Product Specification
AU OPTRONICS CORPORATION

( ) **Preliminary Specifications**
(✓) **Final Specifications**

Module	15.6" (15.55) FHD 16:9 Color TFT-LCD with *LED Backlight* design
Model Name	B156HTN02.1 (HW:1A)
Note (⊕)	LED Backlight with driving circuit design

Customer	Date
Checked & Approved by	**Date**

Note: This Specification is subject to change without notice.

Approved by	Date
Buffy Chen	09/01/2012
Prepared by	**Date**
Hsiang YI Chen	09/01/2012

NBBU Marketing Division / AU Optronics corporation

Product Specification
AU OPTRONICS CORPORATION
Contents

Record of Revision

Version and Date	Page	Old description	New Description	Remark
0.1 2012/06/01	All	Preliminary Edition for Customer		
1.0 2012/09/01	All		Final Edition for Customer	

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.

11)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.

12)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.

13)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 electros tic breakdown.

2. General Description

B156HTN02.1 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 16:9 FHD (1920(H) x 1080(V)) screen and 262k colors (RGB 6-bits data driver) with LED backlight driving circuit. All input signals are LVDS interface compatible.

B156HTN02.1 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 ℃ condition:

Items	Unit	Specifications			
Screen Diagonal	[mm]	15.6'' (15.55)			
Active Area	[mm]	344.16 x 193.59			
Pixels H x V		1920 x 3(RGB) x 1080			
Pixel Pitch	[mm]	0.17925 x 0.17925			
Pixel Format		R.G.B. Vertical Stripe			
Display Mode		Normally White			
White Luminance (I_{LED}=20mA) (Note: I_{LED} is LED current)	[cd/m^2]	300 Typ. (5 points average) 255 Min. (5 points average)			
Luminance Uniformity		1.25 Max. (5 points)			
Contrast Ratio		400 :1 Typ			
Response Time	[ms]	8 Typ / 16 Max.			
Nominal Input Voltage VDD	[Volt]	+3.3 Typ.			
Power Consumption	[Watt]	8.0 Max. (Include Logic and BLU Power)			
Weight	[Grams]	440 Max.			
Physical Size **Without inverter, bracket.**	[mm]		Min.	Typ.	Max.
		Length	359.0	359.5	360
		Width	223.3	223.8	224.3
		Thickness			4.1
Electrical Interface		2 channel LVDS			
Glass Thickness	[mm]	0.5			
Surface Treatment		Anti-Glare			
Support Color		262K colors (RGB 6-bit)			
Temperature Range Operating Storage (Non-Operating)	[ºC] [ºC]	0 to +50 -20 to +60			
RoHS Compliance		RoHS Compliance			

## 2.2 Optical Characteristics

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

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
White Luminance ILED=20mA			5 points average	255	300	-	cd/m²	1, 4, 5
Viewing Angle		θR θL	Horizontal (Right) CR = 10 (Left)	60 60	70 70	- -	degree	4, 9
		ψH ψL	Vertical (Upper) CR = 10 (Lower)	45 50	60 60	- -		
Luminance Uniformity		δ5P	5 Points	-	-	1.25		1, 3, 4
Luminance Uniformity		δ13P	13 Points	-	-	1.53		2, 3, 4
Contrast Ratio		CR		300	400	-		4, 6
Cross talk		%				4		4, 7
Response Time		TRT	Rising + Falling	-	8	16	msec	4, 8
Color / Chromaticity Coodinates	Red	Rx	CIE 1931	0.590	0.620	0.650		4
		Ry		0.320	0.350	0.380		
	Green	Gx		0.290	0.320	0.350		
		Gy		0.570	0.600	0.630		
	Blue	Bx		0.120	0.150	0.180		
		By		0.090	0.120	0.150		
	White	Wx		0.283	0.313	0.343		
		Wy		0.299	0.329	0.359		
NTSC		%		--	60			

Note 1: 5 points position (Ref: Active area)
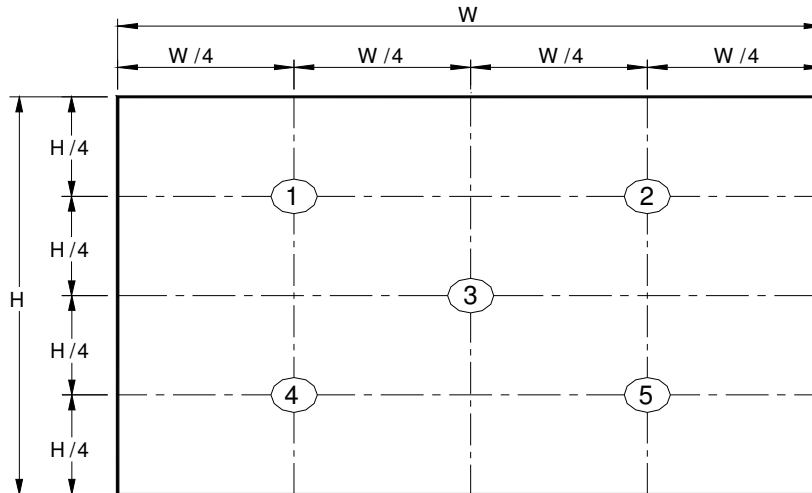
Note 2: 13 points position (Ref: Active area)
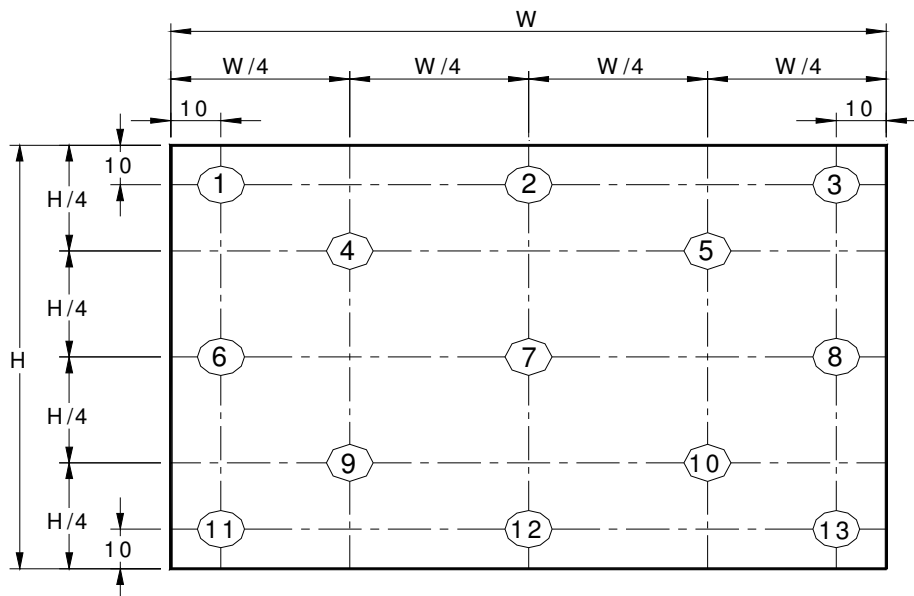
Note 3: The luminance uniformity of 5 or13 points is defined by dividing the maximum luminance values by the minimum test point luminance.

$$\delta_{W5} = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

$$\delta_{W13} = \frac{\text{Maximum Brightness of thirteen points}}{\text{Minimum Brightness of thirteen points}}$$

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.

Photo detector

Field=2

50 cm

LCD Panel

TFT-LCD Module

Center of the screen
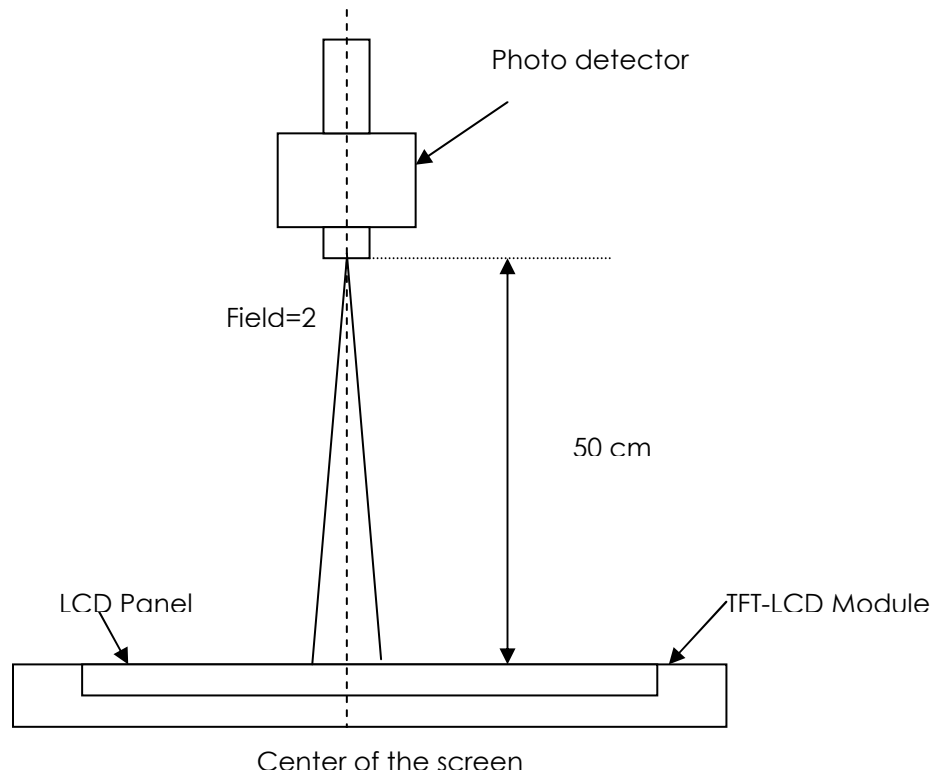
Note 5： Definition of Average Luminance of White (Y_L):

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 × 100 (%)

Where

Y_A = Luminance of measured location without gray level 0 pattern (cd/m2)

Y_B = Luminance of measured location with gray level 0 pattern (cd/m2)
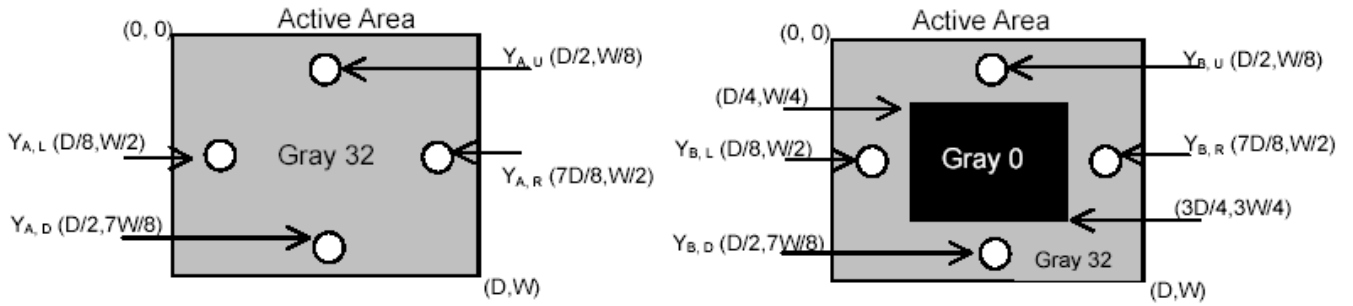
Note 8： Definition of response time:

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.
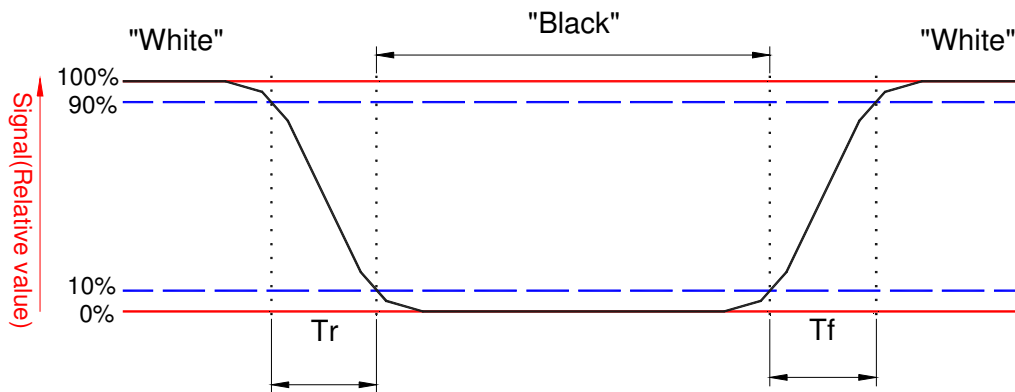
Note 9： Definition of view angle

   Viewing angle is the measurement of contrast ratio $\geqq$ 10, at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (Φ) 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.
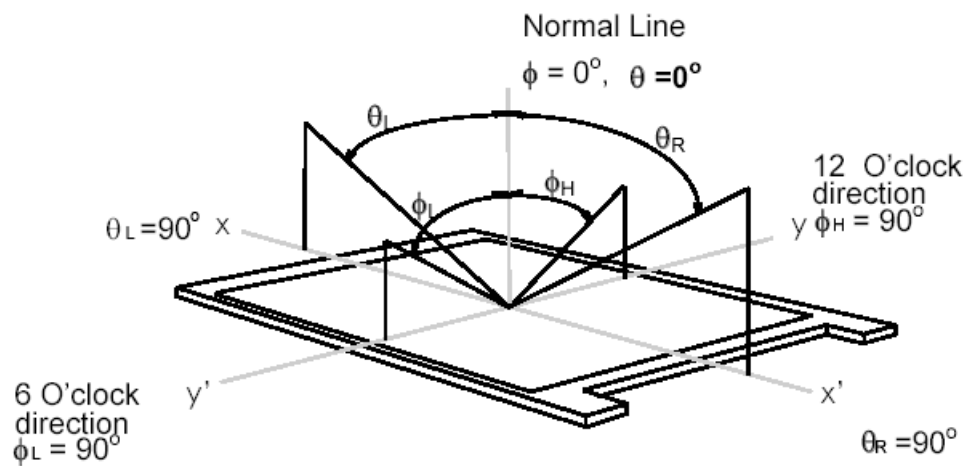
3. Functional Block Diagram

The following diagram shows the functional block of the 15.6 inches wide Color TFT/LCD 40 Pin.
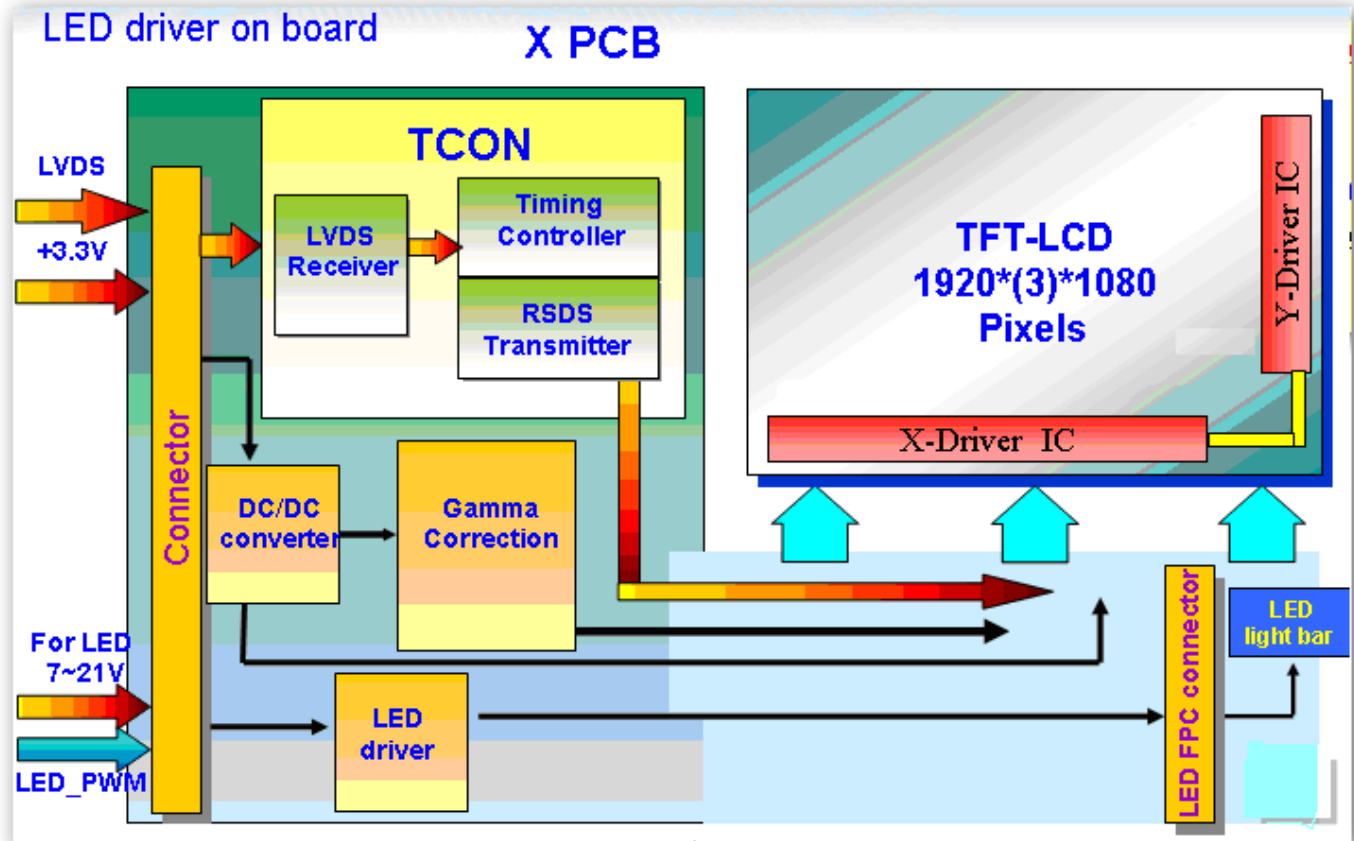
4. Absolute Maximum Ratings

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	8	95	[%RH]	Note 4
Storage Temperature	TST	-20	+60	[°C]	Note 4
Storage Humidity	HST	5	95	[%RH]	Note 4

Note 1: At Ta (25℃)

Note 2: Permanent damage to the device may occur if exceed maximum values
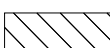
Note 3: LED specification refer to section 5.2

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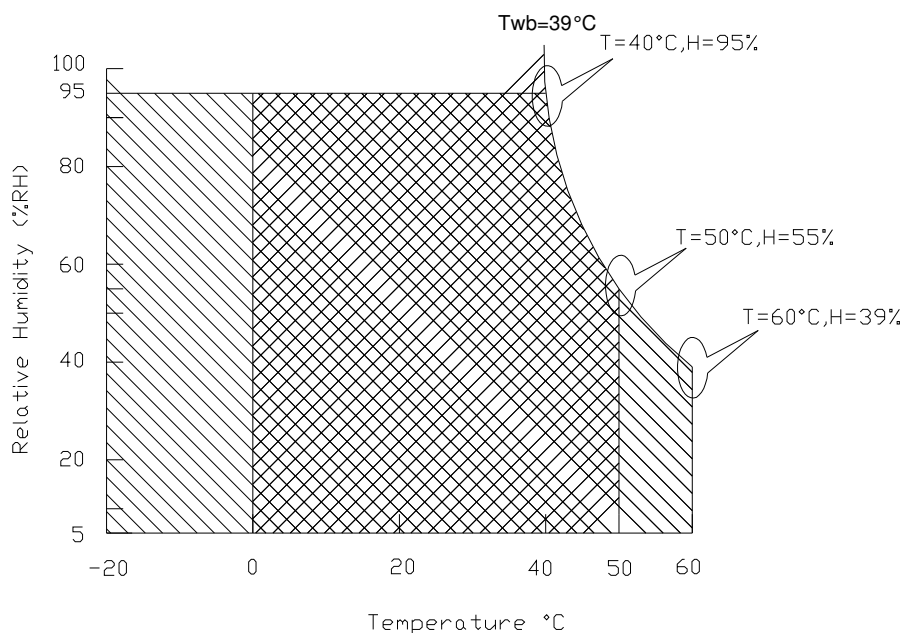
Operating Range   Storage Range

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℃ and frame frenquency under 60Hz

Symble	Parameter	Min	Typ	Max	Units	Note
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	
PDD	VDD Power	-	-	2.0	[Watt]	Note 1/2
IDD	IDD Current	-	-	606	[mA]	Note 1/2
IRush	Inrush Current	-	-	2000	[mA]	Note 3
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	

Note 1 : Maximum Measurement Condition : Black Pattern, XP Desktop Pattern

Note 2 : Typical Measurement Condition: Mosaic Pattern, XP Desktop Pattern

Note 3 : Measure Condition
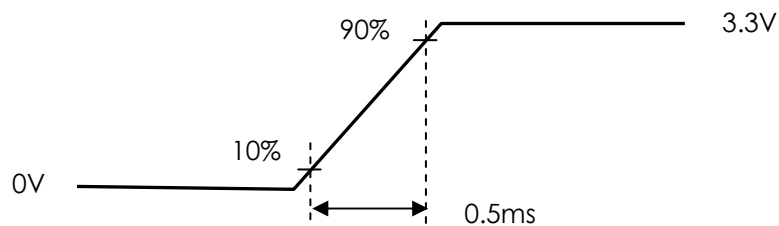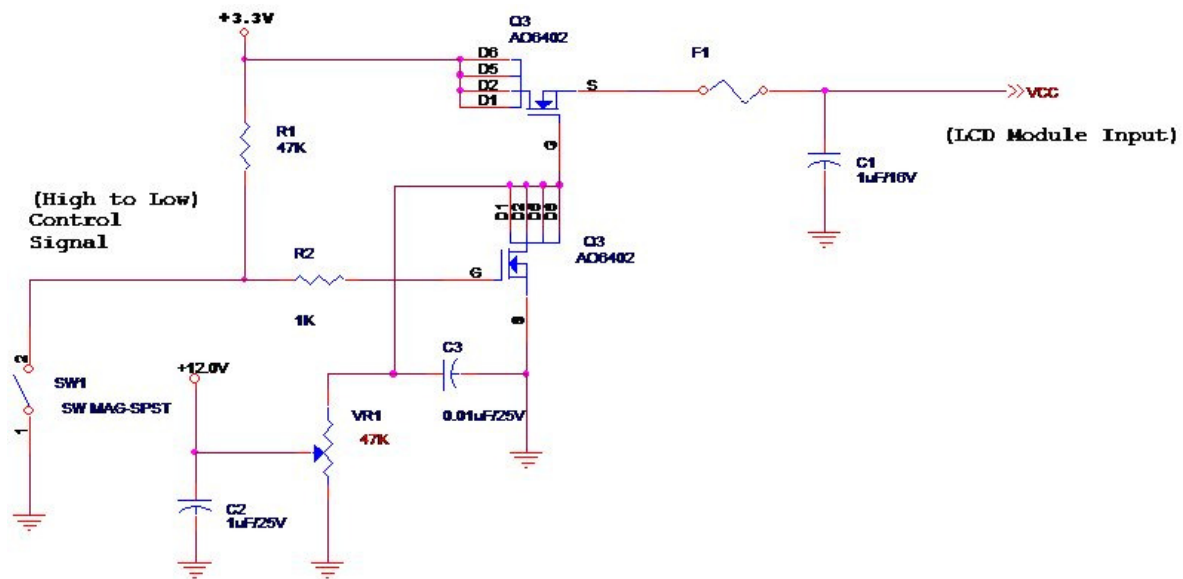
Vin rising time

5.1.2 Signal Electrical Characteristics

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

Signal electrical characteristics are as follows;

Parameter	Condition	Min	Max	Unit
V_{TH}	Differential Input High Threshold (Vcm=+1.2V)	-	100	[mV]
V_{TL}	Differential Input Low Threshold (Vcm=+1.2V)	-100	-	[mV]
$\lvert V_{ID} \rvert$	Differential Input Voltage	100	600	[mV]
V_{CM}	Differential Input Common Mode Voltage	1.125	1.375	[V]

Note: LVDS Signal Waveform
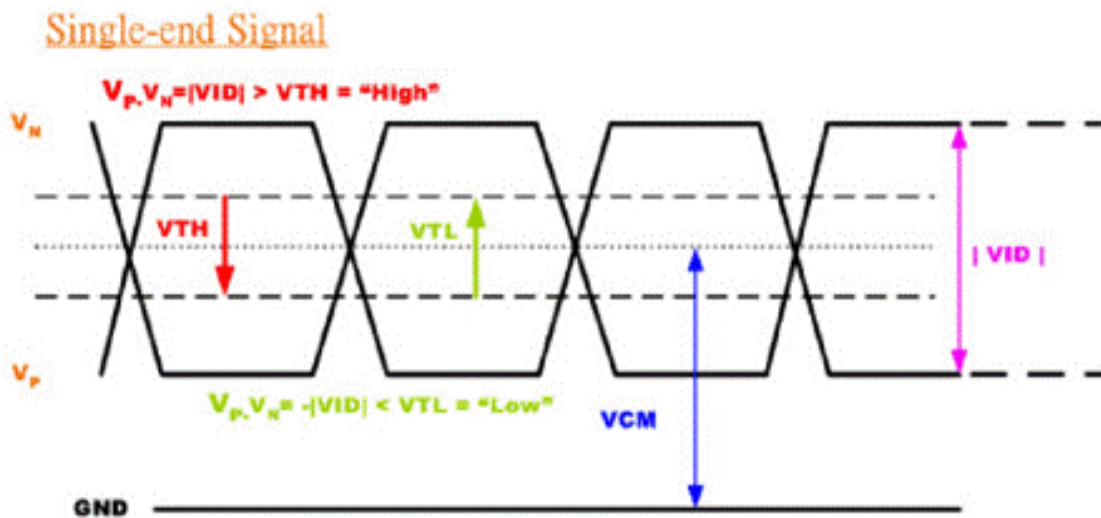
5.2 Backlight Unit

5.2.1 LED characteristics

Parameter	Symbol	Min	Typ	Max	Units	Condition
Backlight Power Consumption	PLED	-	-	6.0	[Watt]	(Ta=25℃), Note 1 Vin =12V
LED Life-Time	N/A	15,000	-	-	Hour	(Ta=25℃), Note 2 I_F=20 mA

Note 1: Calculator value for reference P_{LED} = VF (Normal Distribution) * IF (Normal Distribution) / Efficiency

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

5.2.2 Backlight input signal characteristics

Parameter	Symbol	Min	Typ	Max	Units	Remark
LED Power Supply	VLED	7.0	12.0	21.0	[Volt]	
LED Enable Input High Level	VLED_EN	2.5	-	5.5	[Volt]	
LED Enable Input Low Level		-	-	0.5	[Volt]	Define as Connector Interface (Ta=25℃)
PWM Logic Input High Level	VPWM_EN	2.5	-	5.5	[Volt]	
PWM Logic Input Low Level		-	-	0.5	[Volt]	
PWM Input Frequency	FPWM	200	1K	10K	Hz	
PWM Duty Ratio	Duty	5	--	100	%	

Note 1 : Recommend system pull up/down resistor no bigger than 10kohm

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

ORXCLKIN+

ORXCLKIN-

ORXIN0 +/- OG0 OR5 OR4 OR3 OR2 OR1 OR0

ORXIN1 +/- OB1 OB0 OG5 OG4 OG3 OG2 OG1

ORXIN2 +/- DE VS HS OB5 OB4 OB3 OB2

Current Cycle

ERXCLKIN+

ERXCLKIN-

ERXIN0 +/- EG0 ER5 ER4 ER3 ER2 ER1 ER0

ERXIN1 +/- EB1 EB0 EG5 EG4 EG3 EG2 EG1

ERXIN2 +/- EB5 EB4 EB3 EB2

Current Cycle
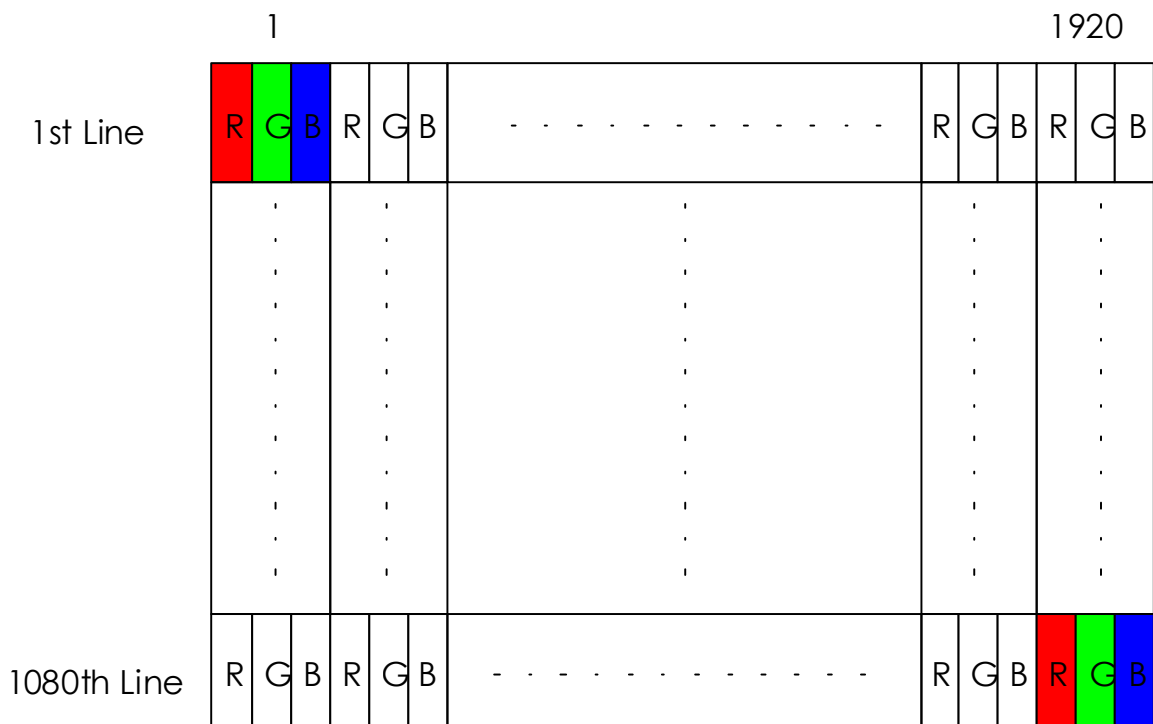
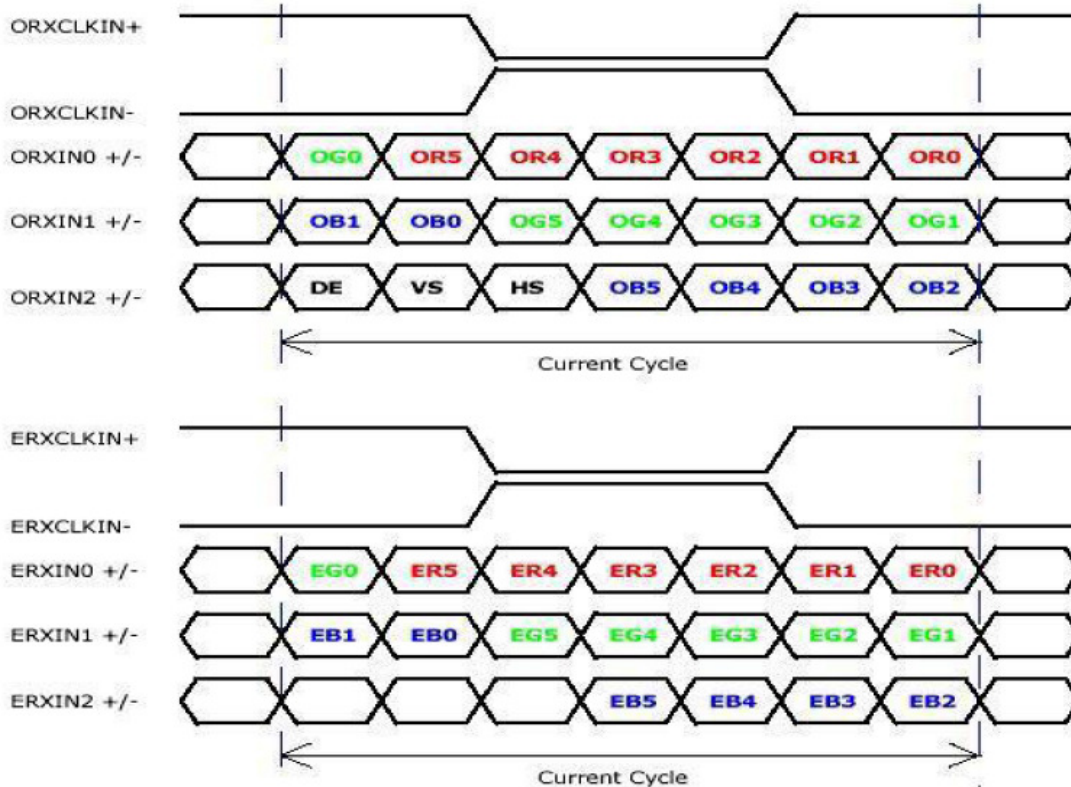| Signal Name	Description	
R5 R4 R3 R2 R1 R0	Red Data 5 (MSB) Red Data 4 Red Data 3 Red Data 2 Red Data 1 Red Data 0 (LSB) Red-pixel Data	Red-pixel Data Each red pixel's brightness data consists of these 6 bits pixel data.
G5 G4 G3 G2 G1 G0	Green Data 5 (MSB) Green Data 4 Green Data 3 Green Data 2 Green Data 1 Green Data 0 (LSB) Green-pixel Data	Green-pixel Data Each green pixel's brightness data consists of these 6 bits 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	Blue-pixel Data Each blue pixel's brightness data consists of these 6 bits 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

6.3.1 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.

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

6.3.2 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 (Reserve)
2	VDD	Power Supply +3.3V
3	VDD	Power Supply +3.3V
4	VEDID	EDID +3.3V Power
5	BIST	Panel Self Test
6	CLK_EDID	EDID Clock Input
7	DAT_EDID	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	CM_EN	CM_EN
20	RxEIN0-	-LVDS Differential Data INPUT(Even R0-R5,G0)
21	RxEIN0-	+LVDS Differential Data INPUT(Even R0-R5,G0)
22	VSS	Ground
23	RxEIN1-	-LVDS Differential Data INPUT(Even G1-G5,B0-B1)

24	RxEIN1+	+LVDS Differential Data INPUT(Even G1-G5,B0-B1)
25	VSS	Ground
26	RxEIN2-	-LVDS Differential Data INPUT(Even B2-B5,HS,VS,DE)
27	RxEIN2+	+LVDS Differential Data INPUT(Even B2-B5,HS,VS,DE)
28	VSS	Ground
29	RxECKIN-	-LVDS Even Differential Clock INPUT
30	RxECKIN+	+LVDS Even Differential Clock INPUT
31	VLED_GND	LED Ground
32	VLED_GND	LED Ground
33	VLED_GND	LED Ground
34	NC	No Connection
35	S_PWMIN	System PWM Logic Input level
36	LED_EN	LED enable input level
37	DCR_EN	DCR_EN
38	VLED	LED Power Supply
39	VLED	LED Power Supply
40	VLED	LED Power Supply
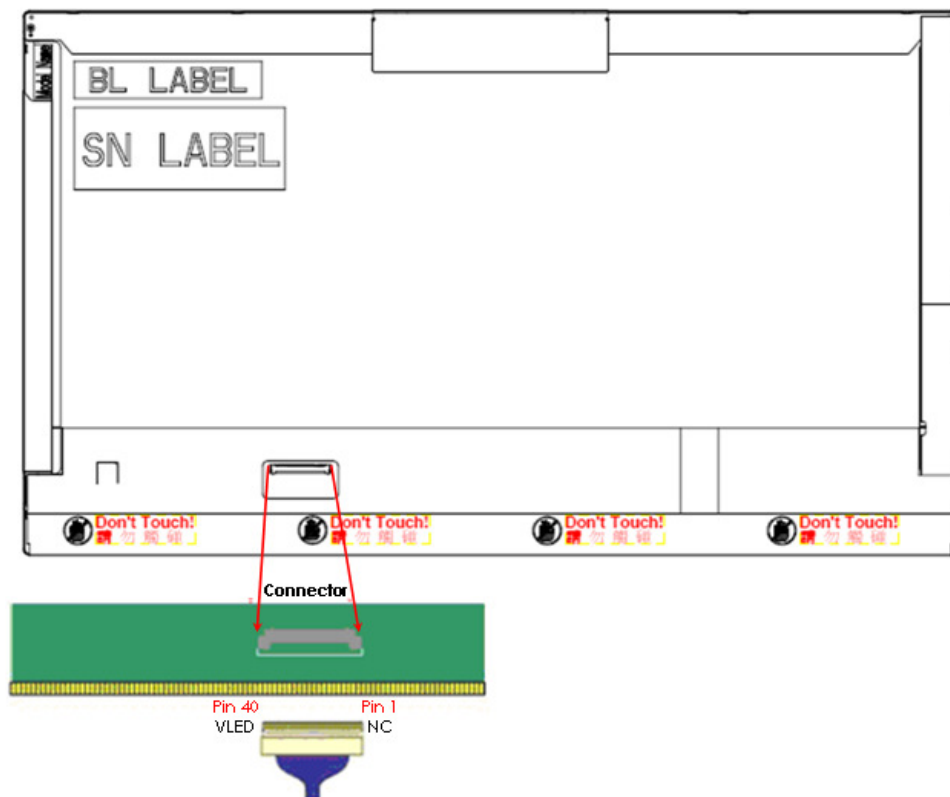
Note1: Input signals shall be low or High-impedance state when VDD is off.

6.4 Interface Timing

6.4.1 Timing Characteristics

Basically, interface timings should match the 1920x1080 /60Hz   manufacturing guide line timing.

Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		-	40	60	-	Hz
Clock frequency		1/ T$_{Clock}$	66.6	72	80	MHz
Vertical Section	Period	T$_V$	1100	1130	1080+A	T$_{Line}$
	Active	T$_{VD}$		1080		
	Blanking	T$_{VB}$	20	50	A	
Horizontal Section	Period	T$_H$	1010	1050	960+B	T$_{Clock}$
	Active	T$_{HD}$		960		
	Blanking	T$_{HB}$	50	90	B	

Note 1 : The above is as optimized setting
Note 2 : DE mode only
Note 3 : The maximum clock frequency = (960+B)*(1080+A)*60 < 80MHz

6.4.2 Timing diagram
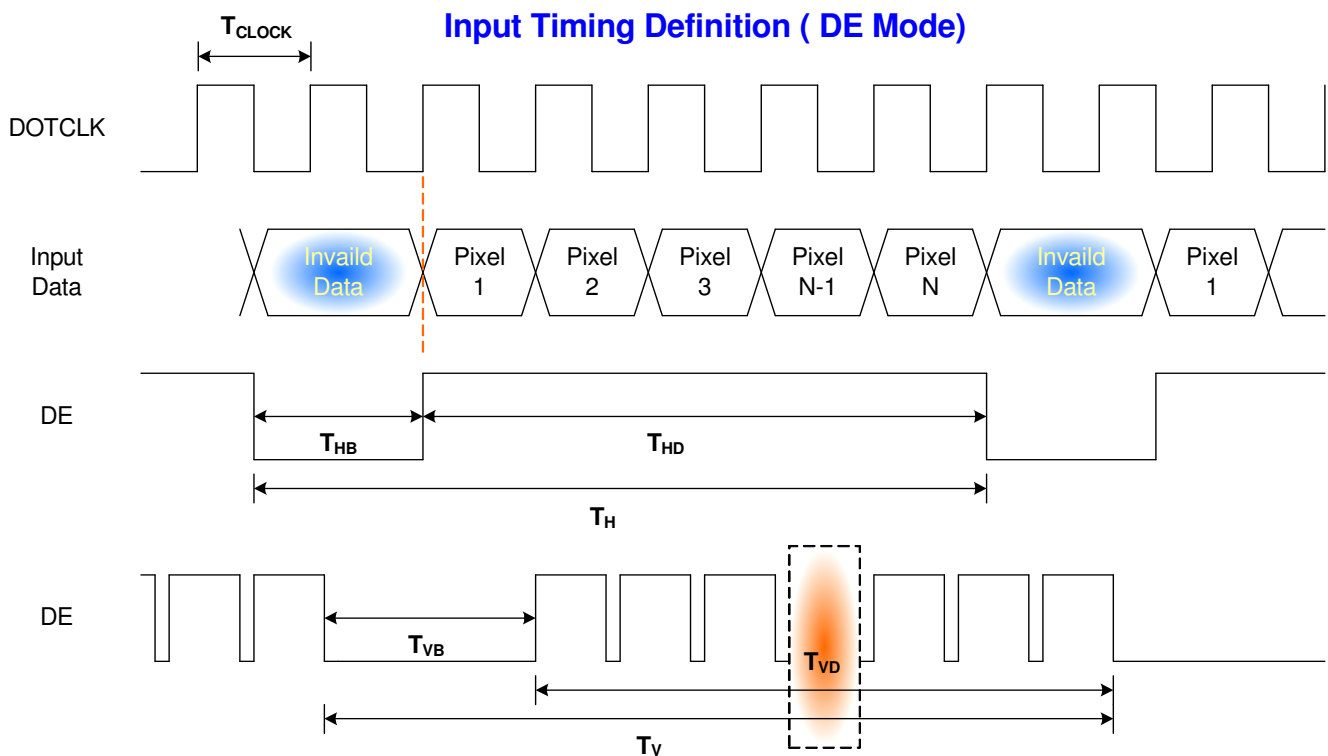
6.5 Power ON/OFF Sequence

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

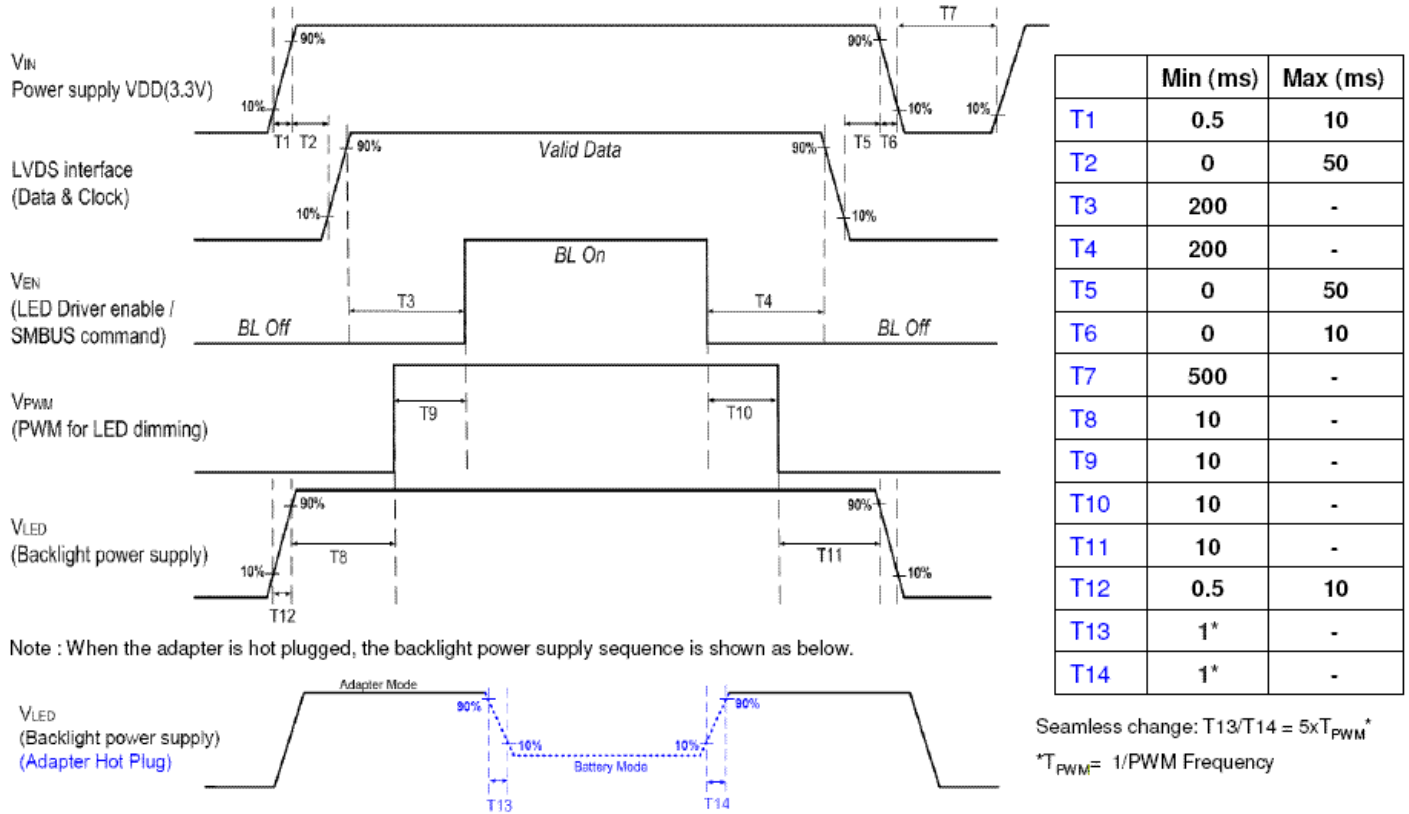|	Min (ms)	Max (ms)
T1	0.5	10
T2	0	50
T3	200	-
T4	200	-
T5	0	50
T6	0	10
T7	500	-
T8	10	-
T9	10	-
T10	10	-
T11	10	-
T12	0.5	10
T13	1*	-
T14	1*	-

Note : When the adapter is hot plugged, the backlight power supply sequence is shown as below.

Seamless change: T13/T14 = 5xT_{PWM}*

*T_{PWM}= 1/PWM Frequency

Note 1 : If T3<200ms, the display garbage may occur. (T3>200ms is recommended)

Note 2 : If T1 or T12<0.5ms, the inrush current may cause the damage of fuse. If T1 or T12<0.5ms, the inrush current I^2t is under typical melt of fuse Spec, there is no mentioned problem.

7. Vibration and Shock Test

7.1 Vibration Test

Test Spec:

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

7.2 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

7.3. Reliability

Items	Required Condition	Note
Temperature Humidity Bias	Ta= 40℃, 90%RH, 300h	
High Temperature Operation	Ta= 50℃, Dry, 300h	
Low Temperature Operation	Ta= 0℃, 300h	
High Temperature Storage	Ta= 60℃, 35%RH, 300h	
Low Temperature Storage	Ta= -20℃, 50%RH, 300h	
Thermal Shock Test	Ta=-20℃ to 60℃, 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%

8. Mechanical Characteristics

8.1 LCM Outline Dimension

8.1.1 Standard Front View
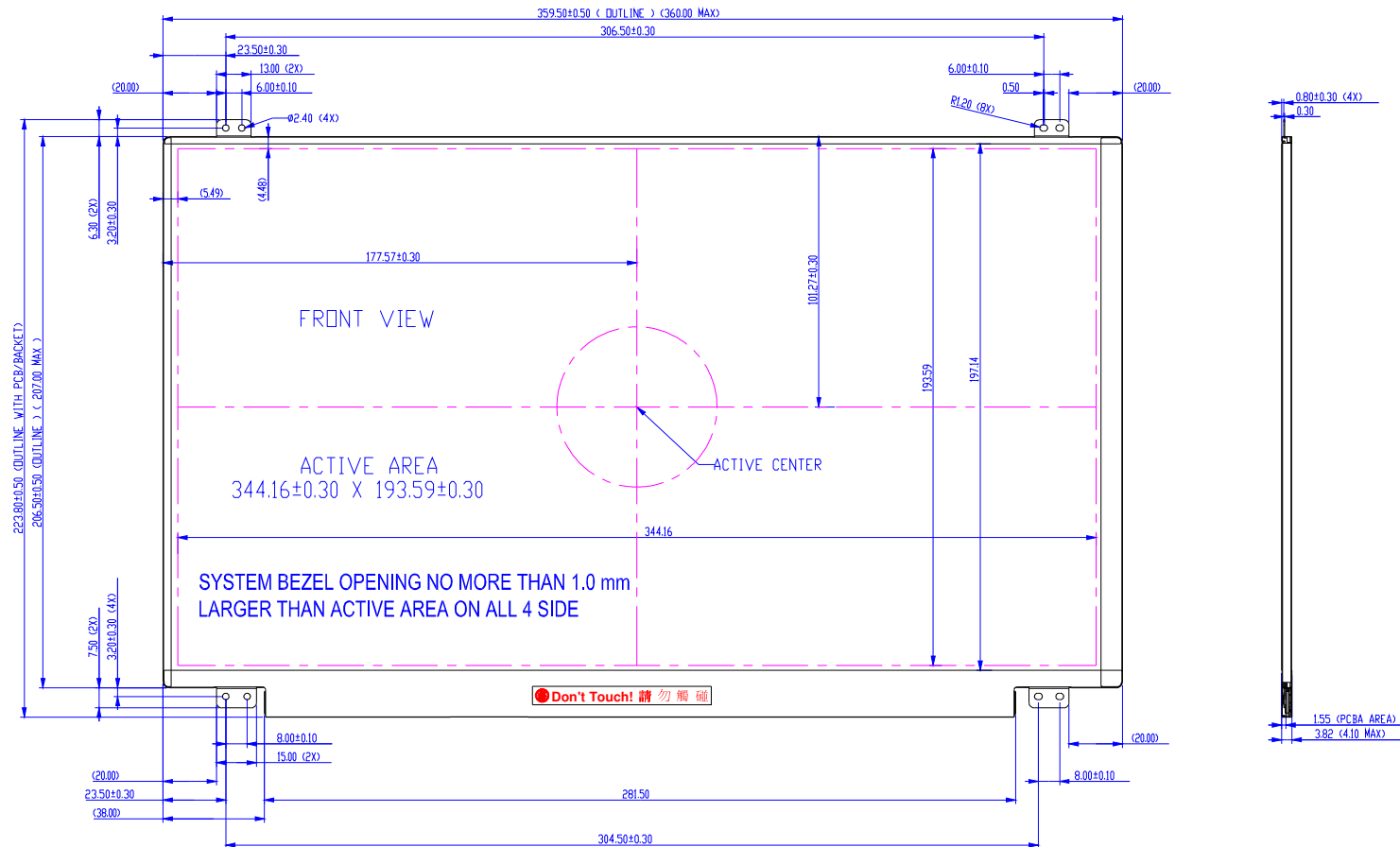
8.1.2 Standard Rear View

BACK VIEW

PIN 1

BLU LABEL PRINT

🔴 **Don't Touch!** 請 勿 觸 碰

112.40±1.00

5.01±1.00
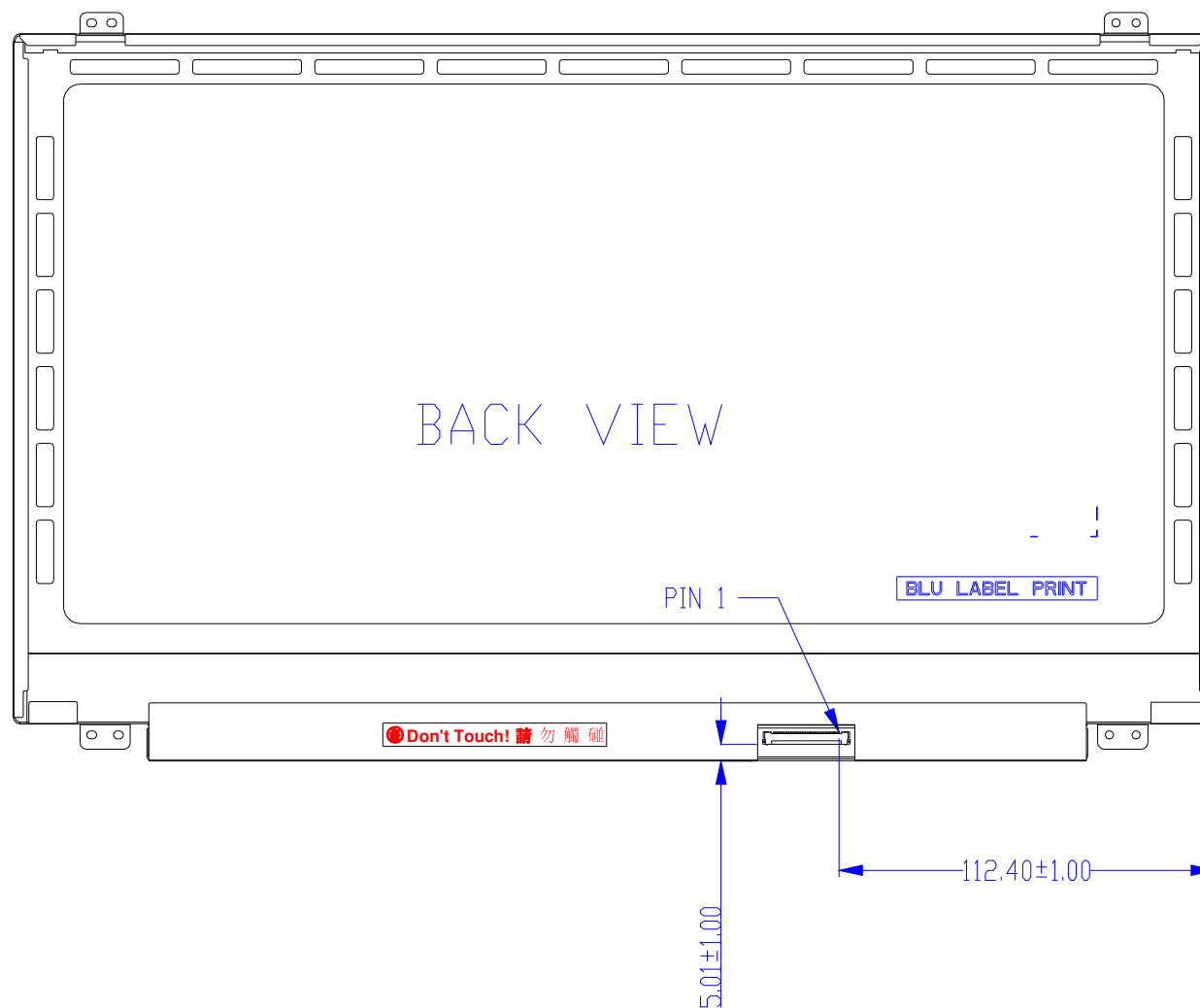
9. Shipping and Package

9.1 Shipping Label Format

XXXXXXXXXXX-XXXXXX

B156HTN02.1

Manufactured MM/WW
Model No: B156HTN02.1
AU Optronics
MADE IN CHINA (S01)
H/W: 1A F/W:1

c ℛ US
E204356

Pb

RoHS

15

9.2 Carton package

9.3 Shipping package of palletizing sequence

Top cardboard

Stretch film

Label

Bottom cardboard

PET band

Corner angle

pallet

10. Appendix: EDID description

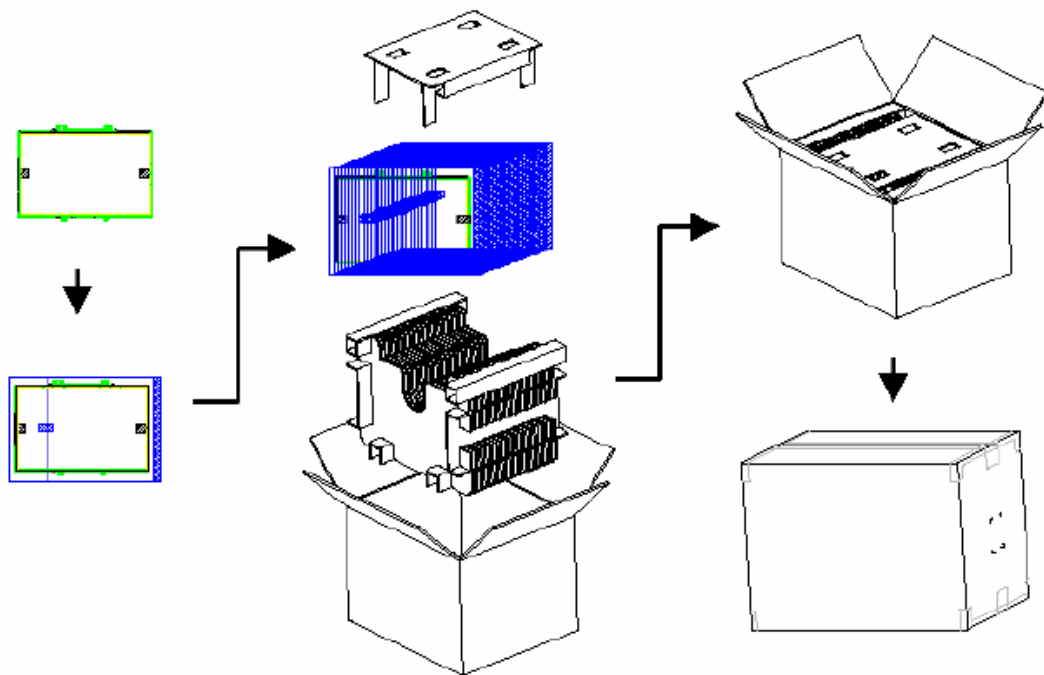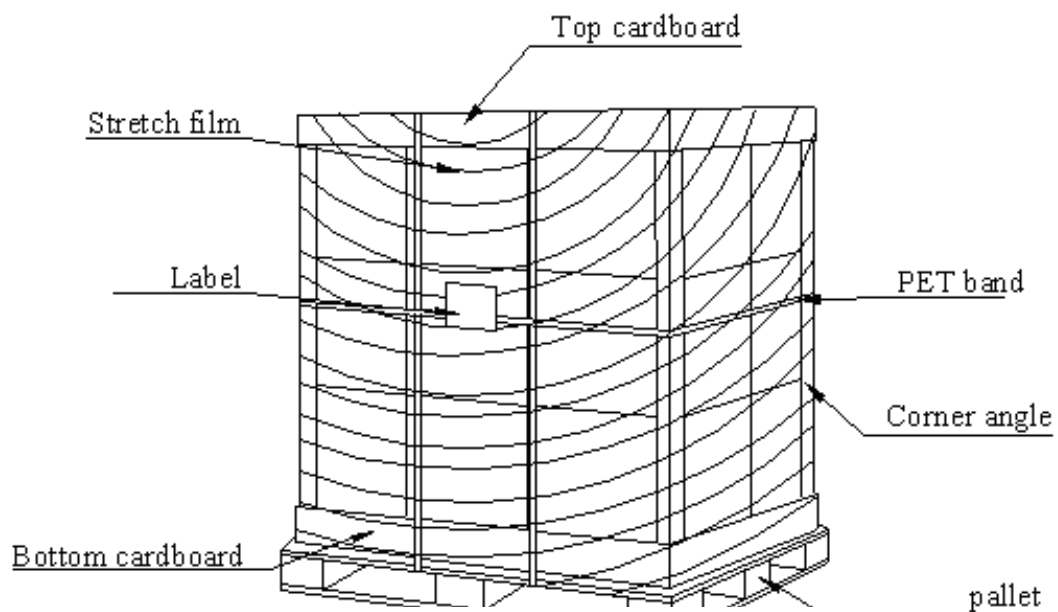| Byte (hex)	Field Name and Comments	Value (hex)	Value (binary)	Value (DEC)
0	Header	00	00000000	0
1	Header	FF	11111111	255
2	Header	FF	11111111	255
3	Header	FF	11111111	255
4	Header	FF	11111111	255
5	Header	FF	11111111	255
6	Header	FF	11111111	255
7	Header	00	00000000	0
8	EISA manufacture code = 3 Character ID	06	00000110	6
9	EISA manufacture code (Compressed ASCII)	AF	10101111	175
0A	Panel Supplier Reserved – Product Code	ED	11101101	237
0B	Panel Supplier Reserved – Product Code	21	00100001	33
0C	LCD module Serial No - Preferred but Optional ("0" if not used)	00	00000000	0
0D	LCD module Serial No - Preferred but Optional ("0" if not used)	00	00000000	0
0E	LCD module Serial No - Preferred but Optional ("0" if not used)	00	00000000	0
0F	LCD module Serial No - Preferred but Optional ("0" if not used)	00	00000000	0
10	Week of manufacture	00	00000000	0
11	Year of manufacture	16	00010110	22
12	EDID structure version # = 1	01	00000001	1
13	EDID revision # = 4	04	00000100	4
14	Video I/P definition	90	10010000	144
15	Max H image size = ?? cm(Rounded to cm)	22	00100010	34
16	Max V image size = ?? cm(Rounded to cm)	13	00010011	19
17	Display gamma = (gamma ×100)-100 = Example: (2.2×100) – 100 = 120	78	01111000	120
18	Feature support	02	00000010	2
19	Red/Green Low bit (RxRy/GxGy)	D1	11010001	209
1A	Blue/White Low bit (BxBy/WxWy)	15	00010101	21
1B	Red X Rx = 0.???	9E	10011110	158
1C	Red Y Ry = 0.???	59	01011001	89
1D	Green X Rx = 0.???	53	01010011	83
1E	Green Y Ry = 0.???	9B	10011011	155
1F	Blue X Rx = 0.???	27	00100111	39
20	Blue Y Ry = 0.???	1E	00011110	30
21	White X Rx = 0.???	50	01010000	80
22	White Y Ry = 0.???	54	01010100	84
23	Established timings 1 (00h if not used)	00	00000000	0
24	Established timings 2 (00h if not used)	00	00000000	0

25	Manufacturer's timings (00h if not used)	00	00000000	0
26	Standard timing ID1 (01h if not used)	01	00000001	1
27	Standard timing ID1 (01h if not used)	01	00000001	1
28	Standard timing ID2 (01h if not used)	01	00000001	1
29	Standard timing ID2 (01h if not used)	01	00000001	1
2A	Standard timing ID3 (01h if not used)	01	00000001	1
2B	Standard timing ID3 (01h if not used)	01	00000001	1
2C	Standard timing ID4 (01h if not used)	01	00000001	1
2D	Standard timing ID4 (01h if not used)	01	00000001	1
2E	Standard timing ID5 (01h if not used)	01	00000001	1
2F	Standard timing ID5 (01h if not used)	01	00000001	1
30	Standard timing ID6 (01h if not used)	01	00000001	1
31	Standard timing ID6 (01h if not used)	01	00000001	1
32	Standard timing ID7 (01h if not used)	01	00000001	1
33	Standard timing ID7 (01h if not used)	01	00000001	1
34	Standard timing ID8 (01h if not used)	01	00000001	1
35	Standard timing ID8 (01h if not used)	01	00000001	1
36	Pixel Clock/10,000 (LSB)	B0	10110000	176
37	Pixel Clock/10,000 (MSB)	36	00110110	54
38	Horizontal Active = ???? pixels (lower 8 bits)	80	10000000	128
39	Horizontal Blanking (Thbp) = 320 pixels (lower 8 bits)	B4	10110100	180
3A	Horizontal Active/Horizontal blanking (Thbp) (upper4:4 bits)	70	01110000	112
3B	Vertical Active = ??? lines	38	00111000	56
3C	Vertical Blanking (Tvbp) = ?? lines (DE Blanking typ. for DE only panels)	1E	00011110	30
3D	Vertical Active : Vertical Blanking (Tvbp) (upper4:4 bits)	40	01000000	64
3E	Horizontal Sync, Offset (Thfp) = ?? pixels	30	00110000	48
3F	Horizontal Sync, Pulse Width = ??? pixels	64	01100100	100
40	Vertical Sync, Offset (Tvfp) = ? lines Sync Width = ? lines	31	00110001	49
41	Horizontal Vertical Sync Offset/Width upper 2 bits	00	00000000	0
42	Horizontal Image Size =??? mm	58	01011000	88
43	Vertical image Size = ??? mm	C1	11000001	193
44	Horizontal Image Size / Vertical image size	10	00010000	16
45	Horizontal Border = 0 (Zero for Notebook LCD)	00	00000000	0
46	Vertical Border = 0 (Zero for Notebook LCD)	00	00000000	0

	Bit[7] 0: Non-interlace, 1: Interlace
	Bit[6:5] 00: Normal display, no strero, see VESA EDID Spec 1.3
	Bit[4:3] 00: Analog composite, 01: Bipolar analog composite, 10: Digital
	                        composite, 11: Digital separate
	Bit[2:1] : The interpretation of bits 2 and 1 is dependent on the decode of
	                        bits 4 and 3 - see VESA EDID Spec 1.3
	Bit[0] : See VESA EDID Spec 1.3			

47	==> fix=1A	1A	00011010	26
48	Pixel Clock/10,000 (LSB)	B0	10110000	176
49	Pixel Clock/10,000 (MSB)	36	00110110	54
4A	Horizontal Active = xxxx pixels (lower 8 bits)	80	10000000	128
4B	Horizontal Blanking (Thbp) = xxxx pixels (lower 8 bits)	B4	10110100	180
4C	Horizontal Active/Horizontal blanking (Thbp) (upper4:4 bits)	70	01110000	112
4D	Vertical Active = xxxx lines	38	00111000	56
4E	Vertical Blanking (Tvbp) = xxxx lines (DE Blanking typ. for DE only panels)	1E	00011110	30
4F	Vertical Active : Vertical Blanking (Tvbp) (upper4:4 bits)	40	01000000	64
50	Horizontal Sync, Offset (Thfp) = xxxx pixels	30	00110000	48
51	Horizontal Sync, Pulse Width = xxxx pixels	64	01100100	100
52	Vertical Sync, Offset (Tvfp) = xx lines Sync Width = xx lines	31	00110001	49
53	Horizontal Vertical Sync Offset/Width upper 2 bits	00	00000000	0
54	Horizontal Image Size =xxx mm	58	01011000	88
55	Vertical image Size = xxx mm	C1	11000001	193
56	Horizontal Image Size / Vertical image size	10	00010000	16
57	Horizontal Border = 0 (Zero for Notebook LCD)	00	00000000	0
58	Vertical Border = 0 (Zero for Notebook LCD)	00	00000000	0

	Bit[7] 0: Non-interlace, 1: Interlace
	Bit[6:5] 00: Normal display, no strero, see VESA EDID Spec 1.3
	Bit[4:3] 00: Analog composite, 01: Bipolar analog composite, 10: Digital
	                        composite, 11: Digital separate
	Bit[2:1] : The interpretation of bits 2 and 1 is dependent on the decode of
	                        bits 4 and 3 - see VESA EDID Spec 1.3
	Bit[0] : See VESA EDID Spec 1.3			

59	==> fix=1A	1A	00011010	26
5A	Flag	00	00000000	0
5B	Flag	00	00000000	0
5C	Flag	00	00000000	0
5D	Data Type Tag: Alphanumeric Data String (ASCII) ==> fix=FE	FE	11111110	254
5E	Flag	00	00000000	0
5F	Dell P/N 1st Character	56	01010110	86

60	Dell P/N 2nd Character	59	01011001	89
61	Dell P/N 3rd Character	59	01011001	89
62	Dell P/N 4th Character	35	00110101	53
63	Dell P/N 5th Character	36	00110110	54
64	EDID Revision Bit[6:0] See charts below Bit[7] 0: X-rev, 1: A-rev	80	10000000	128
65	Manufacturer P/N	42	01000010	66
66	Manufacturer P/N	31	00110001	49
67	Manufacturer P/N	35	00110101	53
68	Manufacturer P/N	36	00110110	54
69	Manufacturer P/N	48	01001000	72
6A	Manufacturer P/N	54	01010100	84
6B	Manufacturer P/N (If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)	4E	01001110	78
6C	Flag	00	00000000	0
6D	Flag	00	00000000	0
6E	Flag	00	00000000	0
6F	Data Type Tag: Manufacturer Specified Data 00 ==>fix=00	00	00000000	0
70	Flag	00	00000000	0
71	Color Management	00	00000000	0
72	Panel Structure	41	01000001	65
73	Frame Rate	02	00000010	2
74	Light Controller Interface and Luminance	96	10010110	150
75	Outdoor Features	01	00000001	1
76	Multi-Media Features	11	00010001	17
77	Multi-Media Features	00	00000000	0
78	Special Features #1	00	00000000	0
79	Special Features #2	02	00000010	2
7A	Special Features #3	01	00000001	1
7B	(If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)	0A	00001010	10
7C	(If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)	20	00100000	32
7D	(If <13 char, then terminate with ASCII code 0Ah, set remaining char = 20h)	20	00100000	32
7E	Extension flag (# of optional 128 EDID extension blocks to follow, Typ = 0)	00	00000000	0
7F	Checksum (The 1-byte sum of all 128 bytes in this EDID block shall = 0)	E4	11100100	228