InfoVision Optoelectronics (Kunshan) Co.,LTD.

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0	2012/05/30	Finished	All	张春宇

Contents

1.0 General Descriptions

1.1 Introduction

The M133NWN1 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. It is composed of a TFT LCD panel, a timing controller, voltage reference, common voltage, column driver, and row driver circuit. This TFT LCD has a 13.3-inch diagonally measured active display area with resolution 1,366 horizontal by 768 vertical pixel arrays.

1.2 Features

- 13.3” TFT-LCD Panel
- LED Backlight System
- Supported 1,366x768 pixels resolution
- Compatible with RoHS standard

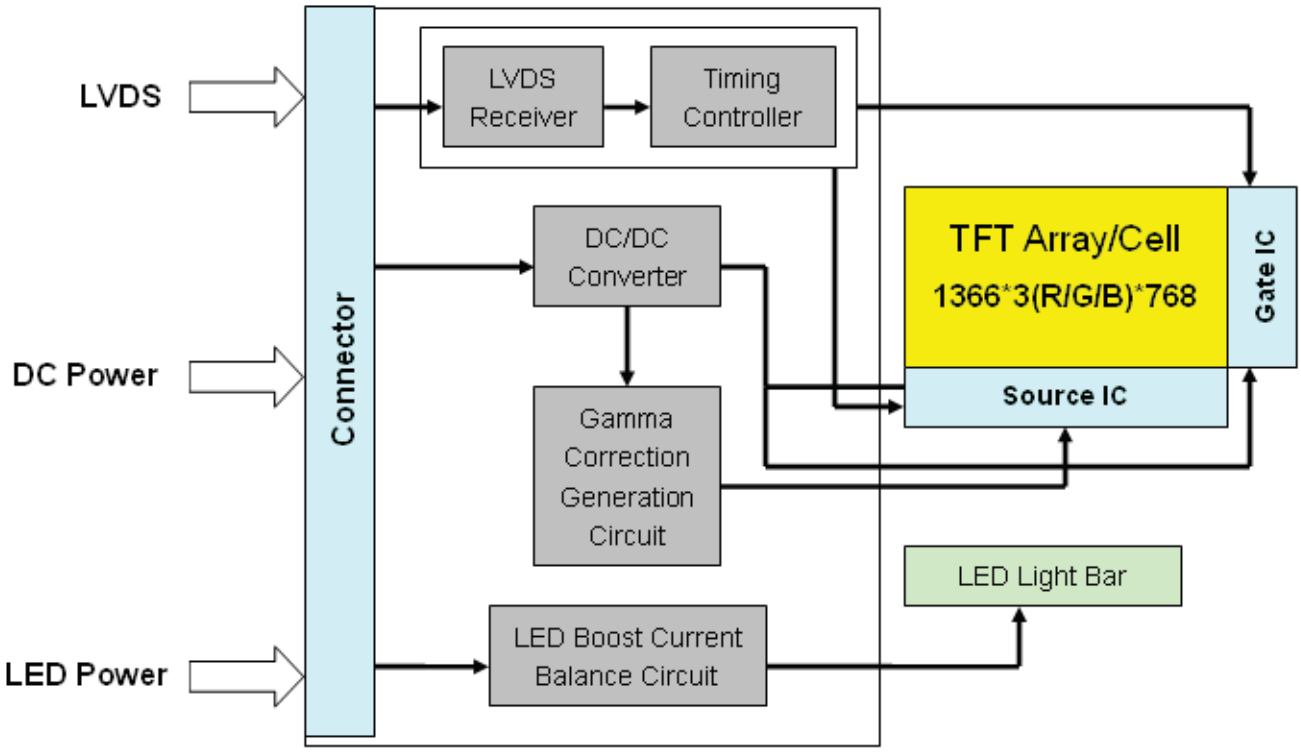
1.3 Product Summary

Items	Specifications	Unit
Screen Diagonal	13.3	Inch
Active Area	293.42x164.97	mm
Pixels (H x V)	1366x3(RGB)x768	-
Pixel Pitch	0.2148(H)*0.2148(V)	mm
Pixel Arrangement	R.G.B Vertical stripe	-
Display Mode	Normally White	-
White Luminance	200 (Typ.)	cd /m^2
Contrast Ratio	500 (Typ.)	-
Color Saturation	45% (Typ.)	-
Response Time	8 (Typ.)	msec
Input Voltage	3.3 (Typ.)	V
Power Consumption	3.24 (Max.)	W
Weight	260 (Max.)	g
Outline Dimension(H x V x D)	314.1x188.7x 3.0 (Max.)	mm
Electrical Interface (Logic)	LVDS	-
Support Color	262 K	-
Optimum Viewing Direction	6 o’ clock	-
Surface Treatment	Glare+ HC(3H)	-

1.4 Functional Block Diagram

Figure 1 shows the functional block diagram of the LCD module.

Figure 1 Block Diagram



2.0 Absolute Maximum Ratings

Table 1 Electrical Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Logic Supply Voltage	V_{DD}	-0.3	4.0	V	(1),(2)
Logic Input Signal Voltage	-	-0.3	3.6	V	
Supply V_{LED} Voltage	V_{LED}	6	21	V	

Note (1) Permanent damage may occur to the LCD module if beyond this specification. Functional operation should be restricted to the conditions described under normal operating conditions.

(2)Operating temperature is 25℃, humidity is 55%.

Table 2 Absolute Ratings of Environment

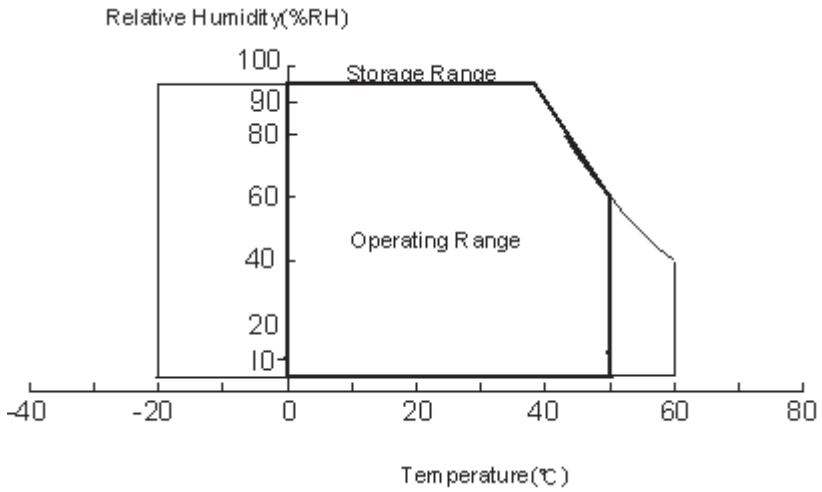
Item	Symbol	Min.	Max.	Unit	Conditions
Operating Temperature	TOP	0	+50	℃	(1),(2),(3)
Operating Humidity	HOP	5	95	%RH	
Storage Temperature	TST	-20	+60	℃	
Storage Humidity	HST	5	95	%RH	
Vibration(non-operating)	Vnop	-	1.5	G	(4)
Shock(non-operating)	Snop	-	220	G	(5)

Note (1) Maximum Wet-Bulb should be 39 degree C. No condensation.

(2) When you apply the LCD module for OA system. Please make sure to keep the temperature of LCD module is less than 60℃

(3) Storage /Operating temperature

Figure 2 Absolute Ratings of Environment of the LCD Module



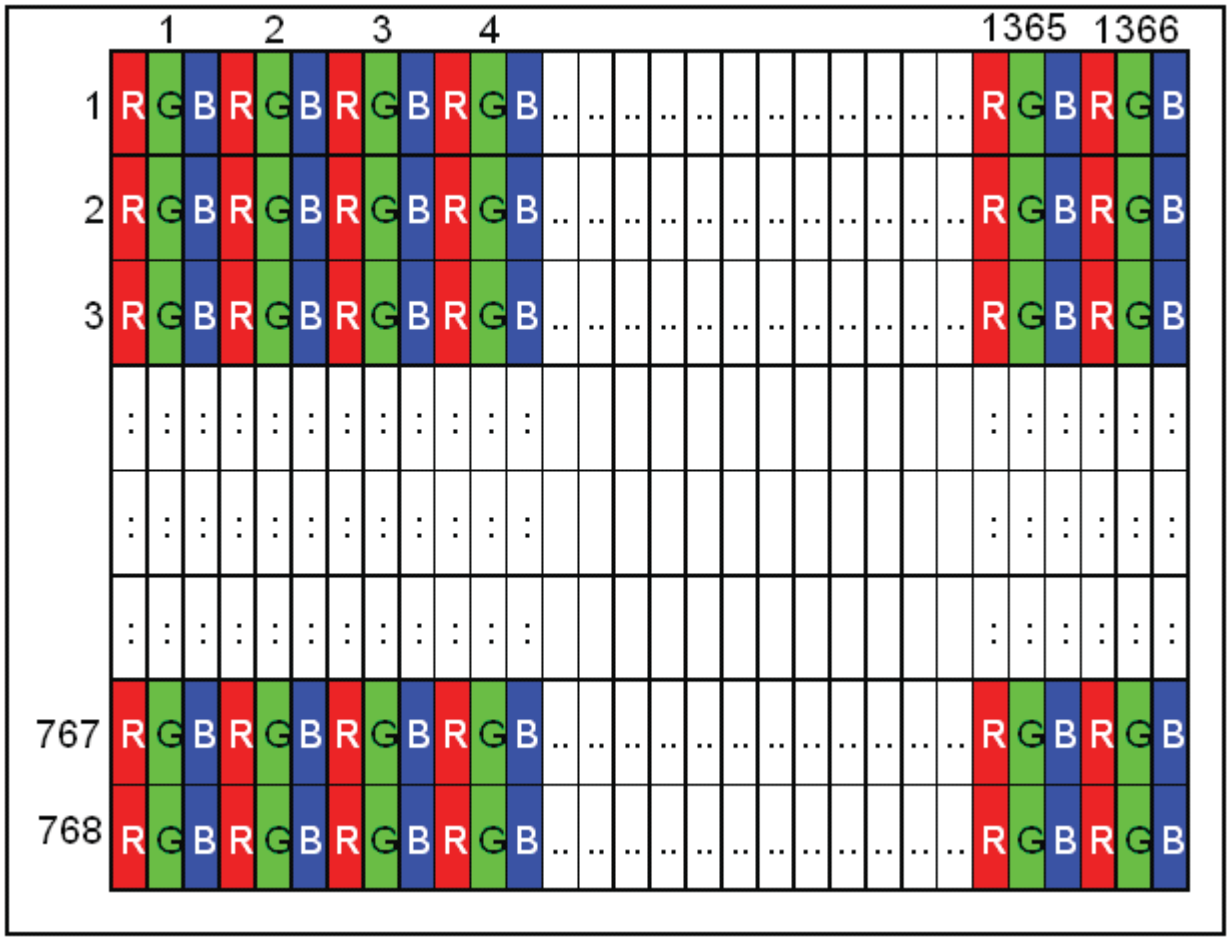
(4) 10-500Hz, random vibration, 30min for X, Y, Z axis

(5) 2ms, half sine wave, one time for X, Y, Z axis

3.0 Pixel Format Image

Figure 3 shows the relationship of the input signals and LCD pixel format image.

Figure 3 Pixel Format



4.0 Optical Characteristics

The optical characteristics are measured under stable conditions as following notes

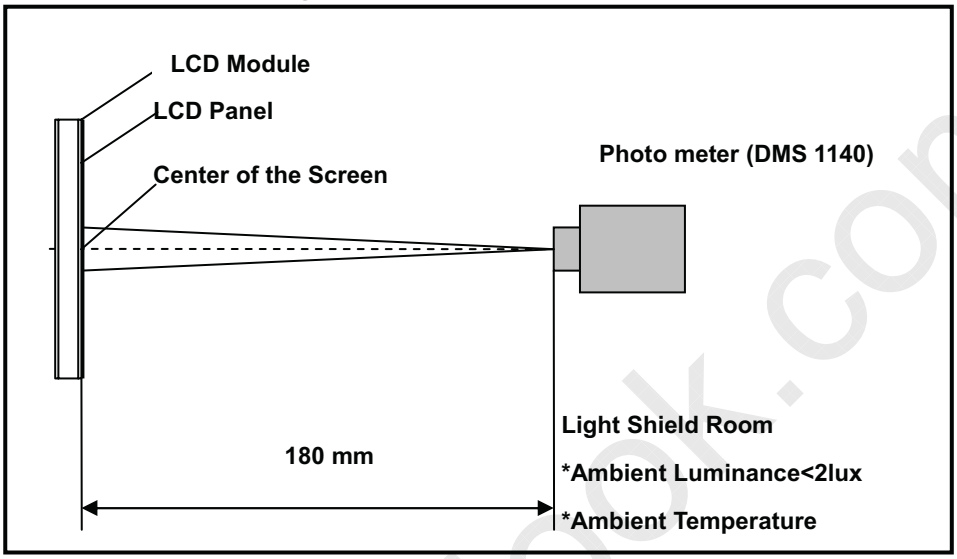
Table 3 Optical Characteristics

Item	Conditions		Min.	Typ.	Max.	Unit	Note
Viewing Angle (CR>10)	Horizontal	θ_L	40	45	-	degree	(1),(2),(3)
		θ_R	40	45	-		
	Vertical	θ_T	10	15	-		
		θ_B	30	35	-		
Contrast Ratio	Center		400	500	-	-	(1),(2),(4)
Response Time	Rising		-	-	-	ms	(1),(2),(5)
	Falling		-	-	-	ms	
	Rising + Falling		-	8	16	ms	
Color Chromaticity (CIE1931)	Red x		Typ. -0.03	0.585	Typ. +0.03	-	(1),(2)
	Red y			0.346		-	
	Green x			0.332		-	
	Green y			0.581		-	
	Blue x			0.155		-	
	Blue y			0.121		-	
	White x			0.313		-	
	White y			0.329		-	
White Luminance I_{LED}=20mA	5 Points Average		170	200	-	cd/m^2	(1),(2),(6)
Luminance Uniformity	5Points		80	-	-	%	(1),(2), (6) (7)
	13Points		60	-	-		

Note (1) Measurement Setup:

The LCD module should be stabilized at given temperature(25℃) for 15 minutes to Avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 15 minutes in a windless room.

Figure 4 Measurement Setup



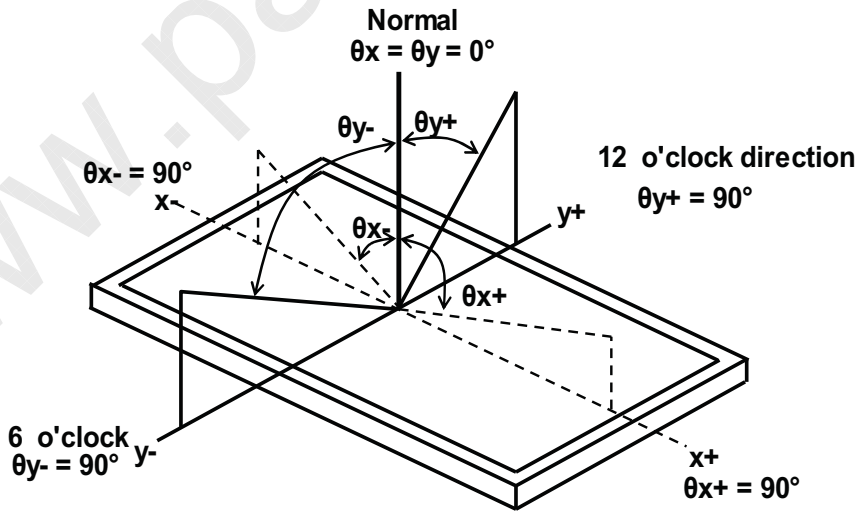
Note (2) The LED input parameter setting as:

V_LED: 12V (±0.1V)

PWM_LED: duty 100 %

Note (3) Definition of Viewing Angle

Figure 5 Definition of Viewing Angle



Note (4) Definition Of Contrast Ratio (CR)

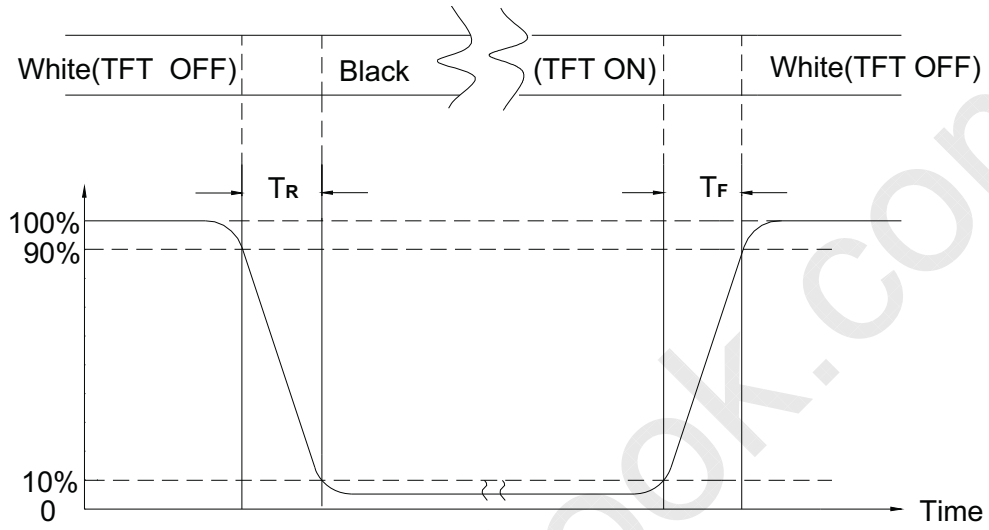
The contrast ratio can be calculated by the following expression

Contrast Ratio (CR) = L63 / L0

L63: Luminance of gray level 63, L0: Luminance of gray level 0

Note (5) Definition Of Response Time (TR, TF)

Figure 6 Definition of Response Time



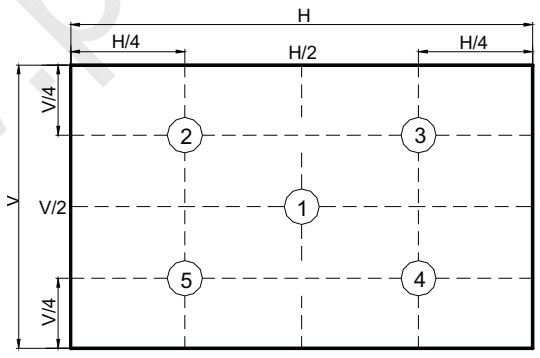
Note (6) Definition Of Luminance White

Measure the luminance of gray level 63 at center point (Ref: Active area)

Display Luminance=(L1+L2+L3+L4+L5)/5

H—Active area length V—Active area width L—Luminance

Figure 7 Measurement Locations Of 5 Points



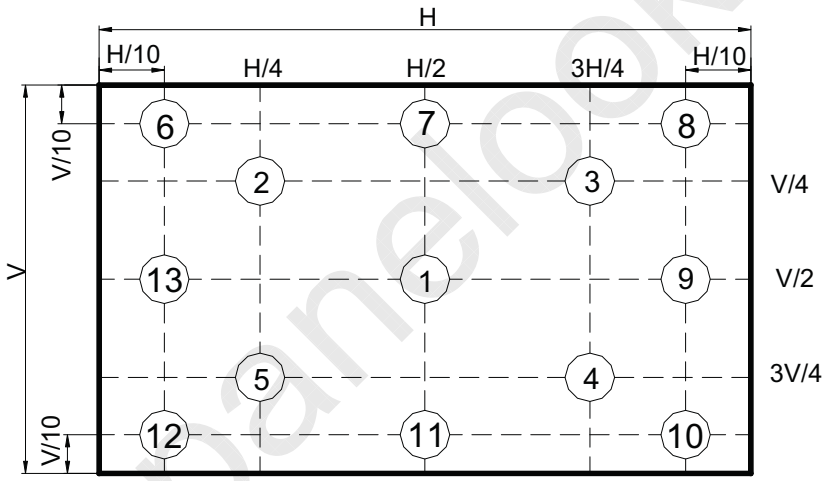
Note (7) Definition Of Luminance Uniformity (Ref: Active area)

Measure the luminance of gray level 63 at 5 or 13 points.

$$\text{UNF(5pts)} = \frac{\text{Minimum Luminance 5 Ponits}(L1, L2, \cdots L5)}{\text{Maximum Luminance 5 Points}(L1, L2, \cdots L5)}$$

$$\text{UNF(13pts)} = \frac{\text{Minimum Luminance 13 Ponits}(L1, L2, \cdots L13)}{\text{Maximum Luminance 13 Points}(L1, L2, \cdots L13)}$$

Figure 8 Measurement Locations Of 13 Points



5.0 Backlight Characteristics

5.1 Parameter Guideline Of LED Backlight

Table 4 Parameter Guideline for LED Backlight

Item	Symbol		Min.	Typ.	Max.	Units	Note
LED Input Voltage	V_{LED}		6	12	21	V	(3)(4)
LED Power Consumption	P_{LED}		-	-	2.19	W	(1)(3)(4)
LED Forward Voltage	V_F		2.7	2.9	3.1	V	(2)(4)
LED Forward Current	I_F		-	20	-	mA	
PWM Signal Voltage	V_{PWM_EN}	High	2.5	-	5.5	V	(4)
		Low	-	-	0.8		
LED Enable Voltage	V_{LED_EN}	High	2.5	-	5.5	V	
		Low	-	-	0.8		
Input PWM Frequency	F_{PWM}		100	-	5K	Hz	
LED Life Time	LT		15,000	-	-	Hours	(3)(4)
Duty Ratio	PWM		1	-	100	%	$0.1KHz \leqslant F_{PWM} \leqslant 1KHz$ (4)
			5	-	100	%	$1KHz < F_{PWM} \leqslant 5KHz$ (4)(5)

Note (1) P_{LED} is calculation value for reference. P_{LED}=30* V_F (Normal Distribution)* I_F (Normal Distribution) /Efficiency

Note (2) The LED life time define as the estimated time when LED packages continue to operate under the conditions at Ta=25℃ and I_F=20mA (per chip) until the brightness becomes ≤50% of its original value.

Note (3) A Higher LED power supply voltage will result in better power efficiency. Keep the V_{LED} between 12V and 21V is strongly recommended.

Note (4) All values are measured at condition of V_{LED}=12V, Ta= 25℃, RH= 55%.

Note (5) When the duty <5%, the flicker should not defect. At least need 5nits no flicker.

6.0 Electrical Characteristics

6.1 Interface Connector

Table 5 Connector Name / Designation

Manufacturer	STARCONN (or equivalent)
Type / Part Number	300E40-0010RA-G3
Mating Receptacle/Part Number	111B40-1210TA-G3**(or equivalent)**

Table 6 Signal Pin Assignment

Pin #	Signal Name	Description	Remarks
1	NC	No Connect(Reserve)	LCD Panel Self Test Enable
2	VDD	Power Supply	3.3V(typical)
3	VDD	Power Supply	3.3V(typical)
4	VEDID	EDID +3.3V Power	-
5	NC	No Connection (Reserve)	-
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	IMG_EN	Color Management Input Level	LOW or OPEN=OFF,HIGH=ON
20	NC	No Connection	-
21	NC	No Connection	-
22	NC	No Connection	-
23	NC	No Connection	-
24	NC	No Connection	-
25	NC	No Connection	-

26	NC	No Connection	-
27	NC	No Connection	-
28	NC	No Connection	-
29	NC	No Connection	-
30	NC	No Connection	-
31	VLED_GND	LED Ground	-
32	VLED_GND	LED Ground	-
33	VLED_GND	LED Ground	-
34	NC	No Connection (Reserve)	-
35	VPWM_EN	PWM logic input level	-
36	VLED_EN	LED enable input level	-
37	DCR_EN	Dynamic Contrast Ratio Input Level	LOW or OPEN=OFF,HIGH=ON
38	VLED	LED Power Supply 6V-21V	-
39	VLED	LED Power Supply 6V-21V	-
40	VLED	LED Power Supply 6V-21V	-

Note: All input signals shall be low or High-impedance state when VDD is off.

6.2 LVDS Receiver

6.2.1 Signal Electrical Characteristics For LVDS Receiver

The built-in LVDS receiver is compatible with (ANSI/TIA/TIA-644) standard.

Table 7 LVDS Receiver Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Differential Input High Threshold	Vth	-	-	+100	mV	Vcm=+1.2V
Differential Input Low Threshold	Vtl	-100	-	-	mV	Vcm=+1.2V
Magnitude Differential Input Voltage	$\|V_{ID}\|$	100	-	600	mV	
Common Mode Voltage	V_{CM}	1.0	1.2	2.4	V	Vth-Vtl=200mV

Note: (1) Input signals shall be low or high-impedance state when VDD is off.

(2) All electrical characteristics for LVDS signal are defined and shall be measured at the interface connector of LCD.

Figure 9 Voltage Definitions

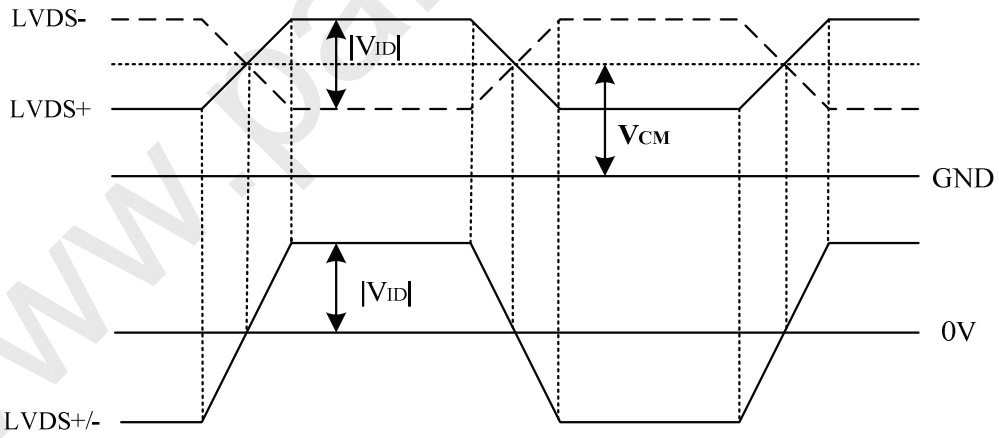


Figure 10 Measurement System

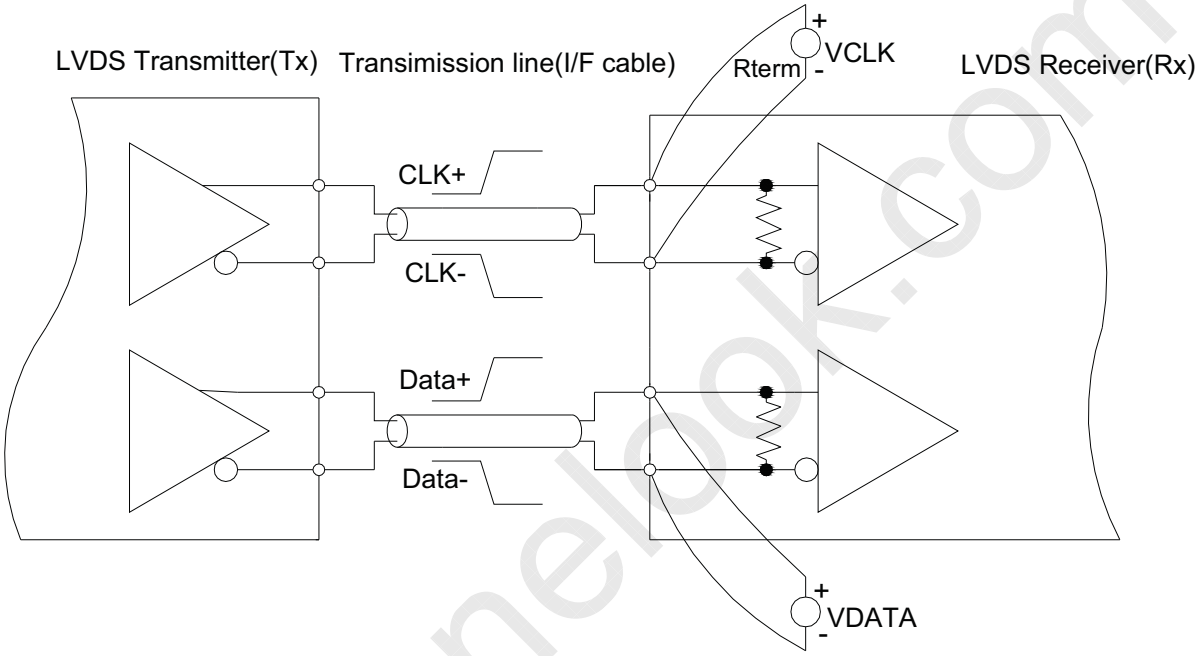
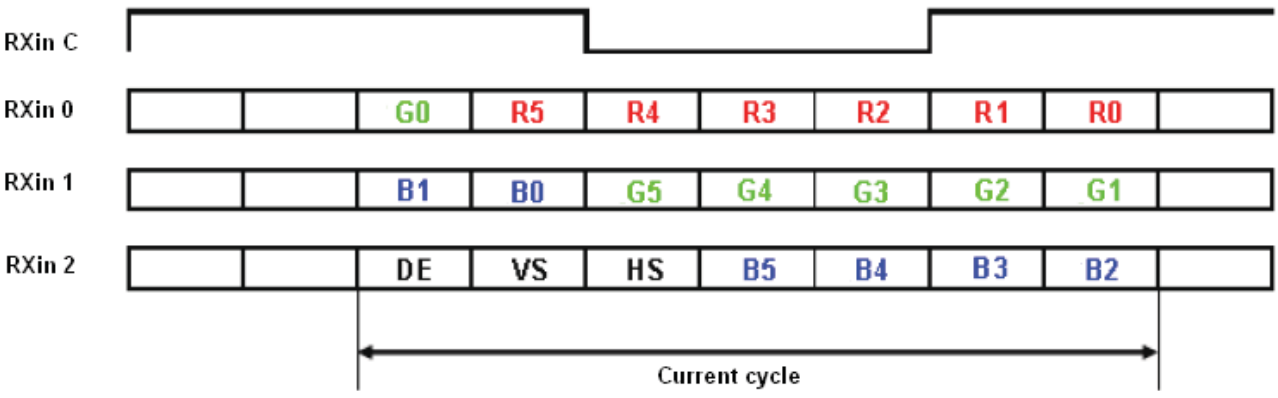


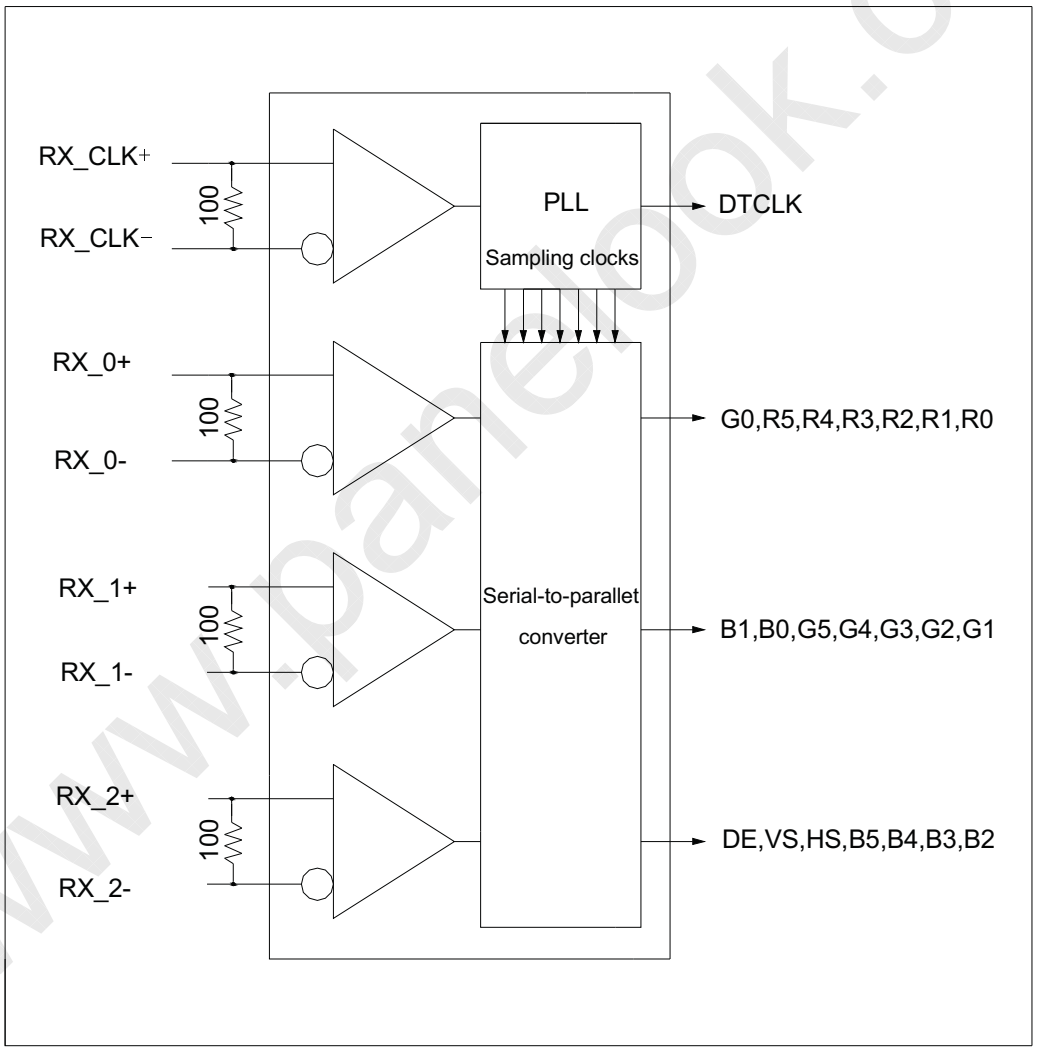
Figure 11 LVDS Data Mapping



6.2.2 LVDS Receiver Internal Circuit

Figure 12 LVDS Receiver Internal Circuit Figure 12 shows the internal block diagram of the LVDS receiver. This LCD module equips termination resistors for LVDS link.

Figure 12 LVDS Receiver Internal Circuit



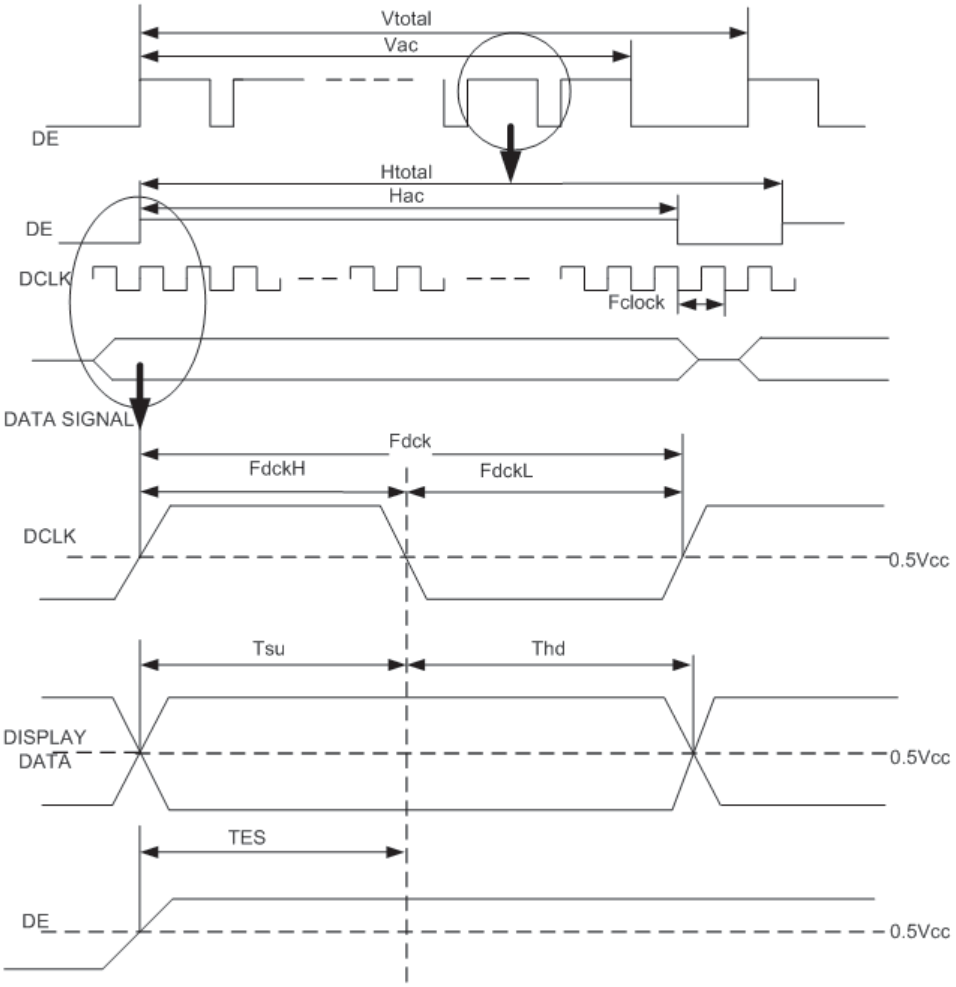
7.0 Interface Timings

7.1 Timing Characteristics

Table 8 Interface Timings

Parameter	Symbol	Unit	Min.	Typ.	Max.
LVDS Clock Frequency(single)	Fdck	MHz	65	75.4	80
H Total Time	Htotal	Clocks	1,430	1,560	1,690
H Active Time	Hac	Clocks	1,366	1,366	1,366
V Total Time	Vtotal	Lines	776	806	850
V Active Time	Vac	Lines	768	768	768
Frame Rate	Vsync	Hz	50	60	65

Figure 13 Timing Characteristics



Note: TES is data enable signal setup time.

8.0 Power Consumption

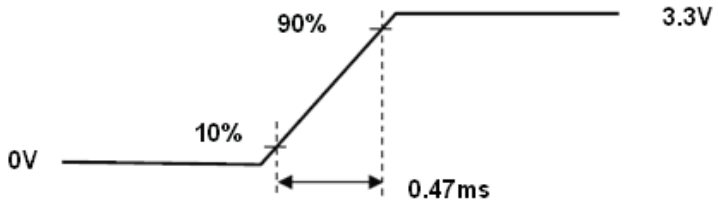
Input power specifications are as follows.

Table 9 Power Consumption

Item	Symbol	Min.	Typ.	Max.	Units	Note
Logic/LCD Drive Voltage	VDD	3.0	3.3	3.6	V	(2), (4)
VDD Current	IDD	-	-	0.318	A	Black Pattern
VDD Power	PDD	-	-	1.05	W	(3),(4)
LED Power Consumption	PLED	-	-	2.19	W	(3),(4)
Rush Current	Irush	-	-	1.5	A	(1),(4)
Allowable Logic/LCD Drive Ripple Voltage	VDDrp	-	-	200	mV	(4)

Note (1) Measure Condition

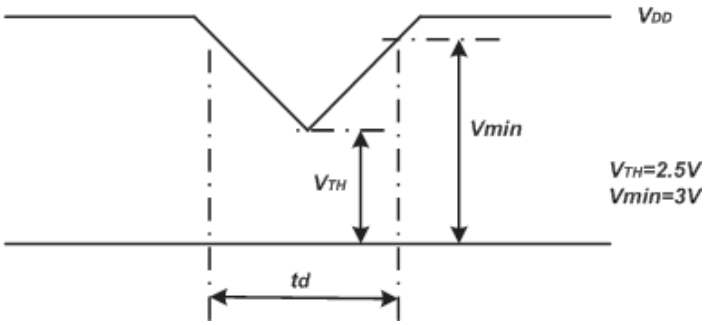
Figure 14 VDD rising time



VDD rising time

Note (2) VDD Power Dip Condition

Figure 15 VDD Power Dip



If $V_{TH} < V_{DD} \leq V_{min}$, then $t_d \leq 10ms$; When the voltage returns to normal, our panel must revive automatically.

Note (3) Fv=60Hz, VDD=3.3V, DC Current

Note (4) Operating temperature is 25℃, humidity is 55%.

9.0 Power ON/OFF Sequence

VDD power on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be High-impedance state or low level when VDD is off.

Figure 16 Power Sequence

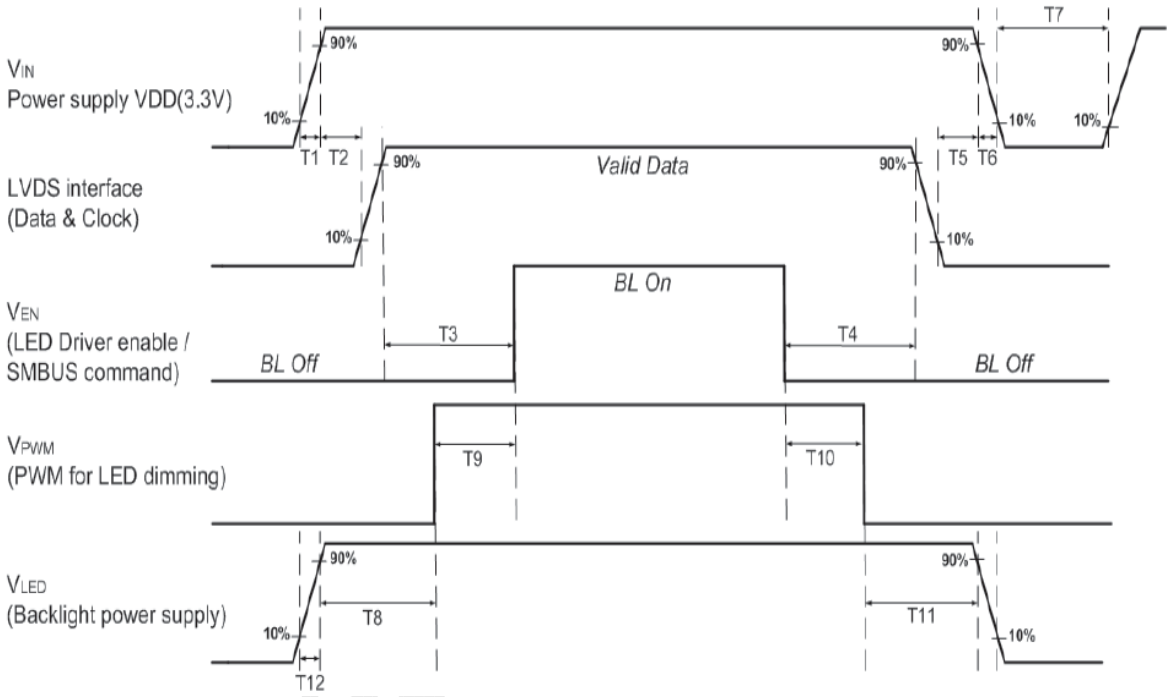


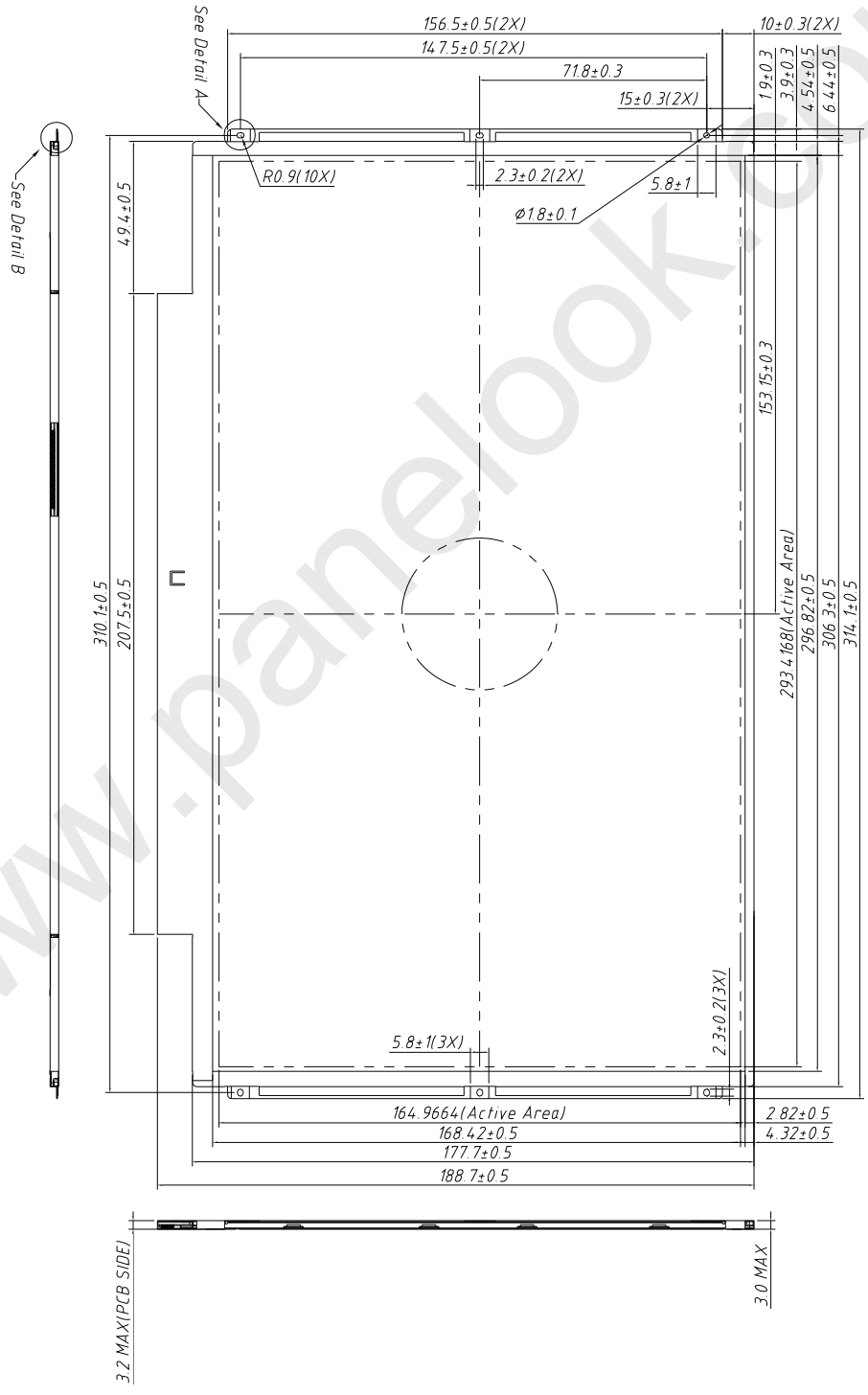
Table 10 Power Sequencing Requirements

Parameter	Unit	min	Typ.	max
T1	ms	0.5	-	10
T2	ms	0	-	50
T3	ms	200	-	-
T4	ms	200	-	-
T5	ms	0	-	50
T6	ms	0	-	10
T7	ms	500	-	-
T8	ms	10	-	-
T9	ms	10	-	-
T10	ms	10	-	-
T11	ms	10	-	-
T12	ms	0.5	-	10

10.0 Mechanical Characteristics

10.1 Outline Drawing

Figure 17 Reference Outline Drawing (Front Side) (Tentative)



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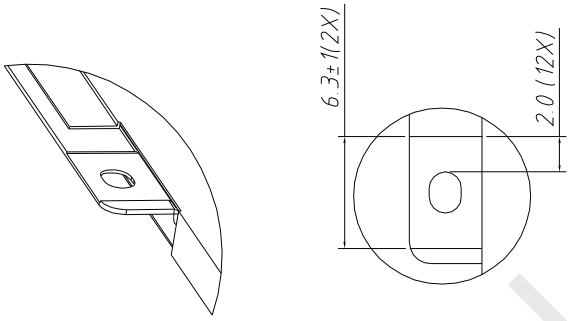
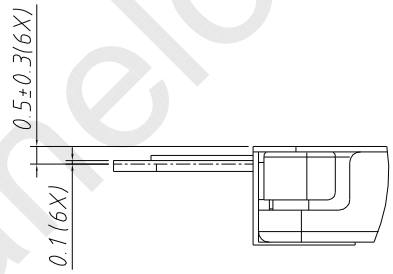


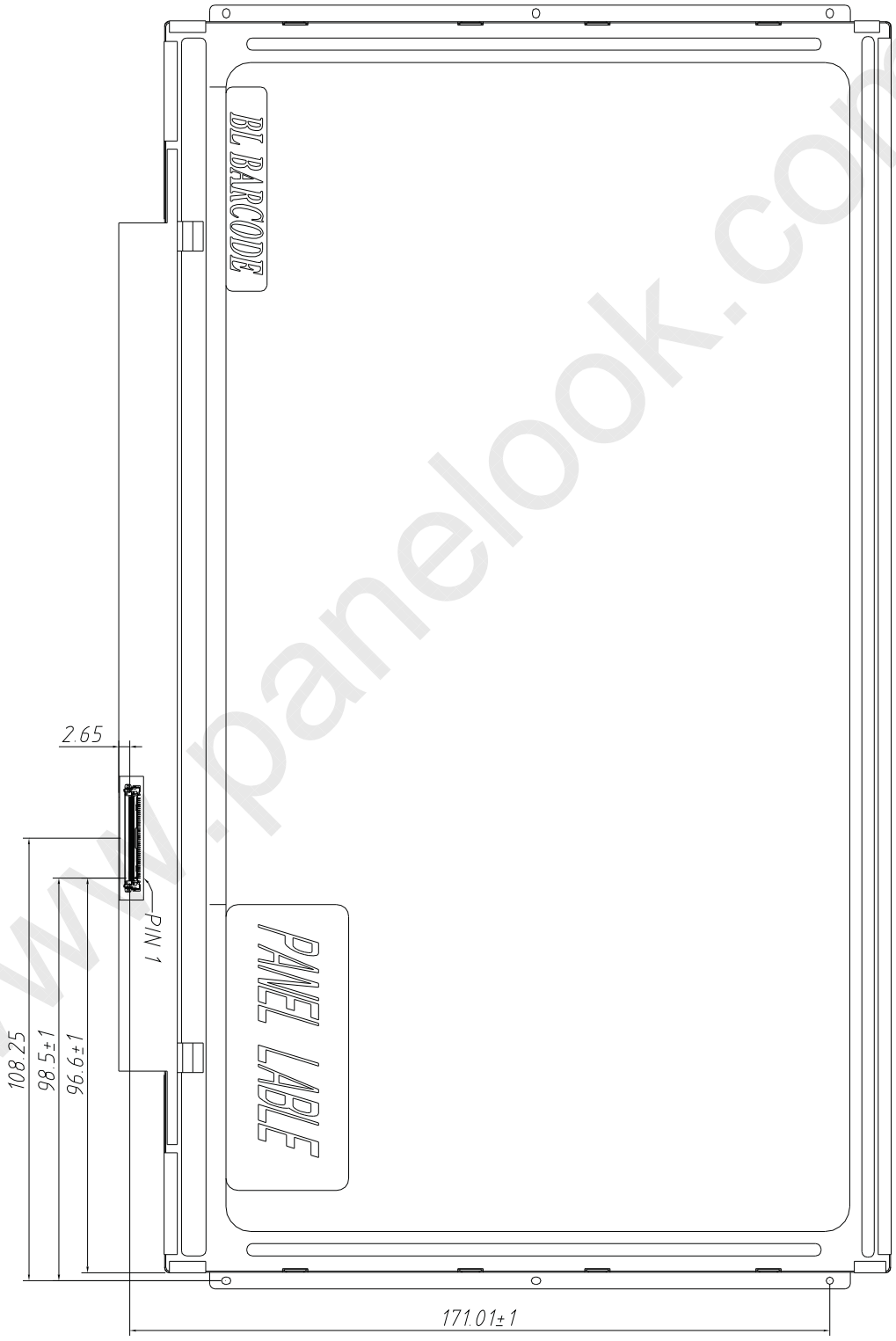
Detail A
Scale 4:1



Detail B
Scale 8:1

CLASS / LIMITS	A	B	C
0~5	±0.05	±0.10	±0.10
5~15	±0.05	±0.10	±0.15
15~50	±0.05	±0.10	±0.20
50~250	±0.10	±0.20	±0.30
250~600	±0.15	±0.30	±0.50
> 600	±0.30	±0.50	±0.70

Figure 18 Reference Outline Drawing (Back Side) (Tentative)



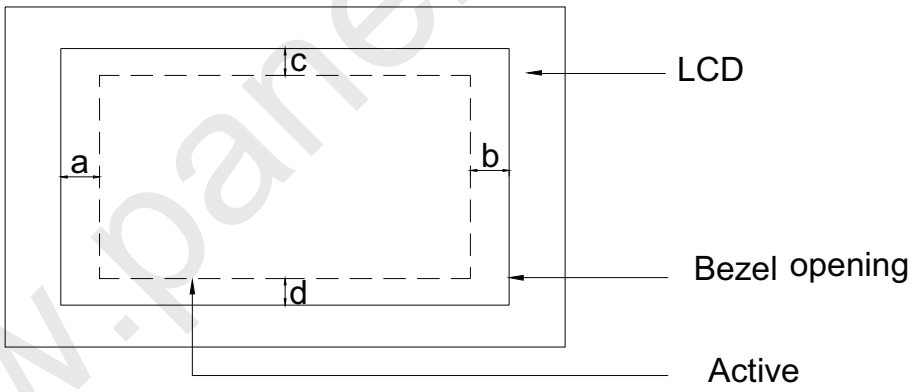
10.2 Dimension Specifications

Table 11 Module Dimension Specifications

Parameter		Unit	Note
Width	314.10±0.5	mm	-
Height	188.7±0.5	mm	-
Thickness	3.0 (Max.)	mm	PCB Side 3.2mm (Max.)
Weight	260 (Max.)	g	-
BM : | a-b | & | c-d |	≤1.0	mm	-

Measure instrument: Vernier caliper

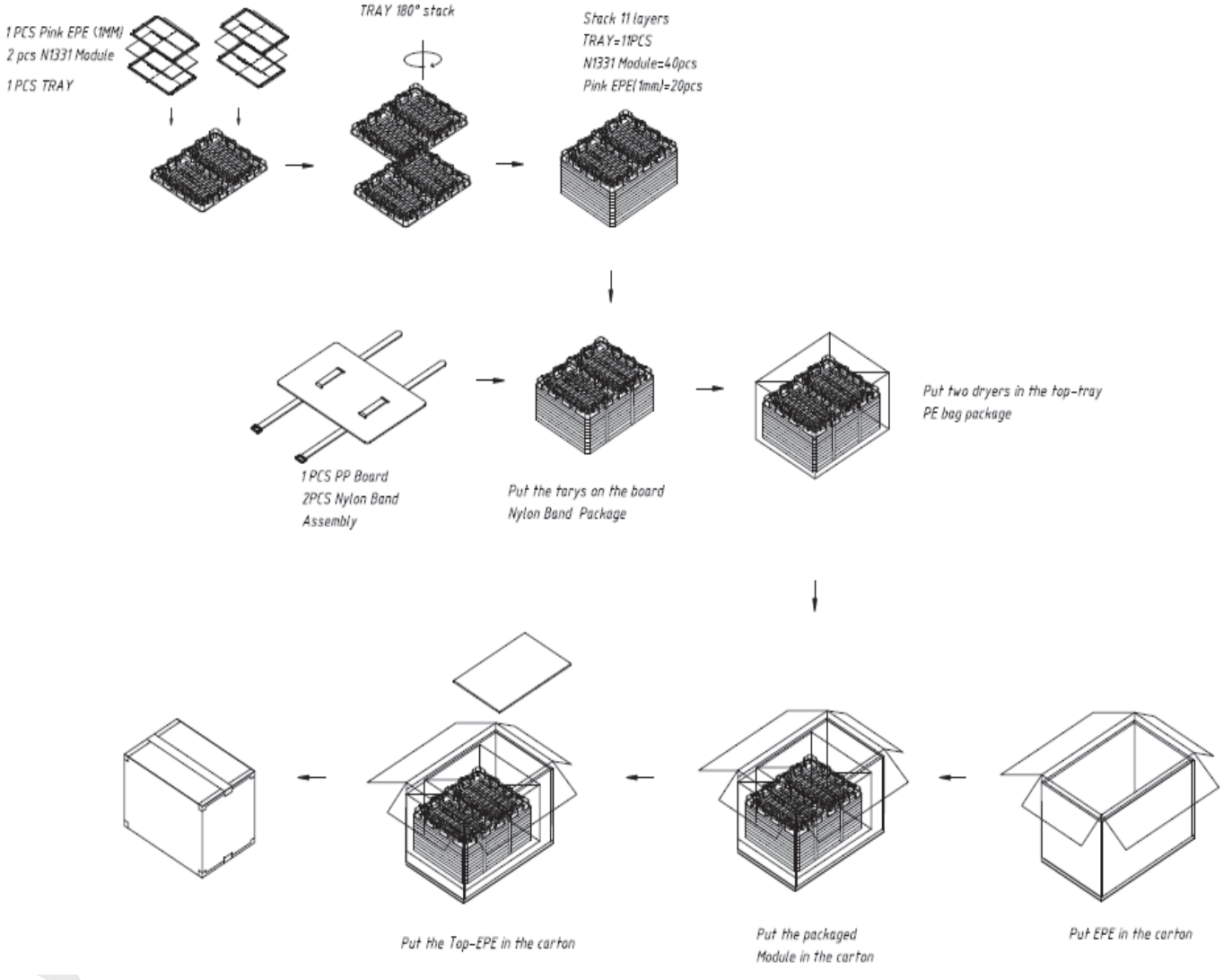
Figure 19 BM Area



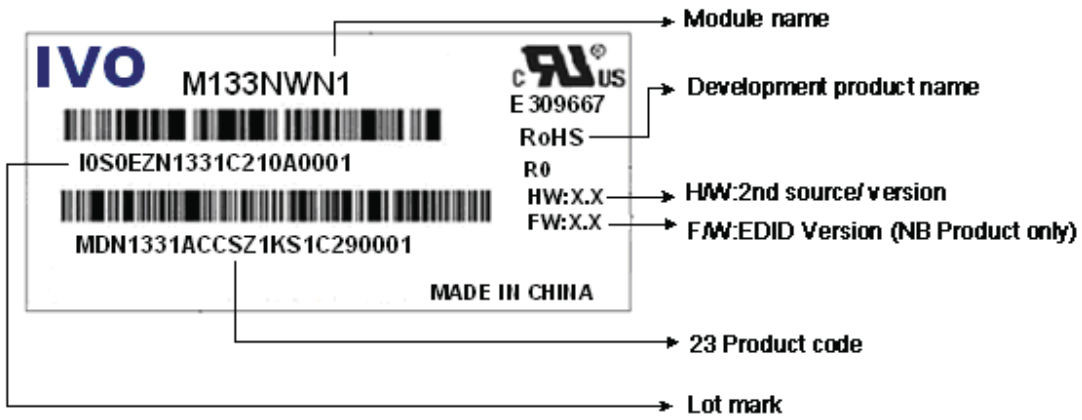
11.0 Package Specification

The outside dimension of carton is 570*455*227mm.

Figure 20 Packing Method (Tentative)



12.0 Lot Mark



12.1 Lot Mark

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

code 1,2,4,5,6,7,8,9,10,11,16: IVO internal flow control code.

code 3: Production location.

code 12: Production year.

code 13: Production month.

code 14,15: Production date.

Code 17,18,19,20: Serial number.

Note (1) Production Year

Year	2,006	2,007	2,008	2,009	2,010	2,011	2,012	2,013	2,014	2,015
Mark	6	7	8	9	A	B	C	D	E	F

Note (2) Production 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

12.2 23 Product Barcode

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

code 1,2:Manufacture District

code 3,4,5,6,7: IVO internal module name.

code 8,9,10,13,16: IVO internal flow control code.

code 11,12: Cell location Suzhou defined as “SZ”.

code 14 ,15: Module line kunshan defined as” KS”.

code 17,18,19 : Year, Month, Day Refer to Note(1) and Note(2) of Lot Mark.

code 20~23 : Serial Number.

13.0 General Precaution

13.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

13.2 Handling Precaution

(1) Please mount LCD module by using mounting holes arranged in four corners tightly.

(2) Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. IVO does not warrant the module, if customers disassemble or modify the module.

(3) If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid Crystal, and do not contact liquid crystal with skin. If liquid crystal contacts mouth or eyes, rinse out with water immediately. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and Rinse thoroughly with water.

(4) Disconnect power supply before handling LCD module

(5) Refrain from strong mechanical shock and /or any force to the module.

(6) Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts’ parameters, environmental temperature; etc otherwise LCD module may be damaged. It’s recommended employing protection circuit for power supply.

(7) Do not touch, push or rub the polarizer with anything harder than HB pencil lead. Use fingerstalls of soft gloves in order to keep clean display quality, when Persons handle the LCD module for incoming inspection or assembly.

(8) When the surface is dusty, please wipe gently with absorbent cotton or other soft Material. When cleaning the adhesives, please use absorbent cotton wetted with a little Petroleum benzene or other adequate solvent.

(9) Wipe off saliva or water drops as soon as possible. If saliva or water drops Contact with polarizer for a long time, they may cause deformation or color Fading.

(10) Protection film must remove very slowly from the surface of LCD module to Prevent from electrostatic occurrence.

(11) Because LCD module uses CMOS-IC on circuit board and TFT-LCD panel, it is Very weak to electrostatic discharge, Please be careful with electrostatic Discharge .Persons who handle the module should be grounded through adequate methods.

(12) Do not adjust the variable resistor located on the module.

13.3 Storage Precaution

(1) Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

(2) The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

(3) The module should be stored in a dark place. It is prohibited to apply sunlight or fluorescent light in storage.

13.4 Operation Precaution

(1) Do not connect or disconnect the module in the "Power On" condition.

(2) Power supply should always be turned on/off by 9.0 "Power on/off sequence"

(3) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference should be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.

(4) After installation of the TFT Module into an enclosure, 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.

13.5 Others

(1) Ultra-violet ray filter is necessary for outdoor operation.

(2) Avoid condensation of water which may result in improper operation or disconnection of electrode.

(3) If the module keeps displaying the same pattern for a long period of time, the image may be "sticked" to the screen.

(4) This module has its circuitry PCB's on the rear side and should be handled carefully in order not to be stressed.

13.6 Disposal

When disposing LCD module, obey the local environmental regulations.

14.0 EDID Data Structure

Address (Decimal)	Address (HEX)	Field Name & Comments	Value (HEX)	Value (BIN)	Value (DEC)	Remark
0	0	Header	00	00000000	0	
1	1	Header	FF	11111111	255	
2	2	Header	FF	11111111	255	
3	3	Header	FF	11111111	255	
4	4	Header	FF	11111111	255	
5	5	Header	FF	11111111	255	
6	6	Header	FF	11111111	255	
7	7	Header	00	00000000	0	
8	8	manufacture code	26	00100110	38	IVO
9	9	manufacture code	CF	11001111	207	
10	0A	Product Code	33	00110011	51	1331
11	0B	Product Code	05	00000101	5	
12	0C	LCD module Serial No –(“0” if not used)	00	00000000	0	
13	0D	LCD module Serial No –(“0” if not used)	00	00000000	0	
14	0E	LCD module Serial No –(“0” if not used)	00	00000000	0	
15	0F	LCD module Serial No –(“0” if not used)	00	00000000	0	
16	10	Week of manufacture	02	00000010	2	week2
17	11	Year of manufacture	16	00010110	22	Year2012
18	12	EDID Structure Ver # = 1	01	00000001	1	
19	13	EDID revision # = 3	03	00000011	3	
20	14	Video I/P definition = Digital I/P (80h)	80	10000000	128	
21	15	Max H image size = (Rounded to cm)	1D	00011101	29	H Active area size:29cm V Active area size:16cm
22	16	Max V image size = (Rounded to cm)	10	00010000	16	
23	17	Display Gamma	78	01111000	120	GAMMA: 2.2
24	18	Feature support (no DPMS, Active off, RGB, timing BLK 1)	0A	00001010	10	
25	19	Red/Green Low bits (RxRy/GxGy)	76	01110110	118	Rx:0.58 Ry:0.335 Gx:0.33 Gy:0.565 Bx:0.155 By:0.14

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						Wx:0.313 Wy:0.329
26	1A	Blue/White Low bits (BxBy/WxWy)	B0	10110000	176	
27	1B	Red X Rx	94	10010100	148	
28	1C	Red Y Ry	55	01010101	85	
29	1D	Green X Gx	54	01010100	84	
30	1E	Green Y Gy	90	10010000	144	
31	1F	Blue X Bx	27	00100111	39	
32	20	Blue Y By	23	00100011	35	
33	21	White X Wx	50	01010000	80	
34	22	White Y Wy	54	01010100	84	
35	23	Established timings 1 (00h if not used)	00	00000000	0	
36	24	Established timing 2 (00h if not used)	00	00000000	0	
37	25	Manufacturer's timings (00h if not used)	00	00000000	0	
38	26	Standard timing ID1 (01h if not used)	01	00000001	1	
39	27	Standard timing ID1 (01h if not used)	01	00000001	1	
40	28	Standard timing ID2 (01h if not used)	01	00000001	1	
41	29	Standard timing ID2 (01h if not used)	01	00000001	1	
42	2A	Standard timing ID3 (01h if not used)	01	00000001	1	
43	2B	Standard timing ID3 (01h if not used)	01	00000001	1	
44	2C	Standard timing ID4 (01h if not used)	01	00000001	1	
45	2D	Standard timing ID4 (01h if not used)	01	00000001	1	
46	2E	Standard timing ID5 (01h if not used)	01	00000001	1	
47	2F	Standard timing ID5 (01h if not used)	01	00000001	1	
48	30	Standard timing ID6 (01h if not used)	01	00000001	1	
49	31	Standard timing ID6 (01h if not used)	01	00000001	1	
50	32	Standard timing ID7 (01h if not used)	01	00000001	1	
51	33	Standard timing ID7 (01h if not used)	01	00000001	1	
52	34	Standard timing ID8 (01h if not used)	01	00000001	1	
53	35	Standard timing ID8 (01h if not used)	01	00000001	1	
54	36	Pixel Clock LSB	68	01101000	104	CLK:75.4MHz
55	37	Pixel Clock HSB	1C	00011100	28	
56	38	Horizontal Active (lower 8 bits)	56	01010110	86	H active:1366

57	39	Hor blanking (lower 8 bits)	86	10000110	134	H blank:134
58	3A	Horizontal Active/Horizontal blanking (upper4:4 bits)	50	01010000	80	
59	3B	Vertcal active(lower 8 bits)	00	00000000	0	V Active:768
60	3C	Vertical blanking(lower 8 bits)	28	00101000	40	V blank:40
61	3D	Vertical Active : Vertical Blanking (upper4:4 bits)	30	00110000	48	
62	3E	Horizontal Sync Offset	3A	00111010	58	H front porch:58
63	3F	Horizontal Sync Pulse Width	24	00100100	36	H sync pulse:36
64	40	Vertical Sync Offset , Sync Width	37	00110111	55	V ront porch:3
65	41	Horizontal Vertical Sync Offset/Width upper 2 bits	00	00000000	0	V sync pulse:12
66	42	Horizontal Image Size	25	00100101	37	H Active area size:293.42mm V Active area size:164.97mm
67	43	Vertical image Size	A4	10100100	164	
68	44	Horizontal Image Size / Vertical image size	10	00010000	16	
69	45	Horizontal Border = (0 for Notebook LCD)	00	00000000	0	
70	46	Vertical Border = (0 for Notebook LCD)	00	00000000	0	
71	47	Non-interlaced, Normal, no stereo, Separate sync, H/V pol Negatives,	19	00011001	25	DE only mode
72	48	Timing Descriptor #2	00	00000000	0	
73	49		00	00000000	0	
74	4A		00	00000000	0	
75	4B		00	00000000	0	
76	4C		00	00000000	0	
77	4D		00	00000000	0	
78	4E		00	00000000	0	
79	4F		00	00000000	0	
80	50		00	00000000	0	
81	51		00	00000000	0	

82	52		00	00000000	0	
83	53		00	00000000	0	
84	54		00	00000000	0	
85	55		00	00000000	0	
86	56		00	00000000	0	
87	57		00	00000000	0	
88	58		00	00000000	0	
89	59	Module revision	00	00000000	0	
90	5A	Detailed timing/monitor descriptor#3	00	00000000	0	
91	5B	Flag	00	00000000	0	
92	5C	Flag	00	00000000	0	
93	5D	FE (hex) defines ASCII string	FE	11111110	254	
94	5E	Flag	00	00000000	0	
95	5F	Manufacture	49	01001001	73	
96	60	Manufacture	6E	01101110	110	
97	61	Manufacture	66	01100110	102	
98	62	Manufacture	6F	01101111	111	
99	63	Manufacture	56	01010110	86	
100	64	Manufacture	69	01101001	105	
101	65	Manufacture	73	01110011	115	
102	66	Manufacture	69	01101001	105	
103	67	Manufacture	6F	01101111	111	
104	68	Manufacture	6E	01101110	110	
105	69	New line character indicates end of ASCII string	0A	00001010	10	
106	6A		20	00100000	32	
107	6B		20	00100000	32	
108	6C	Detailed timing/monitor descriptor #4	00	00000000	0	
109	6D		00	00000000	0	
110	6E		00	00000000	0	
111	6F	FE (hex) defines ASCII string	FE	11111110	254	
112	70	Flag	00	00000000	0	
113	71	Manufacture P/N	4D	01001101	77	M

114	72	Manufacture P/N	31	00110001	49	1
115	73	Manufacture P/N	33	00110011	51	3
116	74	Manufacture P/N	33	00110011	51	3
117	75	Manufacture P/N	4E	01001110	78	N
118	76	Manufacture P/N	57	01010111	87	W
119	77	Manufacture P/N	4E	01001110	78	N
120	78	Manufacture P/N	31	00110001	49	1
121	79	Manufacture P/N	20	00100000	32	
122	7A	Manufacture P/N	52	01010010	82	R
123	7B	Manufacture P/N	30	00110000	48	0
124	7C	New line character indicates end of ASCII string	20	00100000	32	
125	7D		0A	00001010	10	
126	7E	Extension Flag = 00	00	00000000	0	
127	7F	Checksum	F0	11110000	240	