



( ) Preliminary Specifications

(✓) Final Specifications

Module	15.6" FHD Color TFT-LCD
Model Name	G156HAT01.0
Note	G/G P-cap touch TTL module

<b>Customer</b>	<b>Date</b>
_____	_____
<b>Checked &amp; Approved by</b>	<b>Date</b>
_____	_____
<b>Customer's sign back page</b>	

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## Record of Revision

Version	Date	Page	Old description	New Description
0.0	2017/08/24	All	First Edition for Customer	
0.1	2017/12/26	27	2 connectors	Keep USB 1 connector
1.0	2018/09/13			Final Spec

## 1. Handling Precautions

- 1) Since front polarizer is easily damaged, please be cautious and 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 soft cloth.
- 5) Since the panel is made of glass, it may be broken or cracked if dropped or bumped on hard surface.
- 6) To avoid ESD (Electro Static Discharge) damage, be sure to ground yourself before handling TFT-LCD Module.
- 7) Do not open nor modify the module assembly.
- 8) Do not press the reflector sheet at the back of the module to any direction.
- 9) In case if a module has to be put back into the packing container slot after it was taken out from the container, do not press the center of the LED light bar edge. Instead, press at the far ends of the LED light bar edge softly. Otherwise the TFT Module may be damaged.
- 10) 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) TFT-LCD Module is not allowed to be twisted & bent even force is added on module in a very short time. Please design your display product well to avoid external force applying to module by end-user directly.
- 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) Severe temperature condition may result in different luminance, response time and lamp ignition voltage.
- 14) Continuous operating TFT-LCD display under low temperature environment may accelerate lamp exhaustion and reduce luminance dramatically.
- 15) The data on this specification sheet is applicable when LCD module is placed in landscape position.
- 16) Continuous displaying fixed pattern may induce image sticking. It's recommended to use screen saver or shuffle content periodically if fixed pattern is displayed on the screen.

## 2. General Description

G156HAT01.0 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 16.2M colors (RGB 6-bits + FRC)with LED backlight driving circuit. All input signals are eDP(Embedded DisplayPort) interface compatible.

G156HAT01.0 is designed for a display with touch panel unit 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]	15.6"
Active Area	[mm]	344.16 x 193.59
Resolution		1920 x 3(RGB) x 1080
Pixel Pitch	[mm]	0.17925 x 0.17925
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		AHVA, Normally Black
Nominal Input Voltage VDD	[Volt]	+3.3 (Typ.)
LCD Power Consumption	[Watt]	0.98 (Max.)
LED Power Consumption	[Watt]	10.4 (Max.)
Weight	[Grams]	1135g typ
Physical Size with touch panel	[mm]	370.4x227.89 x 11.45 mm typ. non PCBA side, PCBA side 13.28mm typ.
Electrical Interface		2 Lane eDP Touch Panel:USB
Surface Treatment		N/A
Surface Hardness		7H
Support Color		16.2M colors ( RGB 6-bits+FRC )
Temperature Range Operating Storage (Non-Operating)	[°C] [°C]	-10 to +60 (+60°C as panel surface temperature) -10 to +60
RoHS Compliance		Yes
Touch Operaton System		Windows8/Window10

## 2.2 Optical Characteristics



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

Item	Unit	Conditions	Min.	Typ.	Max.	Note		
White Luminance	cd/m <sup>2</sup>	I <sub>LED</sub> =50mA Center average	340	425	-	1, 2		
Luminance Uniformity	%	9 Points	75	80	-	1, 2, 3		
Contrast Ratio	--		500	800	-	1, 4		
Response Time	msec	Rising + Falling	-	25	35	1, 5		
Viewing Angle	degree	Horizontal (Right) CR = 10 (Left)	80	89	-	1, 6		
			80	89	-			
		Vertical (Upper) CR = 10 (Lower)	80	89	-			
			80	89	-			
Color / Chromaticity Coordinates (CIE 1931)	Red	Rx	0.589	0.639	0.689	4		
		Ry	0.283	0.333	0.383			
	Green	Gx	0.251	0.301	0.351			
		Gy	0.577	0.627	0.677			
	Blue	Bx	0.107	0.157	0.207			
		By	0.009	0.059	0.109			
	White	Wx	0.263	0.313	0.363			
		Wy	0.279	0.329	0.379			
	Color Gamut		%	-	72		-	

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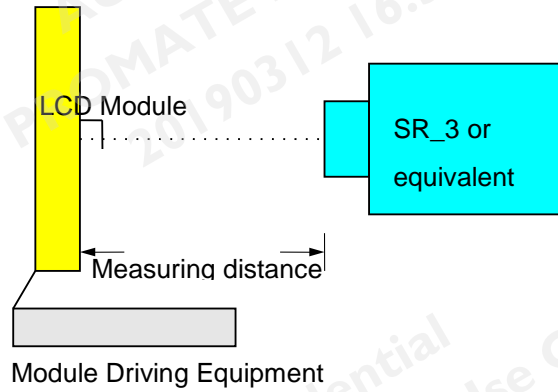
**Note 1:** Measurement method

Equipment Pattern Generator, Power Supply, Digital Voltmeter, Luminance meter (SR\_3 or equivalent)

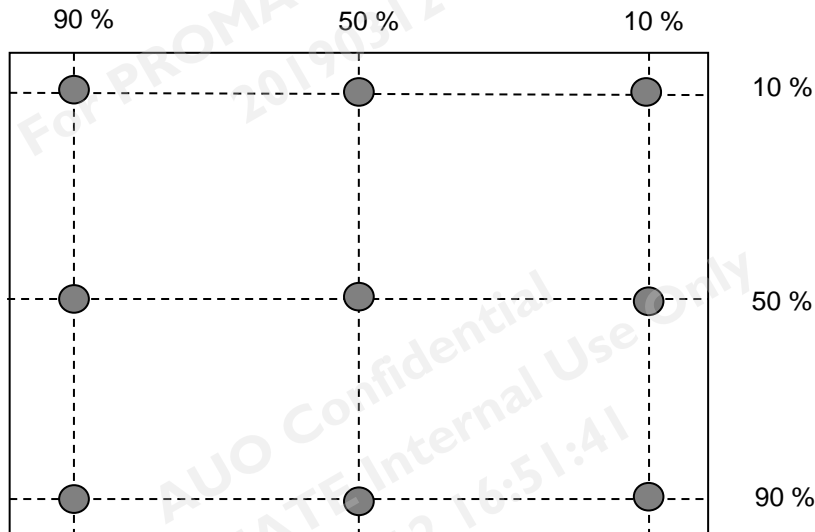
Aperture 1° with 50cm viewing distance

Test Point Center

Environment < 1 lux



**Note 2:** 9 points position



**Note 3:** The luminance uniformity of 9 points is defined by dividing the maximum luminance values by the minimum test point luminance. And measured by TOPCON SR-3

$$\delta w_9 = \frac{\text{Minimum Luminance of 9 points}}{\text{Maximum Luminance of 9 points}}$$

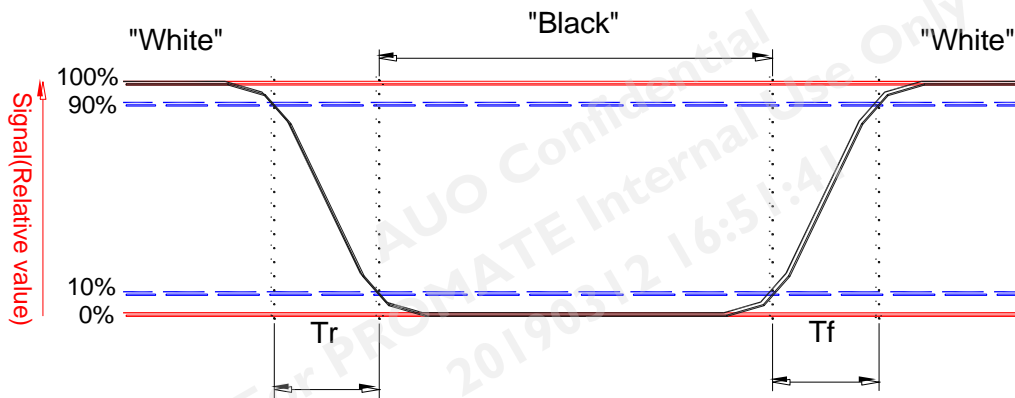
**Note 4 :** Definition of contrast ratio:

Contrast ratio is calculated with the following formula.

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

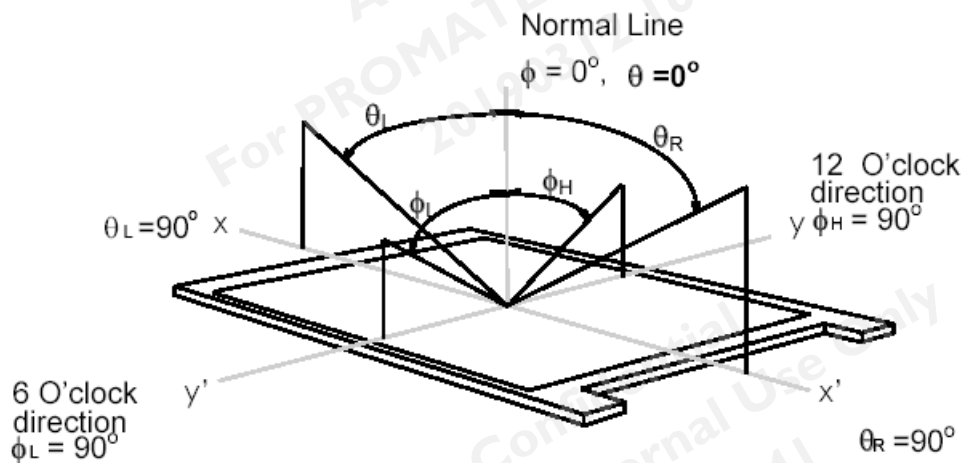
**Note 5:** Definition of response time:

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 6:** Definition of viewing angle

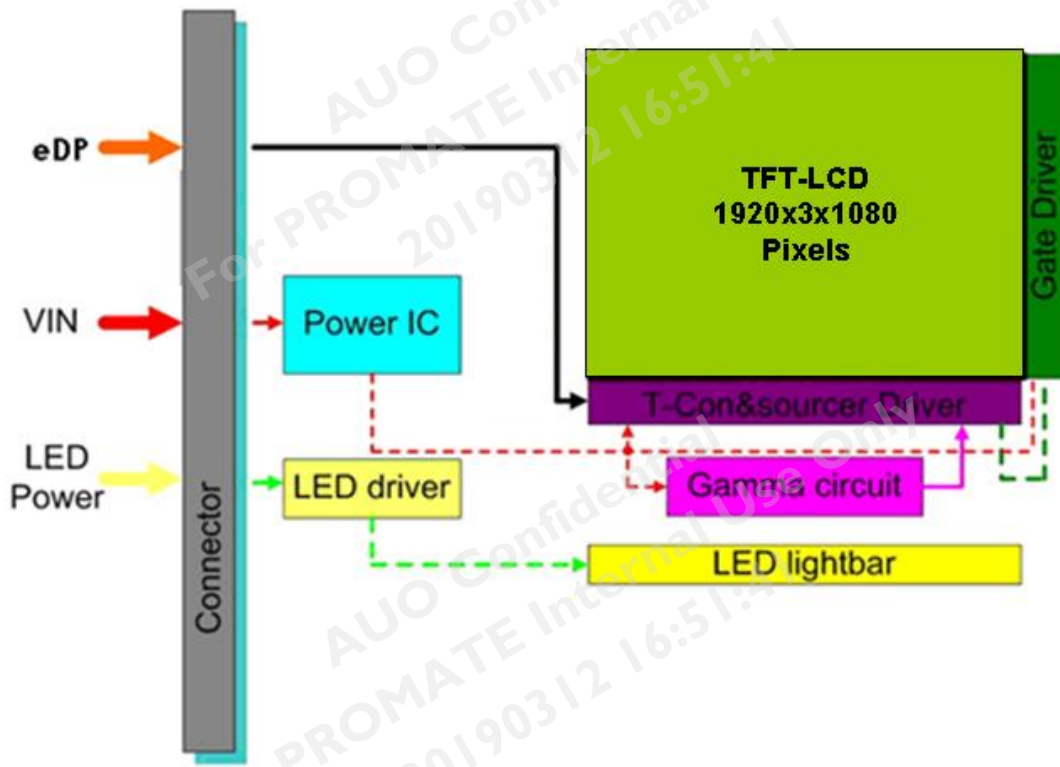
Viewing angle is the measurement of contrast ratio  $\geq 10$ , at the screen center, over a  $180^\circ$  horizontal and  $180^\circ$  vertical range (off-normal viewing angles). The  $180^\circ$  viewing angle range is broken down as follows;  $90^\circ$  ( $\theta$ ) horizontal left and right and  $90^\circ$  ( $\phi$ ) 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 module.



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## 4. Absolute Maximum Ratings

An absolute maximum rating of the module is as following:

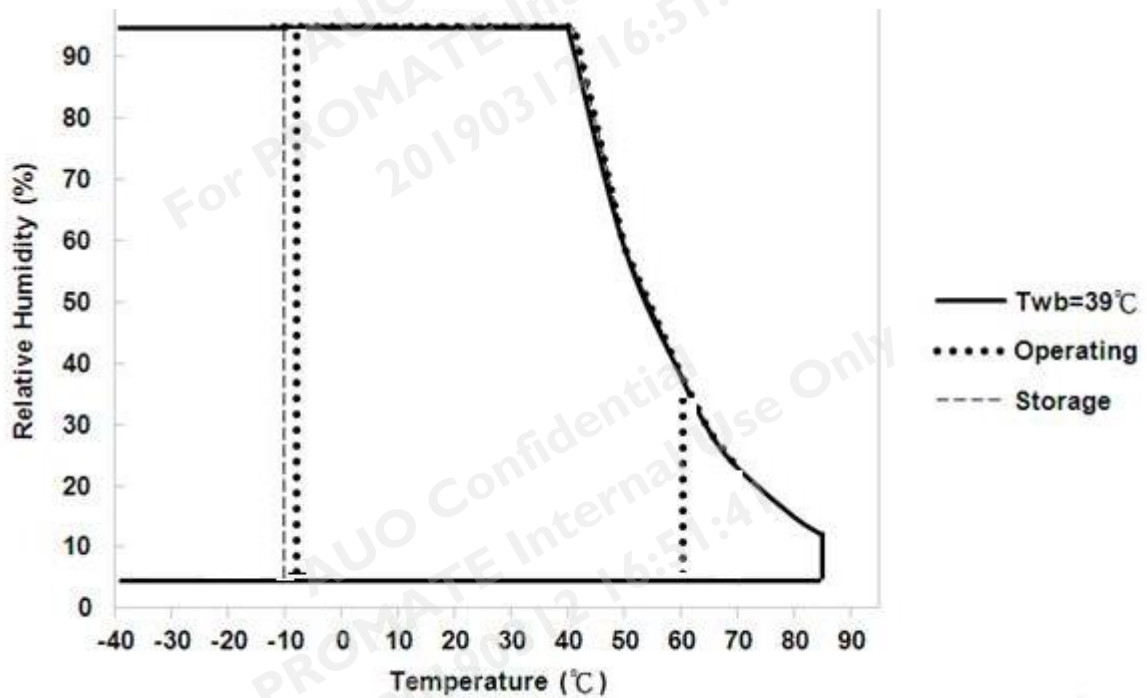
### 4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Min	Max	Unit
Logic/LCD Drive	Vin	-0.3	+4.0	[Volt]

### 4.2 Absolute Ratings of Environment

Item	Symbol	Min	Max	Unit
Operating	TOP	-10	+60	[°C]
Operation Humidity	HOP	5	95	[%RH]
Storage Temperature	TST	-10	+60	[°C]
Storage Humidity	HST	5	95	[%RH]

Note: Maximum Wet-Bulb should be 39 °C and no condensation.



## 5. Electrical Characteristics

### 5.1 TFT LCD Module

#### 5.1.1 Power Specification

Input power specifications are as follows;

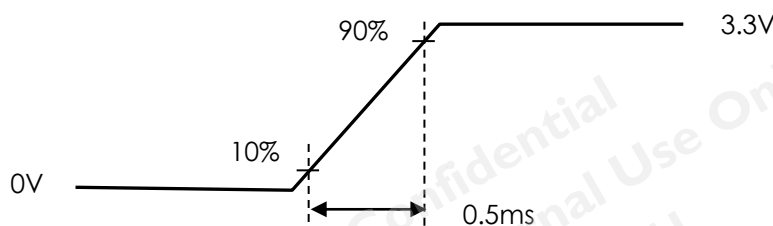
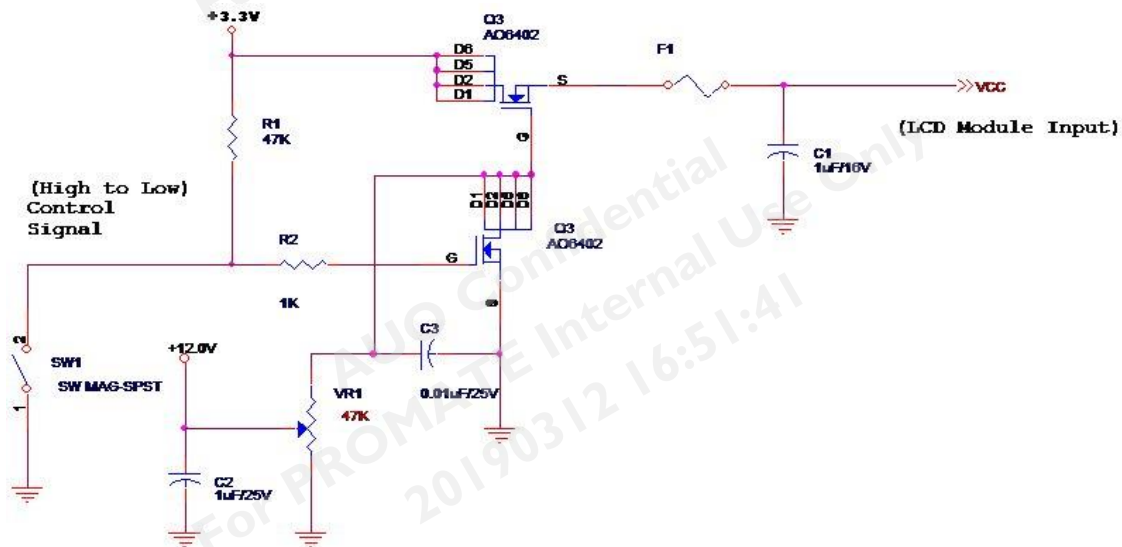
The power specification are measured under 25°C and frame frequency under 60Hz

Symble	Parameter	Min	Typ	Max	Units	Remark
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	
PDD	VDD Power	-	0.79	0.98	[Watt]	All Black Pattern (VDD=3.3V, at 60Hz)
IDD	IDD Current	-	240	290	[mA]	All Black Pattern (VDD=3.3V, at 60Hz)
IRush	Inrush Current	-	-	2000	[mA]	Note 1
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-	-	100	[mV] p-p	All Black Pattern (VDD=3.3V, at 60Hz)

Note 1 : Maximum Measurement Condition : White Pattern at 3.3V driving voltage. ( $P_{max}=V_{3.3} \times I_{white}$ )

Typical Measurement Condition: Mosaic Pattern

Note 2 : Measure Condition



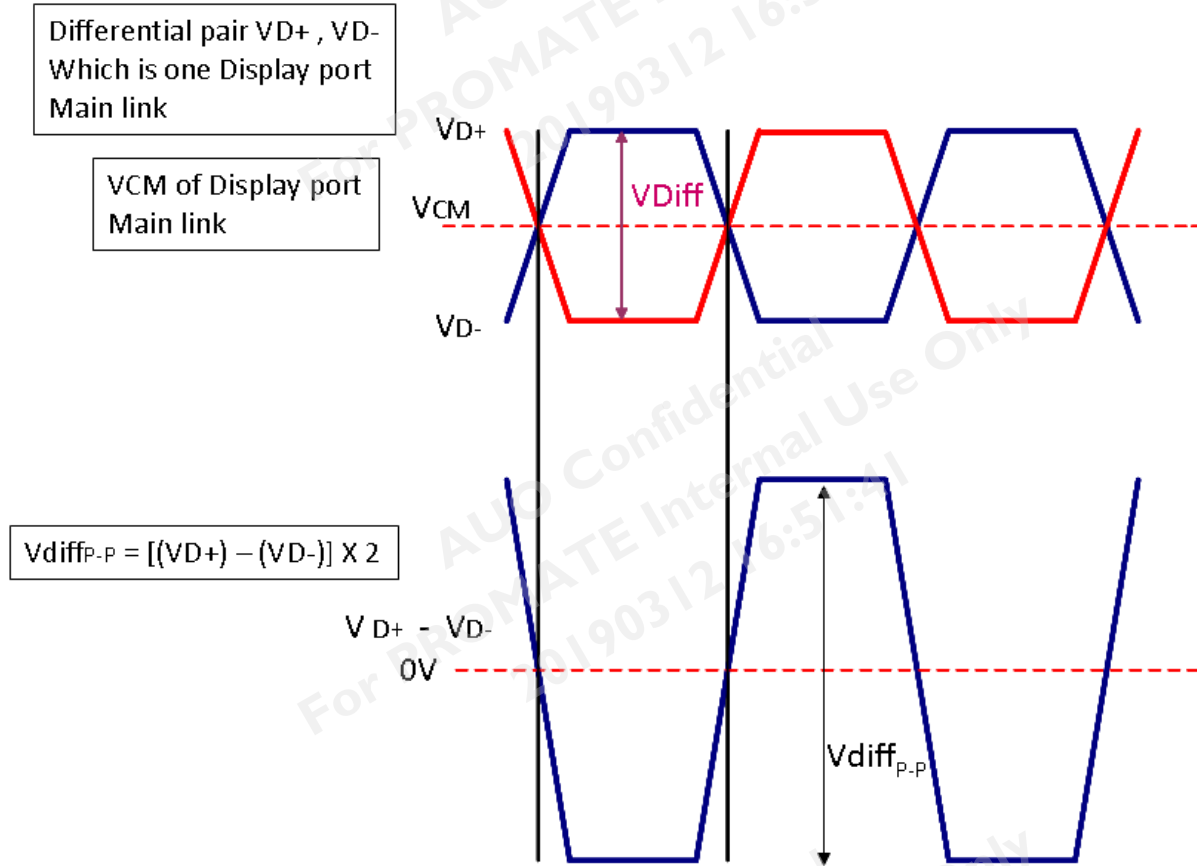
Vin rising time

## 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;

### Display Port main link signal:

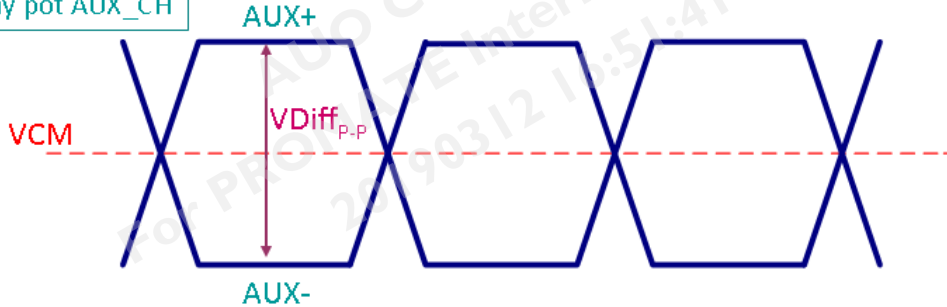


Display port main link					
		Min	Typ	Max	unit
VCM	RX input DC Common Mode Voltage		0		V
VDiff <sub>P-P</sub>	Peak-to-peak Voltage at a receiving Device	100		1320	mV

Follow as VESA display port standard V1.1a

## Display Port AUX\_CH signal:

Differential AUX+ , AUX-  
Which is Display pot AUX\_CH



Display port AUX_CH					
		Min	Typ	Max	unit
VCM	AUX DC Common Mode Voltage		0		V
VDiff <sub>P-P</sub>	AUX Peak-to-peak Voltage at a receiving Device	0.4	0.6	0.8	V

Follow as VESA display port standard V1.1a.

## Display Port VHPD signal:

Display port VHPD					
		Min	Typ	Max	unit
VHPD	HPD Voltage	2.25		3.6	V

Follow as VESA display port standard V1.1a.

## 5.2 Backlight Unit

### 5.2.1 LED characteristics

Parameter	Symbol	Min	Typ	Max	Units	Condition
Backlight Power Consumption	PLED	-	8.3	10.4	[Watt]	(Ta=25°C), Note 1 Vin =12V
LED Life-Time	N/A	50,000	-	-	Hour	(Ta=25°C), Note 2,3

**Note 1:** Ta means ambient temperature of TFT-LCD module.

**Note 2:** If G156HAN02.0 module is driven at high ambient temperature & humidity condition. The operating life will be reduced.

**Note 3:** Operating life means brightness goes down to 50% initial brightness. Min. operating life time is estimated data.

### 5.2.2 Backlight input signal characteristics

Parameter	Symbol	Min	Typ	Max	Units	Remark
LED Power Supply	VLED	10.8	12	13.2	[Volt]	Define as Connector Interface (Ta=25°C)
LED Enable Input High Level	VLED_EN	2.5		5.5	[Volt]	
LED Enable Input Low Level		0		0.9	[Volt]	
PWM Logic Input High Level	VPWM_EN	2.5		5.5	[Volt]	
PWM Logic Input Low Level		0		0.9	[Volt]	
PWM Input Frequency	FPWM	200		15K	Hz	
PWM Duty Ratio	Duty	10		100	%	

**Note 1 :** Recommended system pull up/down resistor no bigger than 10kohm.

**Note 2 :** If the PWM duty ratio(min) is set between 5% to 1% , the PWM input frequency should be set below 1KHz . The brightness-duty characteristic might not be able to keep in it's linearity if the dimming control is operated in 1% to 5% range.



## 5.3 Touch Sensor

### 5.3.1 Power Specification

Items	Symbol	Specifications			Unit	Notes
		Min.	Typ.	Max.		
Touch Panel Power Supply	VTSP	4.5	5	5.5	V	Ripple <100mV
Input voltage	VIH	VCCIOx0.7	-	VCCIO	V	VCCIO= 1.8V or 3.3V
	VIL	0	-	VCCIOx0.3	V	
Normal mode Current consumption @ Report rate 100Hz	INORMAL	75	80	85	mA	
Idle mode Current consumption	IIDLE	40	50	60	mA	
Sleep mode Current consumption	ISLEEP	-			uA	

### 5.3.2 Touch Driver information

Connector Name / Designation	For Signal Connector
Manufacturer	eGalax_eMPIA Techonology Inc.
Type / Part Number	EXC-3188



5.3.3 Touch Characteristic

Item	Specifications
Cover Lens Material	SDL CS Glass
Interface	USB 1.1 full speed
Touch Resolution	Same with display resolution
Single / Multi-touch Accuracy	Center:1mm Edge 1.5mm
Linearity	Center +/-1mm Edge:+-1.5mm
The smallest distance between 2 points	13mm
Channel (X * Y)	72 * 41
Report Rate (points /sec)	>100Hz
Power Consumption	454 mW (Max)

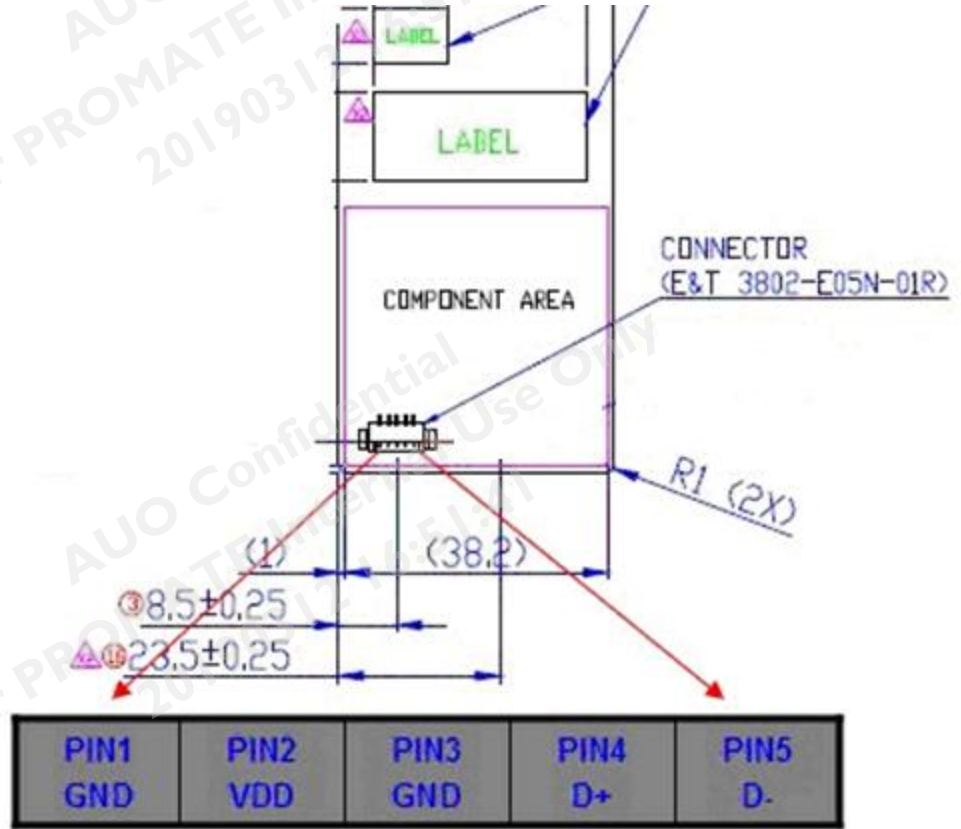
5.3.4 Touch Pin assignment

Connector Name / Designation	TP Connector
Manufacturer	E & T Corporation
Type / Part Number	3802K-E05N-01R (From FPCa) H201K-D05N-12B (From System)

Pin#	Symbol	Signal Name
1	GND	Ground
2	VDD	Power 5V
3	GND	Ground
4	D+	USB D+
5	D-	USB D-



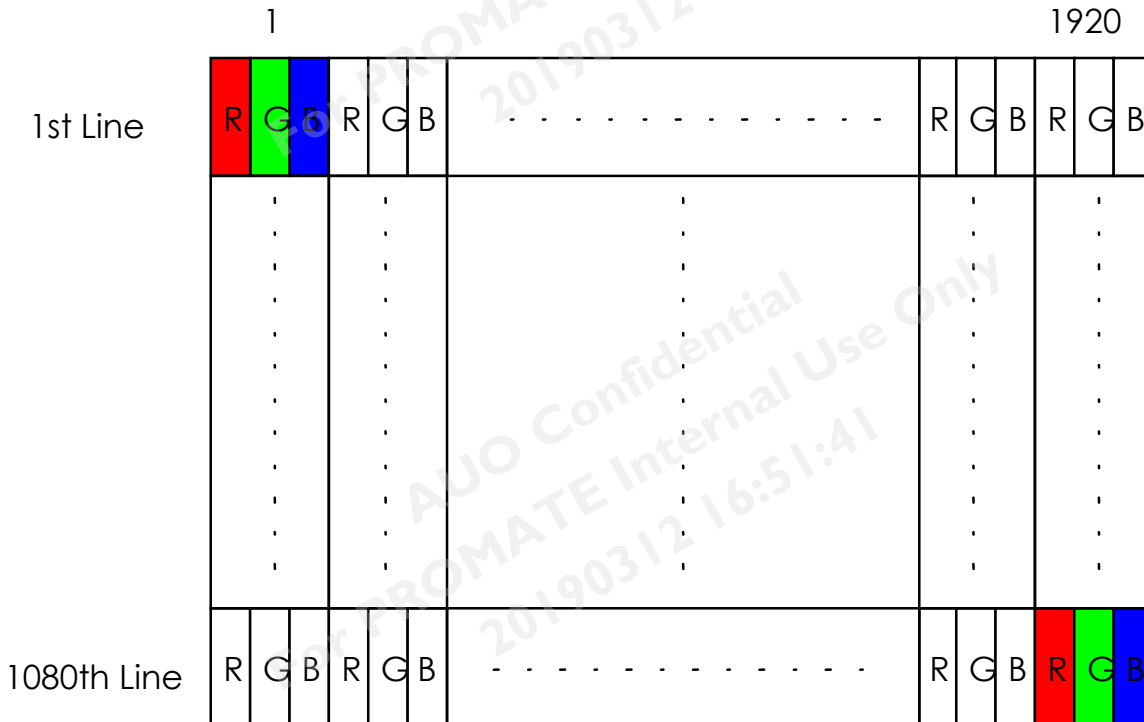
## 5.3.5 Touch Connector Illustration



## 6. Signal Interface Characteristic

### 6.1 Pixel Format Image

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



## 6.2 Integration Interface Requirement

### 6.2.1 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 20455-030E-76B or compatible
Mating Housing/Part Number	IPEX 20453-030T-11 or compatible

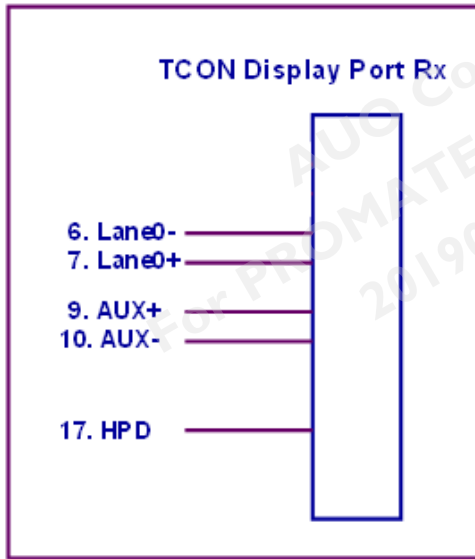
### 6.2.2 Pin Assignment (2 Lane)

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

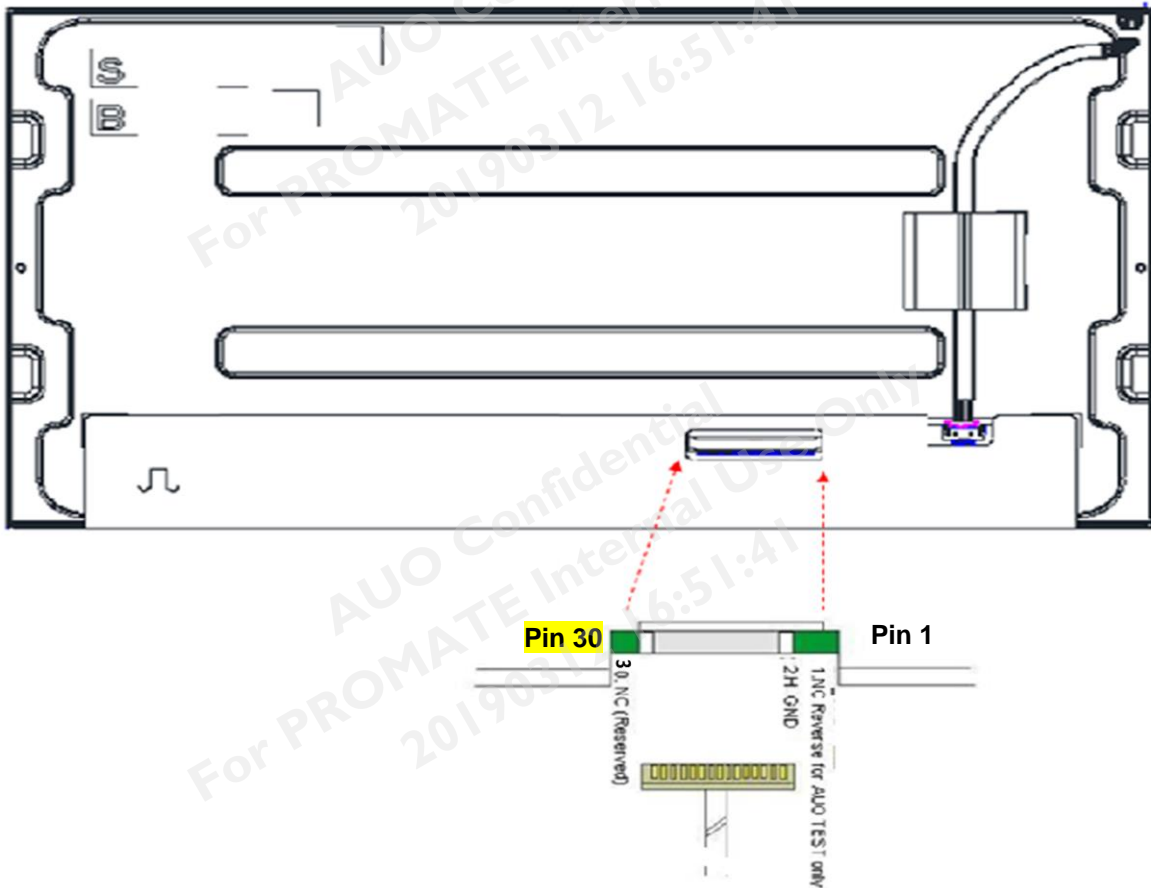
PIN NO	Symbol	Function
1	NC	Reverse for AUO TEST only
2	H_GND	High Speed Ground
3	Lane1_N	Comp Signal Lane 1
4	Lane1_P	True Signal Link Lane 1
5	H_GND	High Speed Ground
6	Lane0_N	Comp Signal Link Lane 0
7	Lane0_P	True Signal Link Lane 0
8	H_GND	High Speed Ground
9	AUX_CH_P	True Signal Auxiliary Ch.
10	AUX_CH_N	Comp Signal Auxiliary Ch.
11	H_GND	High Speed Ground
12	LCD_VCC	LCD logic and driver power
13	LCD_VCC	LCD logic and driver power
14	LCD_Self_Test or NC	LCD Panel Self Test Enable (Optional)
15	LCD_GND	LCD logic and driver ground
16	LCD_GND	LCD logic and driver ground
17	HPD	HPD signal pin
18	BL_GND	Backlight_ground
19	BL_GND	Backlight_ground
20	BL_GND	Backlight_ground
21	BL_GND	Backlight_ground
22	BL_Enable	Backlight On / Off
23	BL_PWM_DIM	System PWM signal Input
24	NC	Reverse for AUO TEST only
25	NC	Reverse for AUO TEST only
26	BL_PWR	Backlight power (5V~21V)
27	BL_PWR	Backlight power (5V~21V)
28	BL_PWR	Backlight power (5V~21V)
29	BL_PWR	Backlight power (5V~21V)
30	NC	No Connect (Reserved for CM)

**Note1** : start from right side refer to next page illustration.

**Note2** : Input signals shall be low or High-impedance state when VDD is off.  
Internal circuit of **eDP inputs** are as following.



**Note3** : Connector Illustration



## 6.3 Interface Timing

## 6.3.1 Timing Characteristics

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	
Frame Rate	-	-	60	-	Hz	
Clock frequency	1/ T <sub>clock</sub>	-	141	-	MHz	
Vertical Section	Period	T <sub>V</sub>	1090	1116	1880	T <sub>Line</sub>
	Active	T <sub>VD</sub>	1080			
	Blanking	T <sub>VB</sub>	10	36	800	
Horizontal Section	Period	T <sub>H</sub>	2080	2104	2320	T <sub>clock</sub>
	Active	T <sub>HD</sub>	1920			
	Blanking	T <sub>HB</sub>	160	184	400	

**Note 1 :** DE mode only

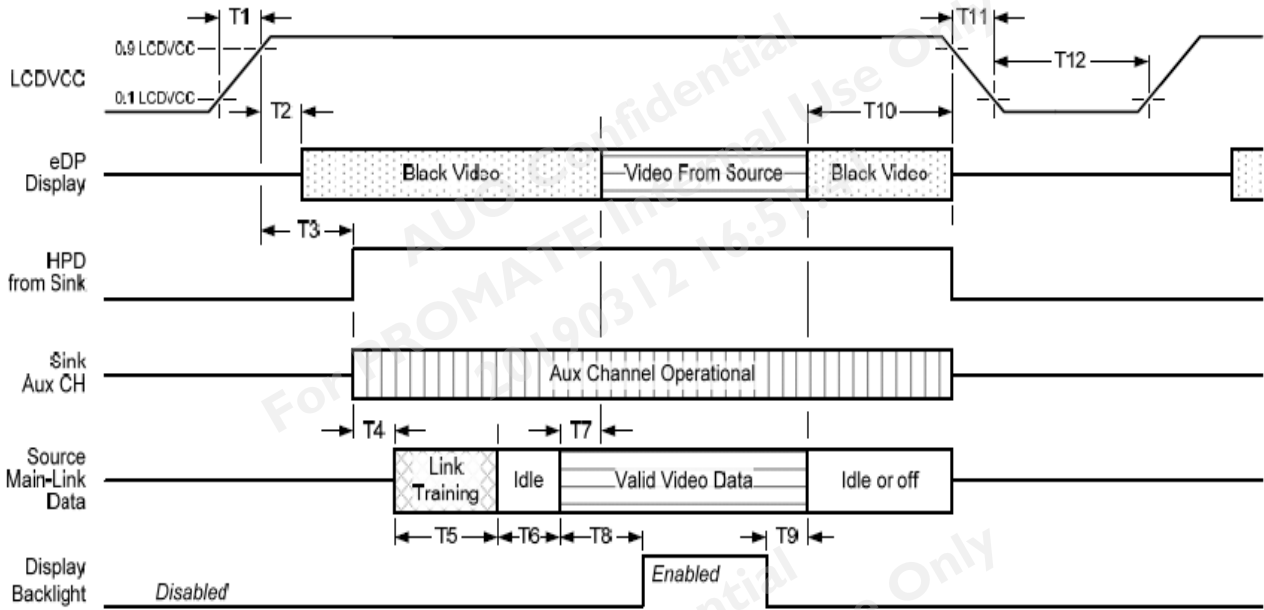
**Note 2 :** The maximum clock frequency =  $(960+B) \cdot (1080+A) \cdot 60 < 80\text{MHz}$

## 6.4 Power ON/OFF Sequence

Power on/off sequence is as follows. Interface signals and LED on/off sequence are also shown in the chart.

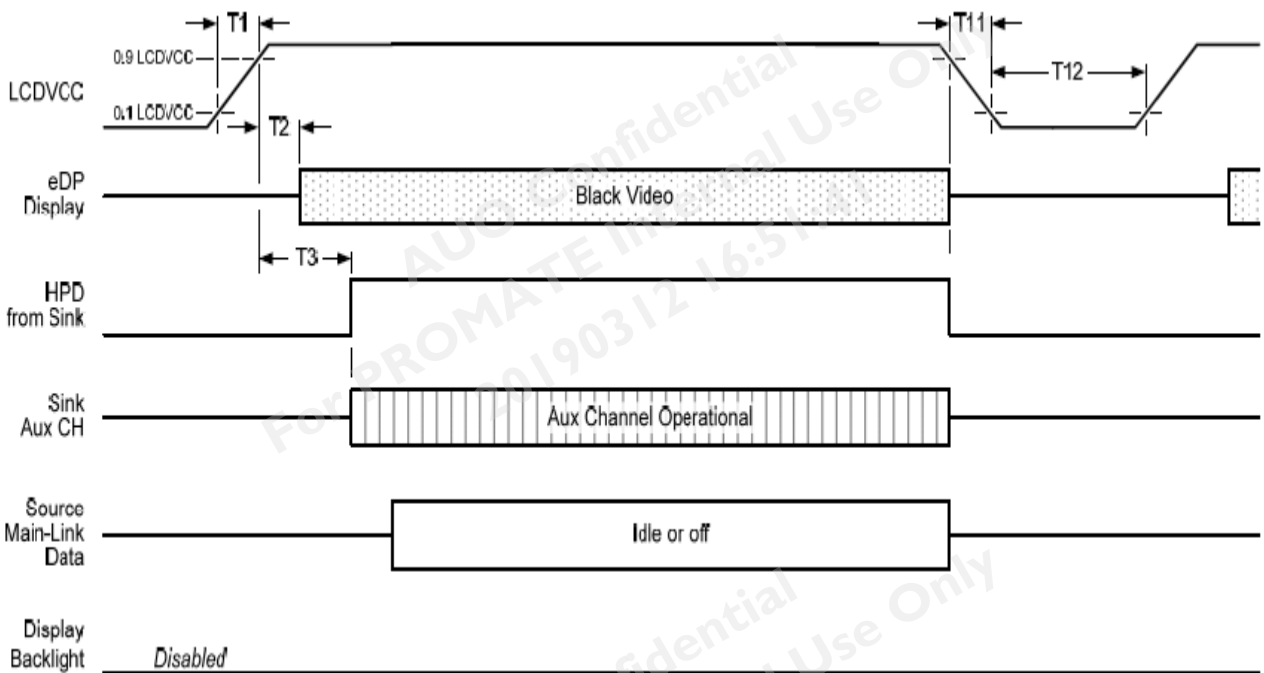
Signals from any system shall be Hi-Z state or low level when VDD is off

**Display Port panel power sequence:**



**Display port interface power up/down sequence, normal system operation**

**Display Port AUX\_CH transaction only:**



**Display port interface power up/down sequence, AUX\_CH transaction only**



Display Port panel power sequence timing parameter:

Timing parameter	Description	Reqd. by	Limits			Notes
			Min.	Typ.	Max.	
T1	power rail rise time, 10% to 90%	source	0.5ms		10ms	
T2	delay from LCDVDD to black video generation	sink	0ms		200ms	prevents display noise until valid video data is received from the source
T3	delay from LCDVDD to HPD high	sink	0ms		200ms	sink AUX_CH must be operational upon HPD high.
T4	delay from HPD high to link training initialization	source				allows for source to read link capability and initialize.
T5	link training duration	source				dependant on source link to read training protocol.
T6	link idle	source				Min accounts for required BS-Idle pattern. Max allows for source frame synchronization.
T7	delay from valid video data from source to video on display	sink	0ms		50ms	max allows sink validate video data and timing.
T8	delay from valid video data from source to backlight enable	source				source must assure display video is stable.
T9	delay from backlight disable to end of valid video data	source				source must assure backlight is no longer illuminated.
T10	delay from end of valid video data from source to power off	source	0ms		500ms	
T11	power rail fall time, 90% to 10%	source			10ms	
T12	power off time	source	500ms			

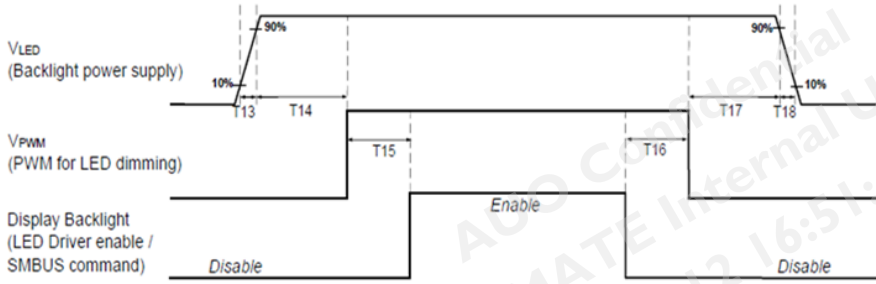
**Note 1:** The sink must include the ability to generate black video autonomously. The sink must automatically enable black video under the following conditions:

- upon LCDVDD power on (with in T2 max)-when the "Novideostream\_Flag" (VB-ID Bit 3) is received from the source (at the end of T9).
- when no main link data, or invalid video data, is received from the source. Black video must be displayed within 64ms (typ) from the start of either condition. Video data can be deemed invalid based on MSA and timing information, for example.

**Note 2:** The sink may implement the ability to disable the black video function, as described in Note 1, above, for system development and debugging purpose.

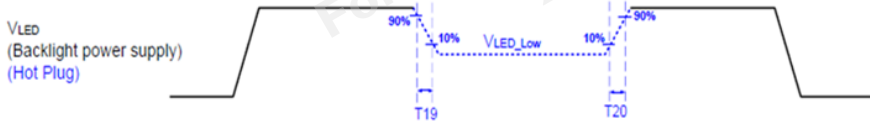
**Note 3:** The sink must support AUX\_CH polling by the source immediately following LCD VDD power on without causing damage to the sink device (the source can re-try if the sink is not ready). The sink must be able to respond to an AUX\_CH transaction with the time specified within T3 max.

Display Port panel B/L power sequence timing parameter:



	Min (ms)	Max (ms)
T13	0.5	10
T14	10	-
T15	10	-
T16	10	-
T17	10	-
T18	0.5	10
T19	1 <sup>*</sup>	-
T20	1 <sup>*</sup>	-

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



Seamless change: T19/T20 = 5xT<sub>PWM</sub><sup>\*</sup>

<sup>\*</sup>T<sub>PWM</sub> = 1/PWM Frequency

## 7. Panel Reliability Test

Items	Required Condition	Note
-------	--------------------	------





Temperature Humidity Bias	Ta=50°C , 80%RH, 300h	Note 1,2
High Temperature Operation	Ta= 60°C, , 300h (For panel surface temp.)	
Low Temperature Operation	Ta= -10°C, 300h	
High Temperature Storage	Ta= 60°C, 300h	
Low Temperature Storage	Ta= -10°C, 300h	
Thermal Shock Test	Ta= -10°C to 60°C, Duration at 30 min, 100 cycles	
Packing Vibration	Random vibration: 0.015G2/Hz from 5~200Hz,-6dB/Octave from 200~500Hz	
Packing Drop	According to packing weight (Refer to RHS table)	
ESD	Contact : ±8 KV Air : ±15 KV	Note 1
Ball drop	500g ,40 cm center point , 1 time/pcs	

ASTM D-775, ASTM D3332, ISTA 1 corner, 3 edges, 6 flats	
Packing Weight (kg)	Drop Height (cm)
0.45~9.52	76.2
9.52~18.59	60.96
18.59~27.66	45.72
27.66~45.35	30.48

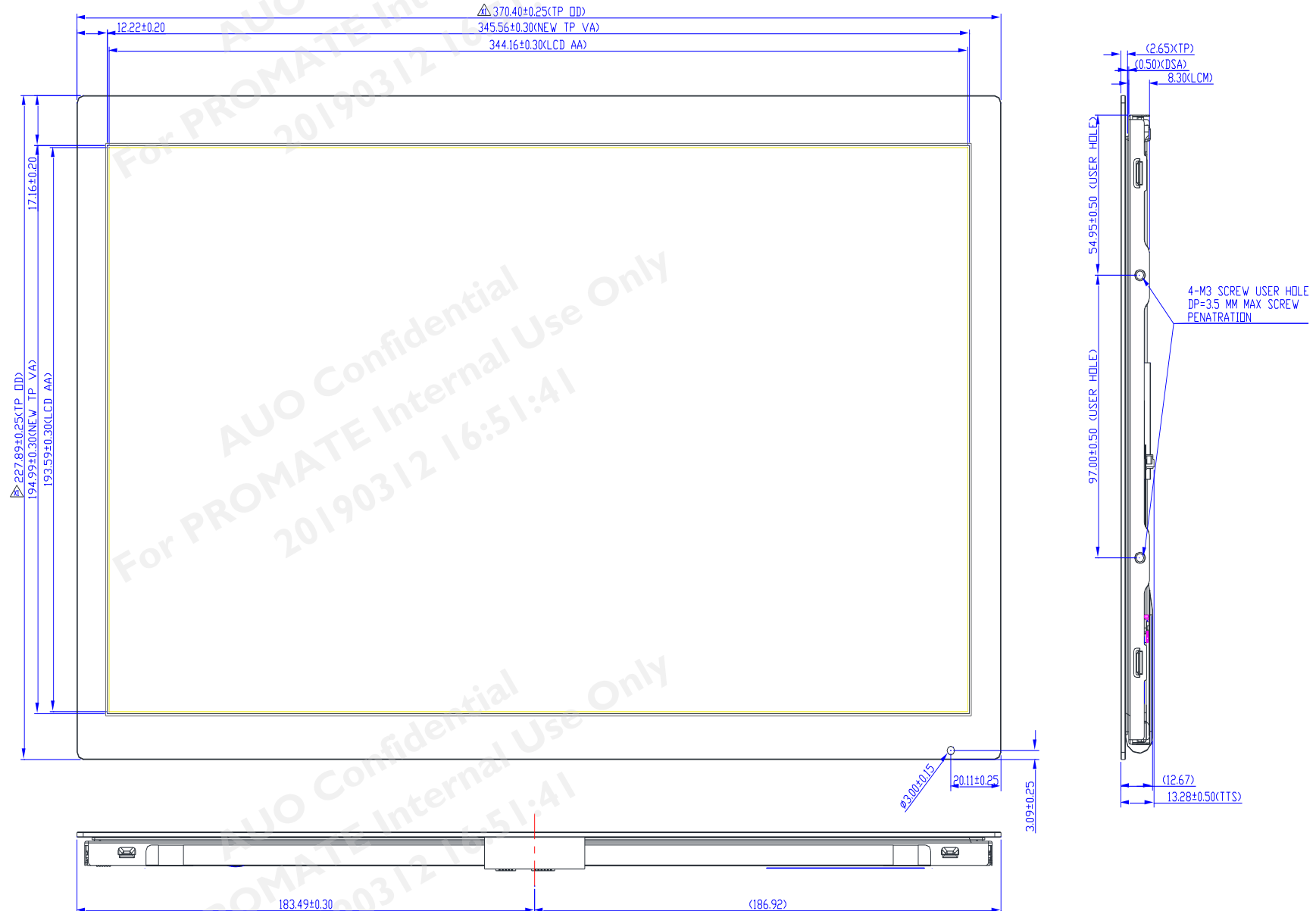
**Note 1:** According to EN 61000-4-2 , ESD class B: Some performance degradation allowed. Self-recoverable. No data lost, No hardware failures.

**Note 2:**

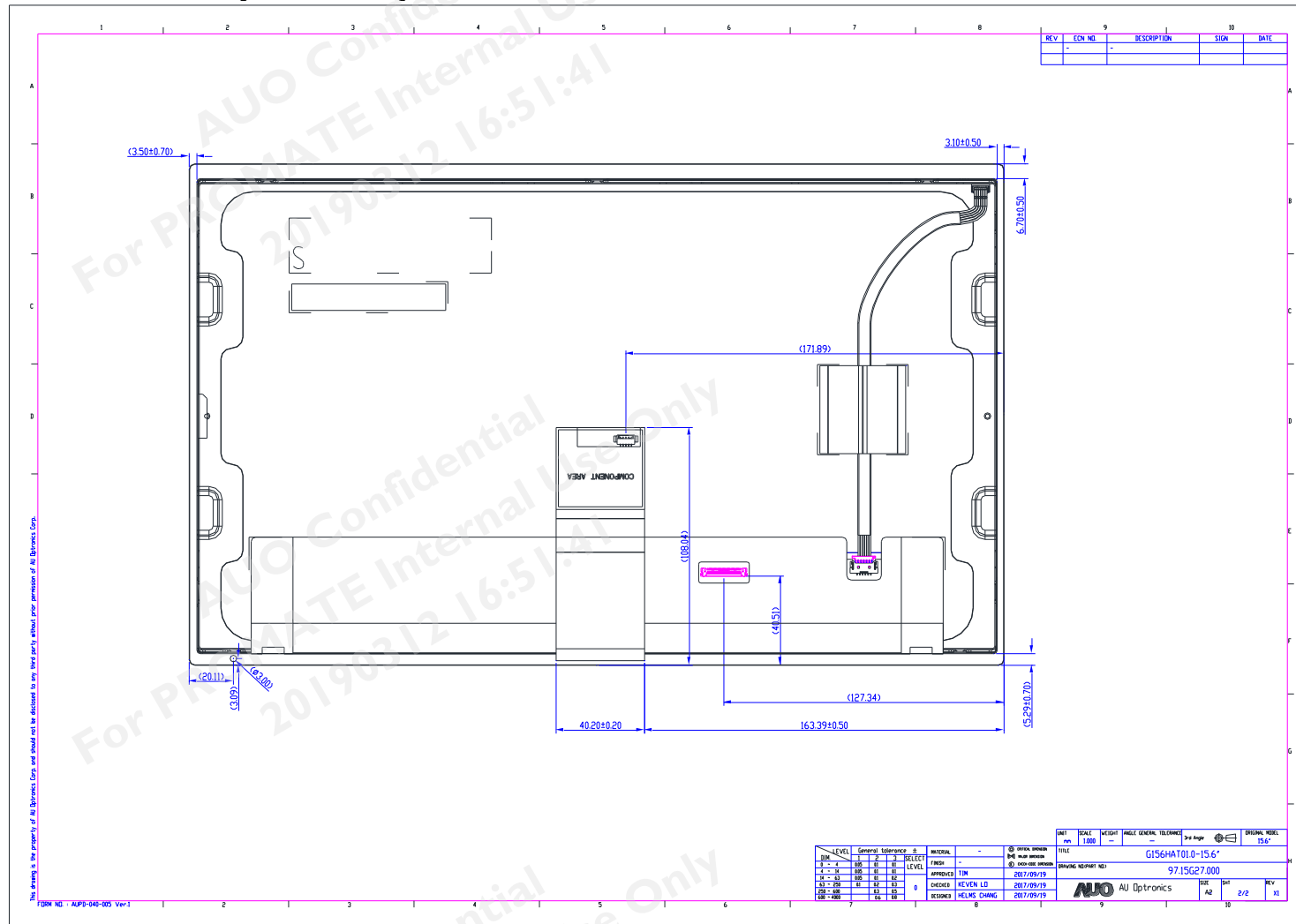
- Water condensation is not allowed for each test items.
- Each test is done by new TFT-LCD module. Don't use the same TFT-LCD module repeatedly for reliability test.
- The reliability test is performed only to examine the TFT-LCD module capability.
- To inspect TFT-LCD module after reliability test, please store it at room temperature and room humidity for 24 hours at least in advance.
- No function failure occurs. Mura shall be ignored after high temperature reliability test

## 8. Mechanical Characteristics

### 8.1 LCM Outline Dimension (Front View)

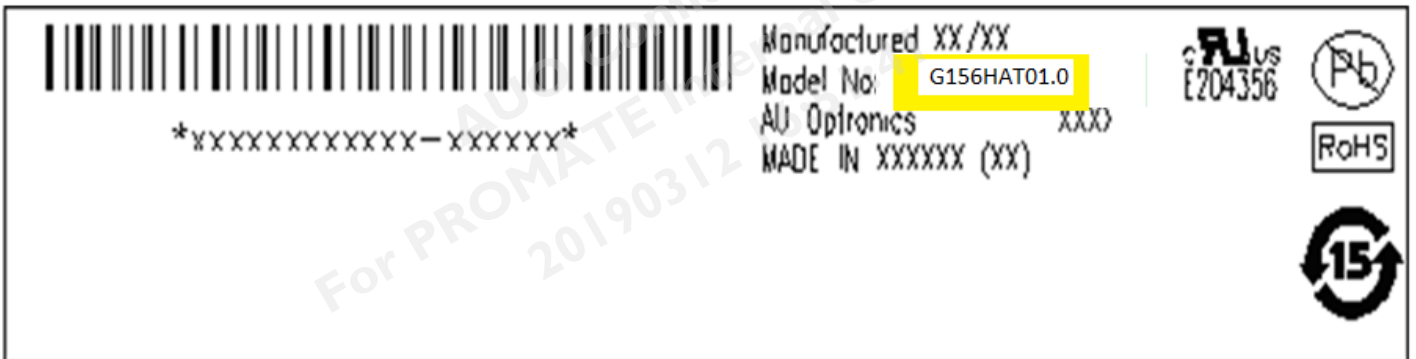


## 8.2 LC M Outline Dimension (RearView)



## 9. Shipping and Package

### 9.1 Shipping Label Format



**Note 1:** For Pb Free products, AUO will add  for identification.

**Note 2:** For RoHS compatible products, AUO will add  for identification.

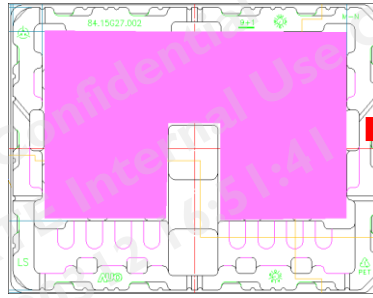
**Note 3:** For China RoHS compatible products, AUO will add  for identification.

**Note 4:** The Green Mark will be presented only when the green documents have been ready by AUO Internal Green Team.

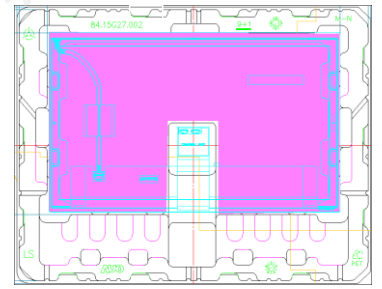
## 9.2 Carton Package



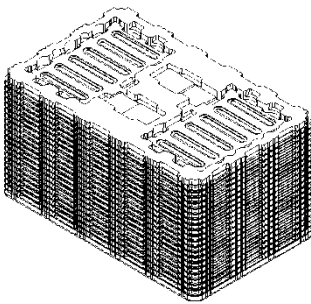
Tray 置放於 PP 瓦楞板上



EPE put on Trav



TP Sensor face down on the Tray 中, 1 tray by 1 pcs.



10 trays 1 package



10 trays packs with anti-static bag



Put EPE cushion in the carton



Put 10 trays in carton



Put Top EPE cushion



Finish pakage

### Box stacked

Module by air :  $(2 * 2) * 5$  layers , one pallet put 9 boxes , total 180pcs module

Module by sea : One pallet  $(2 * 2) * 5$  layers + One pallet  $(2 * 2) * 1$ ayers , total 216pcs module

Module by sea\_ HQ : One pallet  $(2 * 2) * 5$  layers + One pallet  $(2 * 2) * 2$  layers  
Total 252pcs module

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## 10. 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	ED	11101101	237	
0B	hex, LSB first	30	00110000	48	
0C	32-bit ser #	00	00000000	0	
0D		00	00000000	0	
0E		00	00000000	0	
0F		00	00000000	0	
10	Week of manufacture	21	00100001	33	
11	Year of manufacture	17	00010111	23	
12	EDID Structure Ver.	01	00000001	1	
13	EDID revision #	04	00000100	4	
14	<b>Video input def.</b> (digital I/P, non-TMDS, CRGB)	95	10010101	149	
15	<b>Max H image size</b> (rounded to cm)	22	00100010	34	
16	<b>Max V image size</b> (rounded to cm)	13	00010011	19	
17	<b>Display Gamma</b> (=gamma*100)-100)	78	01111000	120	
18	<b>Feature support</b> (no DPMS, Active OFF, RGB, tmg Blk#1)	02	00000010	2	
19	Red/green low bits ( <b>Lower 2:2:2:2 bits</b> )	E2	11100010	226	
1A	Blue/white low bits ( <b>Lower 2:2:2:2 bits</b> )	95	10010101	149	
1B	Red x ( <b>Upper 8 bits</b> )	A3	10100011	163	
1C	Red y/ highER 8 bits	54	01010100	84	
1D	Green x	52	01010010	82	

1E	Green y	99	10011001	153
1F	Blue x	26	00100110	38
20	Blue y	0F	00001111	15
21	White x	50	01010000	80
22	White y	54	01010100	84
23	Established timing 1	00	00000000	0
24	Established timing 2	00	00000000	0
25	Established timing 3	00	00000000	0
26	Standard timing #1	01	00000001	1
27		01	00000001	1
28	Standard timing #2	01	00000001	1
29		01	00000001	1
2A	Standard timing #3	01	00000001	1
2B		01	00000001	1
2C	Standard timing #4	01	00000001	1
2D		01	00000001	1
2E	Standard timing #5	01	00000001	1
2F		01	00000001	1
30	Standard timing #6	01	00000001	1
31		01	00000001	1
32	Standard timing #7	01	00000001	1
33		01	00000001	1
34	Standard timing #8	01	00000001	1
35		01	00000001	1
36	Pixel Clock/10000 LSB	14	00010100	20
37	Pixel Clock/10000 USB	37	00110111	55
38	Horz active <b>Lower 8bits</b>	80	10000000	128
39	Horz blanking <b>Lower 8bits</b>	B8	10111000	184
3A	HorzAct:HorzBlnk <b>Upper 4:4 bits</b>	70	01110000	112
3B	Vertical Active <b>Lower 8bits</b>	38	00111000	56
3C	Vertical Blanking <b>Lower 8bits</b>	24	00100100	36
3D	Vert Act : Vertical Blanking <b>(upper 4:4 bit)</b>	40	01000000	64
3E	HorzSync. Offset	10	00010000	16
3F	HorzSync.Width	10	00010000	16
40	VertSync.Offset : VertSync.Width	3E	00111110	62
41	Horz&Vert Sync Offset/Width <b>Upper 2bits</b>	00	00000000	0
42	Horizontal Image Size <b>Lower 8bits</b>	58	01011000	88
43	Vertical Image Size <b>Lower 8bits</b>	C1	11000001	193
44	Horizontal & Vertical Image Size <b>(upper 4:4 bits)</b>	10	00010000	16
45	Horizontal Border <i>(zero for internal LCD)</i>	00	00000000	0
46	Vertical Border <i>(zero for internal LCD)</i>	00	00000000	0
47	Signal <i>(non-intr, norm, no stero, sep sync, neg pol)</i>	18	00011000	24
48	Detailed timing/monitor	B8	10111000	184
49	descriptor #2	24	00100100	36
4A		80	10000000	128
4B		B8	10111000	184
4C		70	01110000	112
4D		38	00111000	56

4E		24	00100100	36	
4F		40	01000000	64	
50		10	00010000	16	
51		10	00010000	16	
52		3E	00111110	62	
53		00	00000000	0	
54		58	01011000	88	
55		C1	11000001	193	
56		10	00010000	16	
57		00	00000000	0	
58		00	00000000	0	
59		18	00011000	24	
5A	Detailed timing/monitor	00	00000000	0	
5B	descriptor #3	00	00000000	0	
5C		00	00000000	0	
5D		FE	11111110	254	
5E		00	00000000	0	
5F	Manufacture	41	01000001	65	A
60	Manufacture	55	01010101	85	U
61	Manufacture	4F	01001111	79	O
62		0A	00001010	10	
63		20	00100000	32	
64		20	00100000	32	
65		20	00100000	32	
66		20	00100000	32	
67		20	00100000	32	
68		20	00100000	32	
69		20	00100000	32	
6A		20	00100000	32	
6B		20	00100000	32	
6C	Detailed timing/monitor	00	00000000	0	
6D	descriptor #4	00	00000000	0	
6E		00	00000000	0	
6F		FE	11111110	254	
70		00	00000000	0	
71	Manufacture P/N	42	01000010	66	B
72	Manufacture P/N	31	00110001	49	1
73	Manufacture P/N	35	00110101	53	5
74	Manufacture P/N	36	00110110	54	6
75	Manufacture P/N	48	01001000	72	H
76	Manufacture P/N	41	01000001	65	A
77	Manufacture P/N	4E	01001110	78	N
78	Manufacture P/N	30	00110000	48	0
79	Manufacture P/N	33	00110011	51	3
7A	Manufacture P/N	2E	00101110	46	.
7B	Manufacture P/N	30	00110000	48	0
7C		20	00100000	32	
7D		0A	00001010	10	



7E	Extension Flag	00	00000000	0	
7F	Checksum	D9	11011001	217	

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