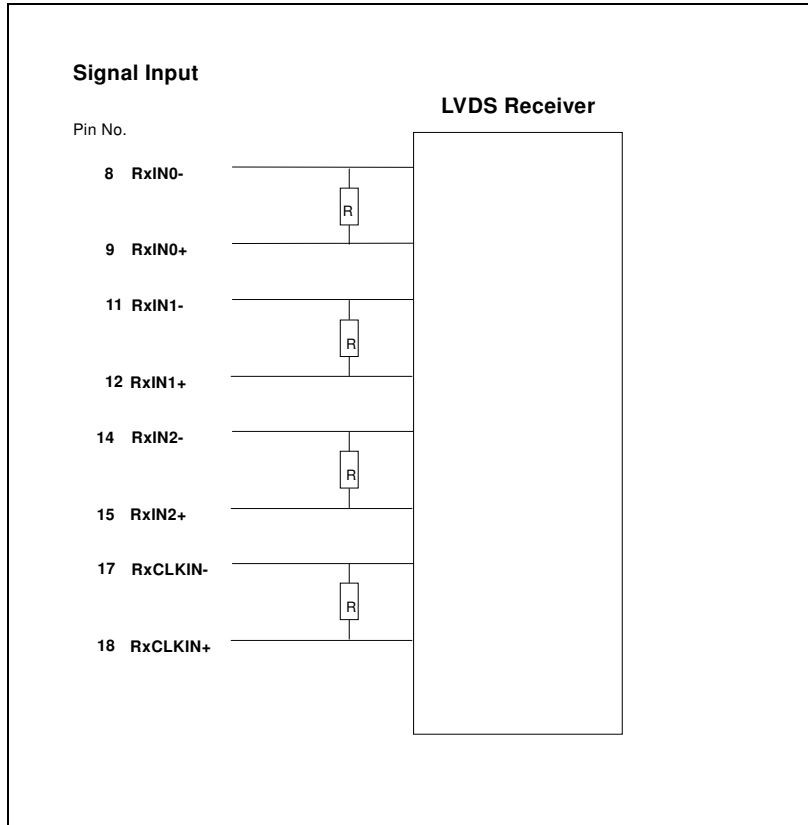
**Note1:** Start from right side



**Note2:** Input signals shall be low or High-impedance state when VDD is off.

Internal circuit of LVDS inputs are as following.

The module uses a 100ohm resistor between positive and negative data lines of each receiver input



## 6.4 Interface Timing

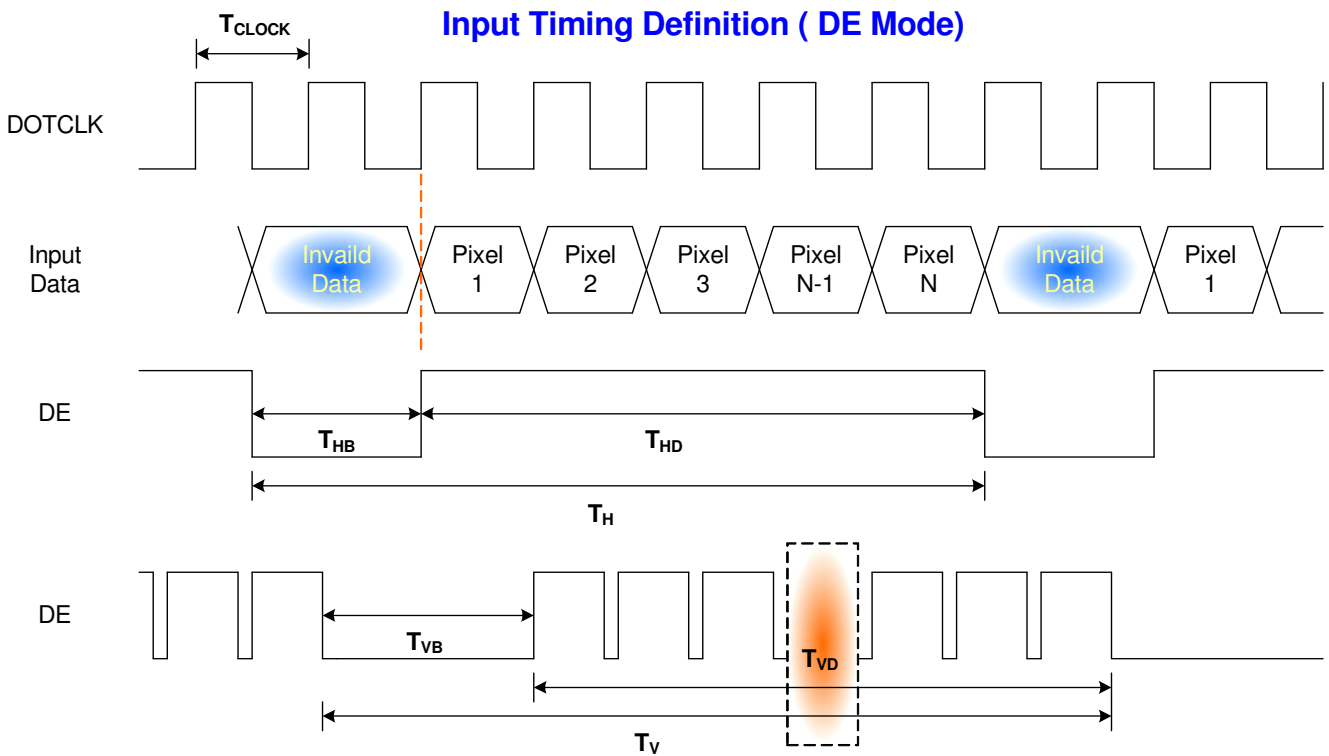
### 6.4.1 Timing Characteristics

Basically, interface timings should match the 1366x768 /60Hz manufacturing guide line timing.

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Frame Rate	-	50	60	-	Hz	
Clock frequency	$1 / T_{\text{Clock}}$	65	70	80	MHz	
Vertical Section	Period	$T_V$	780	808	-	$T_{\text{Line}}$
	Active	$T_{VD}$	768			
	Blanking	$T_{VB}$	12	23	-	
Horizontal Section	Period	$T_H$	1400	1440	-	$T_{\text{Clock}}$
	Active	$T_{HD}$	1366			
	Blanking	$T_{HB}$	34	160	-	

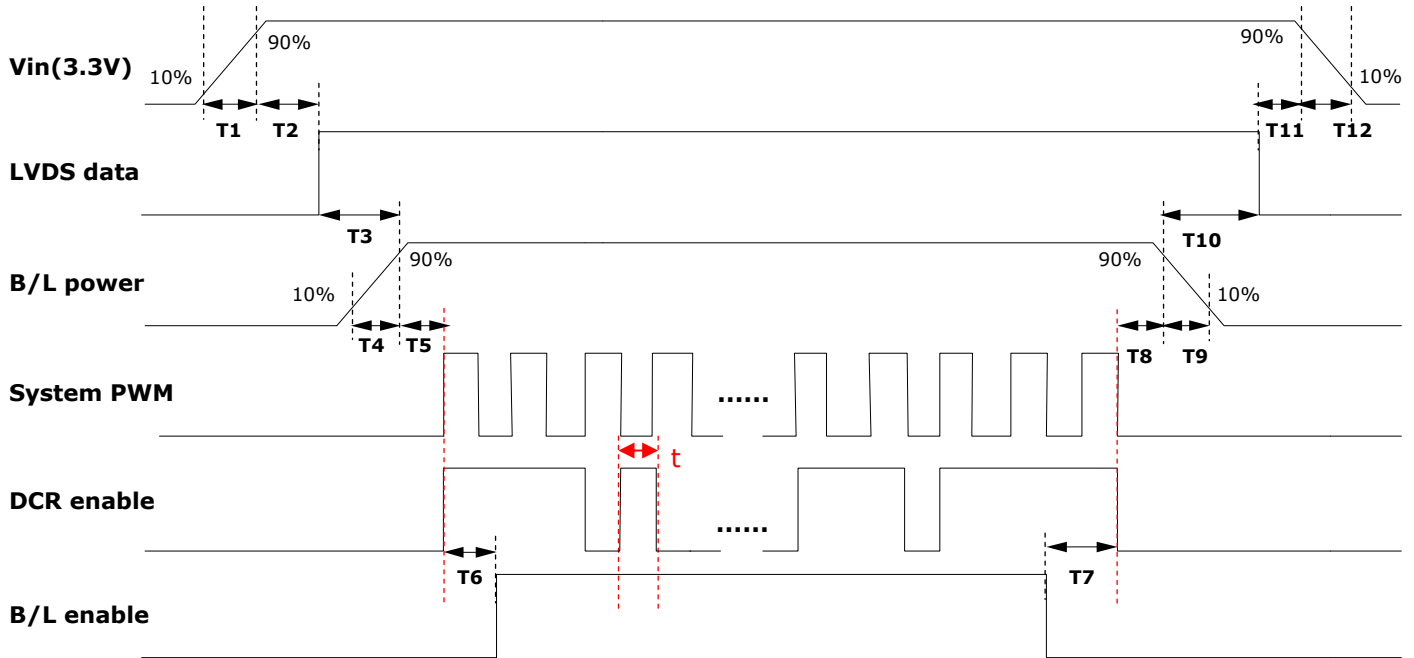
Note : DE mode only

### 6.4.2 Timing diagram



## 6.5 Power ON/OFF Sequence

VDD power on/off & LED On/Off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off



Parameter	Value (ms)		
	Min.	Typ.	Max.
T1	<b>0.5</b>	-	<b>10</b>
T2	<b>30</b>	<b>40</b>	<b>90</b>
T3	<b>200</b>	-	-
T4	<b>0.5</b>	-	<b>10</b>
T5	<b>10</b>	-	-
T6	<b>10</b>	-	-
T7	<b>0</b>	-	-
T8	<b>10</b>	-	-
T9	-	<b>10</b>	<b>30</b>
T10	<b>200</b>	-	-
T11	<b>0</b>	-	<b>50</b>
T12	-	<b>10</b>	<b>30</b>





## 7. Connector Description

Physical interface is described as for the connector on module.

These connectors are capable of accommodating the following signals and will be following components.

### 7.1 TFT LCD Module

<b>Connector Name / Designation</b>	<b>For Signal Connector</b>
Manufacturer	IPEX or compatible
Type / Part Number	<b>IPEX 20455-040E-12A</b> or compatible
Mating Housing / Part Number	<b>IPEX 20453-040T-11</b> or compatible



## 8. LED Driving Specification

### 8.1 Connector Description

It is a integrative interface and comibe into LVDS connector. The type and mating refer to section 7.

### 8.2 Pin Assignment

Ref. to 6.3



## 9. Vibration and Shock Test

### 9.1 Vibration Test

**Test Spec:**

- Test method: Non-Operation
- Acceleration: 1.5 G
- Frequency: 10 - 500Hz Random
- Sweep: 30 Minutes each Axis (X, Y, Z)

### 9.2 Shock Test Spec:

**Test Spec:**

- Test method: Non-Operation
- Acceleration: 220 G , Half sine wave
- Active time: 2 ms
- Pulse: X,Y,Z .one time for each side

## 10. Reliability

Items	Required Condition	Note
Temperature Humidity Bias	Ta= 40°C, 90%RH, 300h	
High Temperature Operation	Ta= 50°C, Dry, 300h	
Low Temperature Operation	Ta= 0°C, 300h	
High Temperature Storage	Ta= 60°C, 35%RH, 300h	
Low Temperature Storage	Ta= -20°C, 50%RH, 250h	
Thermal Shock Test	Ta=-20°Cto 60°C, Duration at 30 min, 100 cycles	
ESD	Contact : ±8 KV Air : ±15 KV	Note 1

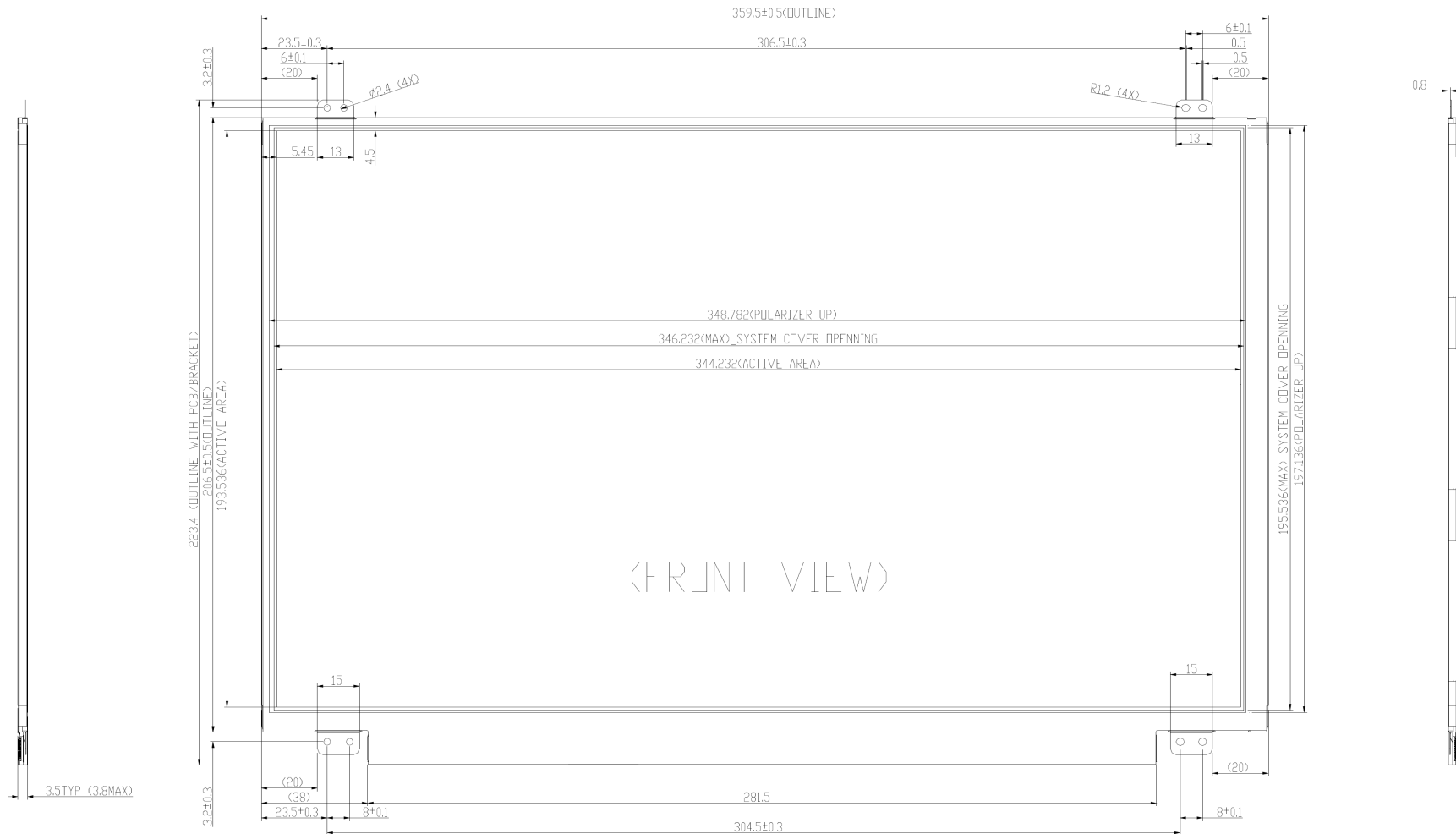
**Note1:** According to EN 61000-4-2 , ESD class B: Some performance degradation allowed.

No data lost. Self-recoverable. No hardware failures.

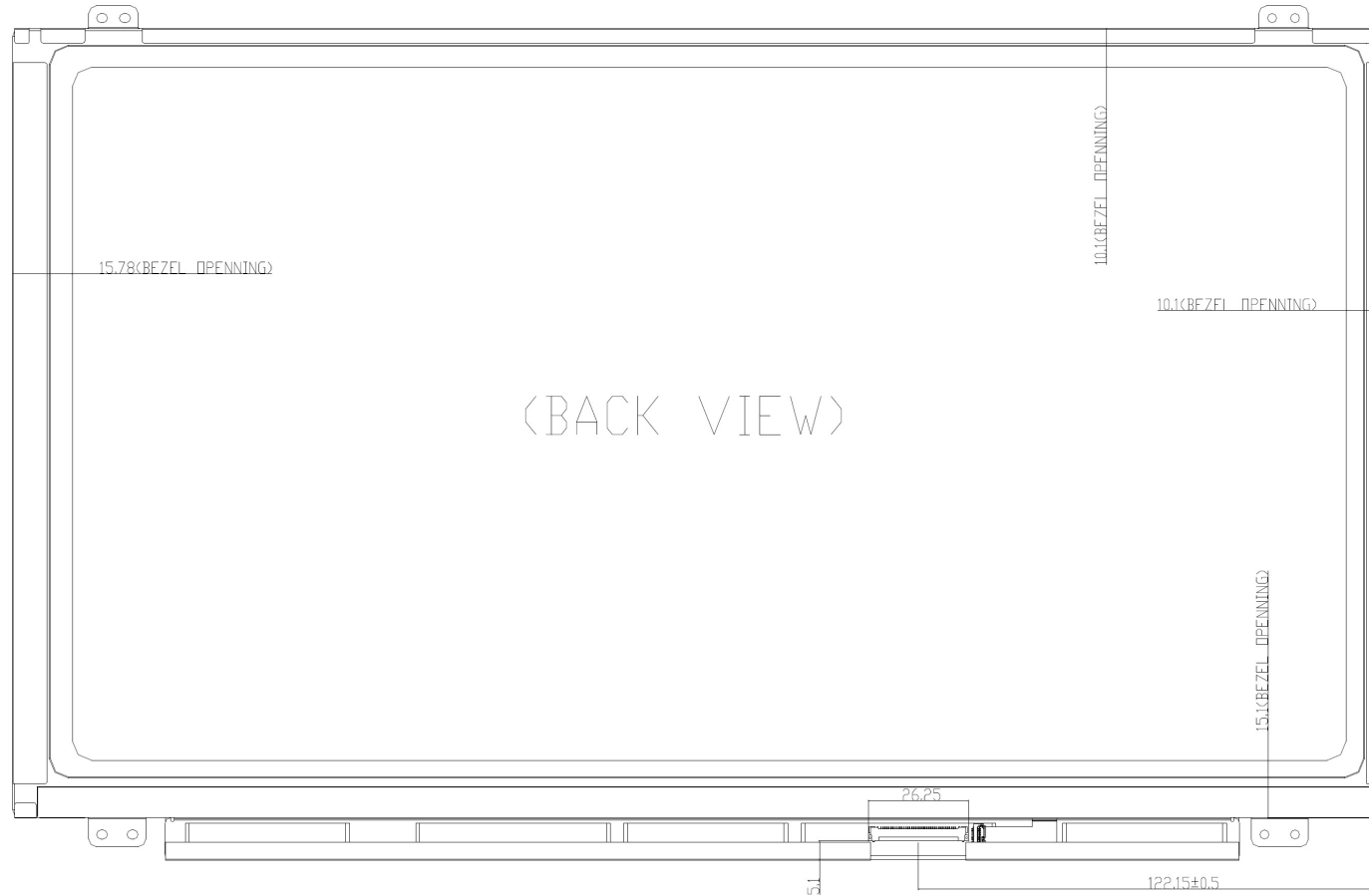
**Remark:** MTBF (Excluding the LED): 30,000 hours with a confidence level 90%

## 11. Mechanical Characteristics

### 11.1 LCM Outline Dimension

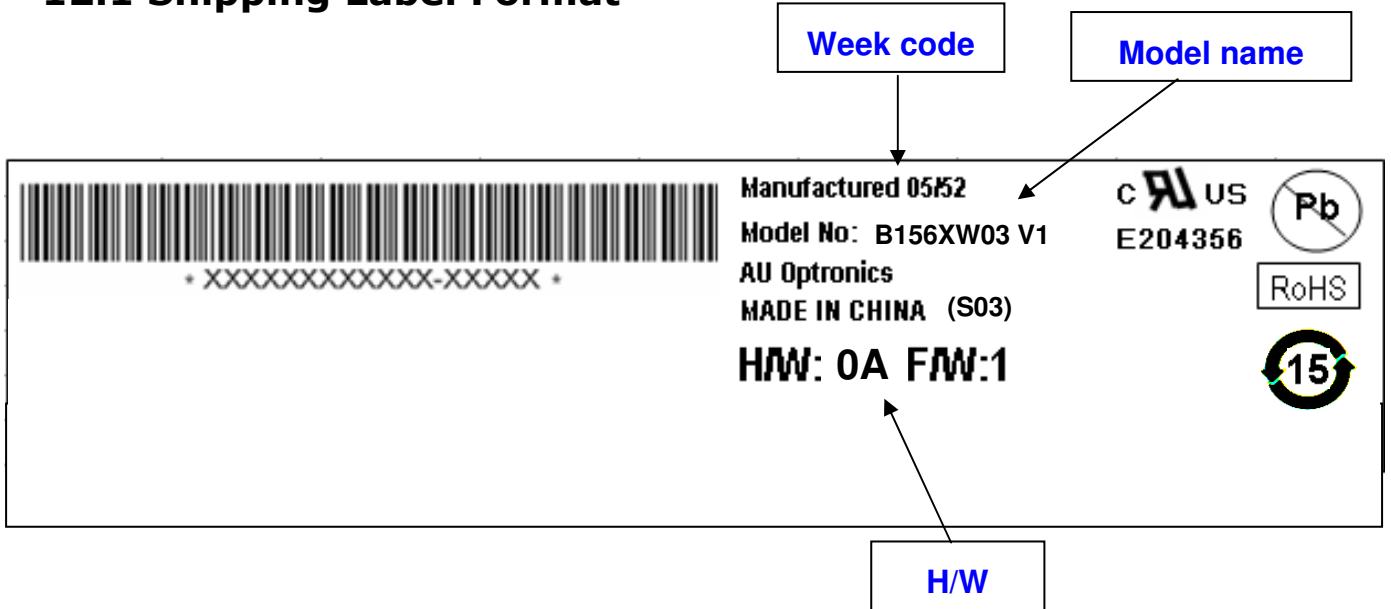


Note: Prevention IC damage, IC positions not allowed any overlap over these areas.



## 12. Shipping and Package

### 12.1 Shipping Label Format





12.2 Carton package

TBD

12.3 Shipping package of palletizing sequence

TBD

13. Appendix: EDID description

Address	FUNCTION	Value	Value	Value	Note
HEX		HEX	BIN	DEC	
00	Header	00	00000000	0	
01		FF	11111111	255	
02		FF	11111111	255	
03		FF	11111111	255	
04		FF	11111111	255	
05		FF	11111111	255	
06		FF	11111111	255	
07		00	00000000	0	
08	EISA Manuf. Code LSB	06	00000110	6	
09	Compressed ASCII	AF	10101111	175	
0A	Product Code	EC	11101100	236	
0B	hex, LSB first	31	00110001	49	
0C	32-bit ser #	00	00000000	0	
0D		00	00000000	0	
0E		00	00000000	0	
0F		00	00000000	0	
10	Week of manufacture	01	00000001	1	
11	Year of manufacture	13	00010011	19	
12	EDID Structure Ver.	01	00000001	1	
13	EDID revision #	03	00000011	3	
14	<b>Video input def. (digital I/P, non-TMDS, CRGB)</b>	80	10000000	128	
15	<b>Max H image size (rounded to cm)</b>	22	00100010	34	





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<b>16</b>	<b>Max V image size (rounded to cm)</b>	13	00010011	19	
<b>17</b>	<b>Display Gamma (=gamma*100)-100)</b>	78	01111000	120	
<b>18</b>	<b>Feature support (no DPMS, Active OFF, RGB, tmg Blk#1)</b>	0A	00001010	10	
<b>19</b>	Red/green low bits (Lower 2:2:2:2 bits)	6B	01101011	107	
<b>1A</b>	Blue/white low bits (Lower 2:2:2:2 bits)	2A	00101010	42	
<b>1B</b>	Red x (Upper 8 bits)	9D	10011101	157	
<b>1C</b>	Red y/ highER 8 bits	4C	01001100	76	
<b>1D</b>	Green x	42	01000010	66	
<b>1E</b>	Green y	84	10000100	132	
<b>1F</b>	Blue x	1C	00011100	28	
<b>20</b>	Blue y	0D	00001101	13	
<b>21</b>	White x	48	01001000	72	
<b>22</b>	White y	4C	01001100	76	
<b>23</b>	Established timing 1	00	00000000	0	
<b>24</b>	Established timing 2	00	00000000	0	
<b>25</b>	Established timing 3	00	00000000	0	
<b>26</b>	Standard timing #1	01	00000001	1	
<b>27</b>		01	00000001	1	
<b>28</b>	Standard timing #2	01	00000001	1	
<b>29</b>		01	00000001	1	
<b>2A</b>	Standard timing #3	01	00000001	1	
<b>2B</b>		01	00000001	1	
<b>2C</b>	Standard timing #4	01	00000001	1	
<b>2D</b>		01	00000001	1	
<b>2E</b>	Standard timing #5	01	00000001	1	
<b>2F</b>		01	00000001	1	
<b>30</b>	Standard timing #6	01	00000001	1	
<b>31</b>		01	00000001	1	
<b>32</b>	Standard timing #7	01	00000001	1	
<b>33</b>		01	00000001	1	
<b>34</b>	Standard timing #8	01	00000001	1	
<b>35</b>		01	00000001	1	
<b>36</b>	Pixel Clock/10000 LSB	58	01011000	88	
<b>37</b>	Pixel Clock/10000 USB	1B	00011011	27	
<b>38</b>	Horz active Lower 8bits	56	01010110	86	
<b>39</b>	Horz blanking Lower 8bits	67	01100111	103	
<b>3A</b>	Horz Act: Horz Blnk Upper 4:4 bits	50	01010000	80	
<b>3B</b>	Vertical Active Lower 8bits	00	00000000	0	



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<b>3C</b>	Vertical Blanking Lower 8bits	1A	00011010	26	
<b>3D</b>	Vert Act : Vertical Blanking (upper 4:4 bit)	30	00110000	48	
<b>3E</b>	Horz Sync. Offset	30	00110000	48	
<b>3F</b>	Horz Sync.Width	20	00100000	32	
<b>40</b>	Vert Sync.Offset : Vert Sync.Width	36	00110110	54	
<b>41</b>	Horz & Vert Sync Offset/Width Upper 2bits	00	00000000	0	
<b>42</b>	Horizontal Image Size Lower 8bits	58	01011000	88	
<b>43</b>	Vertical Image Size Lower 8bits	C1	11000001	193	
<b>44</b>	Horizontal & Vertical Image Size (upper 4:4 bits)	10	00010000	16	
<b>45</b>	Horizontal Border (zero for internal LCD)	00	00000000	0	
<b>46</b>	Vertical Border (zero for internal LCD)	00	00000000	0	
<b>47</b>	Signal (non-intr, norm, no stero, sep sync, neg pol)	18	00011000	24	
<b>48</b>	Detailed timing/monitor	00	00000000	0	
<b>49</b>	descriptor #2	00	00000000	0	
<b>4A</b>		00	00000000	0	
<b>4B</b>		0F	00001111	15	
<b>4C</b>		00	00000000	0	
<b>4D</b>		00	00000000	0	
<b>4E</b>		00	00000000	0	
<b>4F</b>		00	00000000	0	
<b>50</b>		00	00000000	0	
<b>51</b>		00	00000000	0	
<b>52</b>		00	00000000	0	
<b>53</b>		00	00000000	0	
<b>54</b>		00	00000000	0	
<b>55</b>		00	00000000	0	
<b>56</b>		00	00000000	0	
<b>57</b>		00	00000000	0	
<b>58</b>		00	00000000	0	
<b>59</b>		20	00100000	32	
<b>5A</b>	Detailed timing/monitor	00	00000000	0	
<b>5B</b>	descriptor #3	00	00000000	0	
<b>5C</b>		00	00000000	0	
<b>5D</b>		FE	11111110	254	
<b>5E</b>		00	00000000	0	
<b>5F</b>	Manufacture	41	01000001	65	A
<b>60</b>	Manufacture	55	01010101	85	U
<b>61</b>	Manufacture	4F	01001111	79	O
<b>62</b>		0A	00001010	10	



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<b>63</b>		20	00100000	32	
<b>64</b>		20	00100000	32	
<b>65</b>		20	00100000	32	
<b>66</b>		20	00100000	32	
<b>67</b>		20	00100000	32	
<b>68</b>		20	00100000	32	
<b>69</b>		20	00100000	32	
<b>6A</b>		20	00100000	32	
<b>6B</b>		20	00100000	32	
<b>6C</b>	Detailed timing/monitor	00	00000000	0	
<b>6D</b>	descriptor #4	00	00000000	0	
<b>6E</b>		00	00000000	0	
<b>6F</b>		FE	11111110	254	
<b>70</b>		00	00000000	0	
<b>71</b>	Manufacture P/N	42	01000010	66	B
<b>72</b>	Manufacture P/N	31	00110001	49	1
<b>73</b>	Manufacture P/N	35	00110101	53	5
<b>74</b>	Manufacture P/N	36	00110110	54	6
<b>75</b>	Manufacture P/N	58	01011000	88	X
<b>76</b>	Manufacture P/N	57	01010111	87	W
<b>77</b>	Manufacture P/N	30	00110000	48	0
<b>78</b>	Manufacture P/N	33	00110011	51	3
<b>79</b>	Manufacture P/N	20	00100000	32	
<b>7A</b>	Manufacture P/N	56	01010110	86	V
<b>7B</b>	Manufacture P/N	31	00110001	49	1
<b>7C</b>		20	00100000	32	
<b>7D</b>		0A	00001010	10	
<b>7E</b>	Extension Flag	00	00000000	0	
<b>7F</b>	Checksum	48	01001000	72	