



Product Specification

AU OPTRONICS CORPORATION

() Preliminary Specifications

(✓) Final Specifications

Module	14.0" FHD 16:9 Color TFT-LCD with LED Backlight design
Model Name	BI40HAN06.6
H/W	0A
Note ()	<i>LED Backlight with driving circuit design</i>

Customer

Date

Checked &
Approved by

Date

Note: This Specification is subject to change
without notice.

Approved by

Date

Buffy Chen

08/05/2020

Prepared by

Date

ZT Hsieh

08/05/2020

MPBU Marketing Division
AU Optronics corporation



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Record of Revision

Version and Date	Page	Old description	New Description	Remark
0.1 2019/05/08	All	First Edition for Customer create PN		
0.2 2019/06/10	P5		Modify AG POL	
	P30		Add Notes	
0.3 2019/08/01	P28, P29,P30~P32, P33		Add Label & Carton & EDID, Update Notes(Free Sync On)	
0.4 2019/08/06	P1		Modify H/W	
0.5 2019/08/16	P30~32,P33		Modify EDID & Notes	
0.6 2019/10/14	P27		Modify 2D Drawing	
1.0 2020/07/31	All		Final SPEC	

I. 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 momentarily. 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 electrostatic breakdown.



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2. General Description

BI40HAN06.6 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)x1080(V) screen and 16.7M colors (RGB 8-bits data driver) with LED backlight driving circuit. All input signals are eDP(Embedded DisplayPort) interface compatible.

BI40HAN06.6 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:

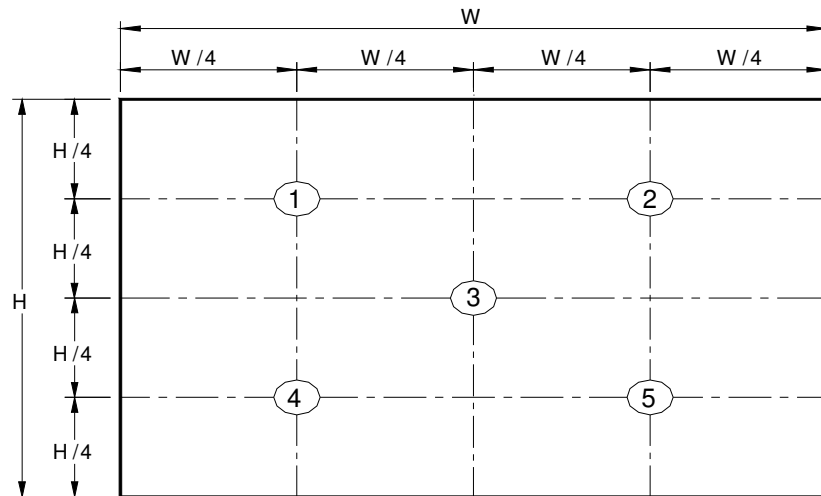
Items	Unit	Specifications			
Screen Diagonal	[mm]	354.95			
Active Area	[mm]	309.37 X 174.02			
Pixels H x V		1920x3(RGB) x 1080			
Pixel Pitch	[mm]	0.161X0.161			
Pixel Format		R.G.B. Vertical Stripe			
Display Mode		Normally Black(AHVA)			
White Luminance (ILED=9.5mA) (Note: ILED is LED current)	[cd/m ²]	400 typ. (5 points average) 340 min. (5 points average)			
Luminance Uniformity		1.25 max. (5 points)			
Contrast Ratio		1200 typ			
Response Time	[ms]	30 typ / 35 max			
Nominal Input Voltage VDD	[Volt]	+3.3 typ.			
Power Consumption	[Watt]	2.0 W (include logic and Blu power)			
Weight	[Grams]	200 max.			
Physical Size	[mm]		Min.	Typ.	Max.
		Length	313.37	313.67	313.97
		Width	183.67	184.17	184.67
		Thickness	-	-	2.0/3.8
Electrical Interface		eDPI.4			
Glass Thickness	[mm]	0.2			
Surface Treatment		Anti Glare, Hardness 1H			
Support Color		16.7M colors (RGB –8bits)			
Temperature Range					
Operating	[°C]	0 to +50			
Storage (Non-Operating)	[°C]	-20 to +60			
RoHS Compliance		RoHS Compliance			

2.2 Optical Characteristics

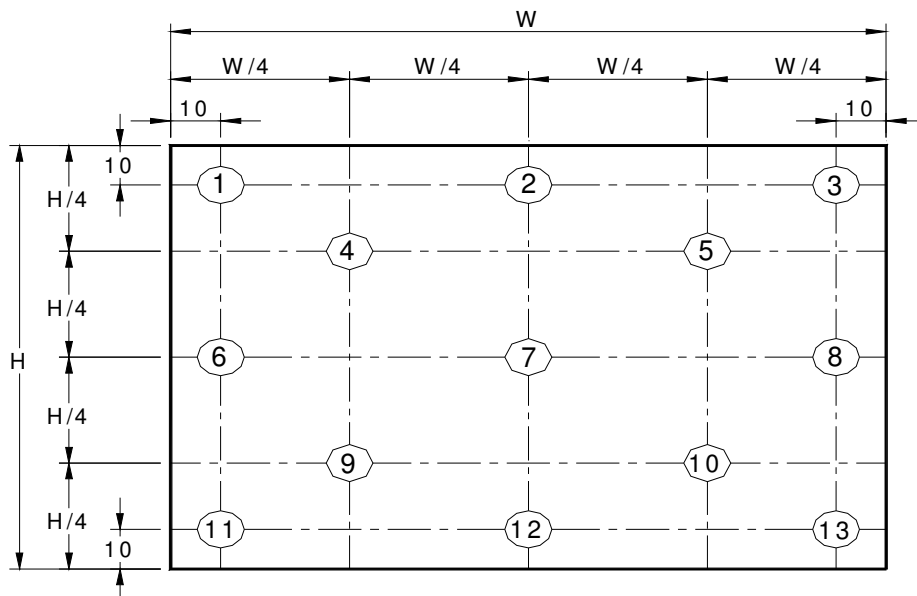
The optical characteristics are measured under stable conditions at 25°C (Room Temperature) :

Item		Symbol	Conditions	Min.	Typ.	Max.	Unit	Note
White Luminance I _{LED} =9.5mA			5 points average	340	400		cd/m²	1, 4, 5.
Viewing Angle		θ _R	Horizontal (Right)		85	-	degree	4, 9
		θ _L	CR = 10 (Left)		85	-		
		ψ _H	Vertical (Upper)		85	-	degree	
		ψ _L	CR = 10 (Lower)		85	-		
Luminance Uniformity		δ _{SP}	5 Points	-	-	1.25		1, 3, 4
Luminance Uniformity		δ _{13P}	13 Points	-	-	1.6		2, 3, 4
Contrast Ratio		CR			1200	-		4, 6
Cross talk		%				4		4, 7
Response Time		T _{RT}	Rising + Falling	-	30	35	msec	4, 8
Color / Chromaticity Coordinates	Red	R _x	CIE 1931	0.610	0.640	0.670		4
		R _y		0.300	0.330	0.360		
	Green	G _x		0.270	0.300	0.330		
		G _y		0.570	0.600	0.630		
	Blue	B _x		0.120	0.150	0.180		
		B _y		0.030	0.060	0.090		
	White	W _x		0.283	0.313	0.343		
		W _y		0.299	0.329	0.359		
sRGB		%		-	100	-		

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

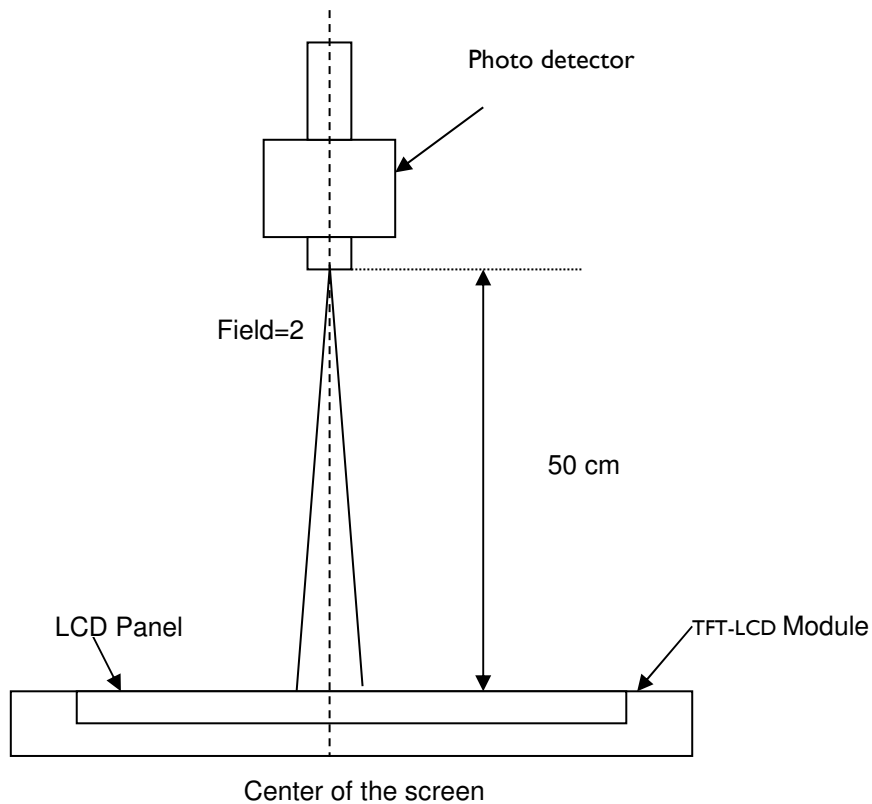
$$\delta_{W5} = \frac{\text{Maximum Brightness of five points}}{\text{Minimum Brightness of five points}}$$

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

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.

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

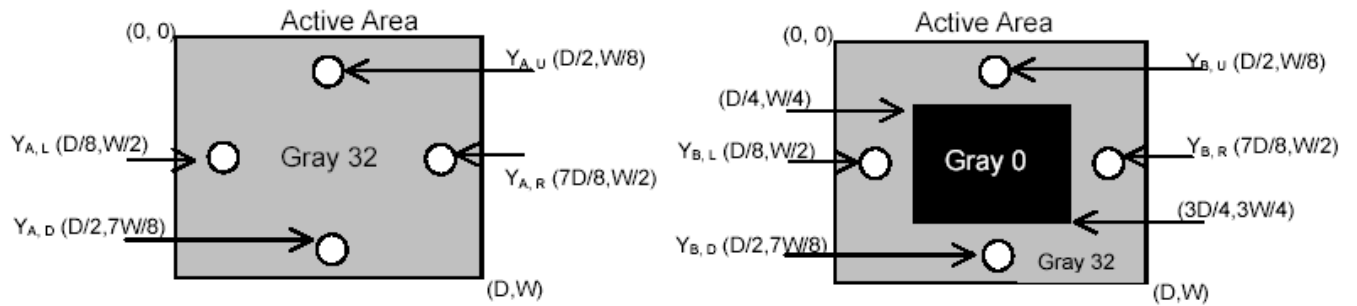
Note 7 : Definition of Cross Talk (CT)

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

Where

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

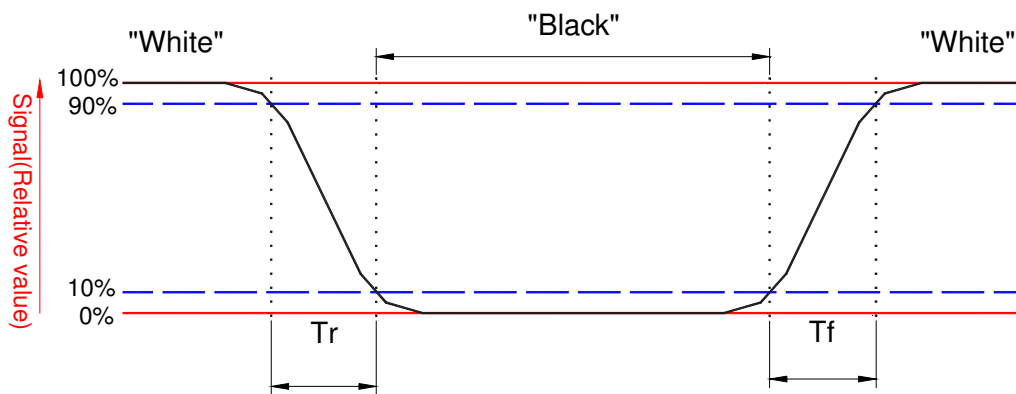
Y_B = Luminance of measured location with gray level 0 pattern (cd/m²)



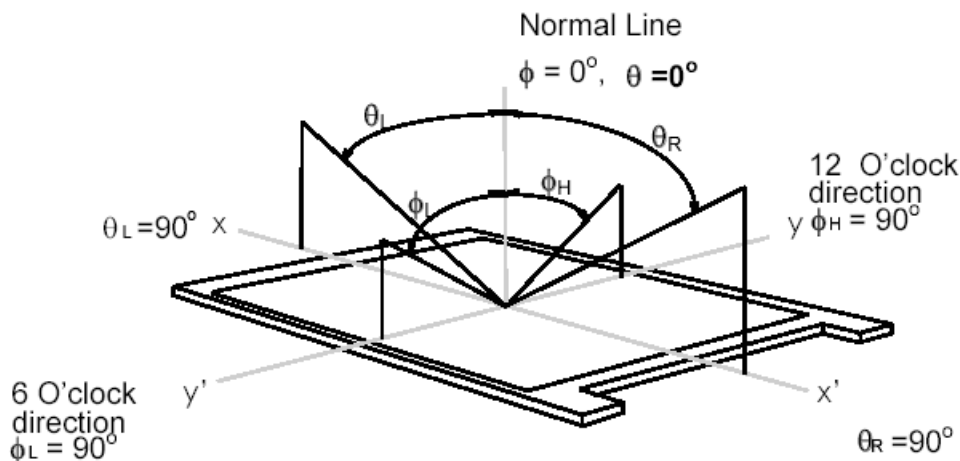
Note 8: Definition of response time:

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 viewing angle

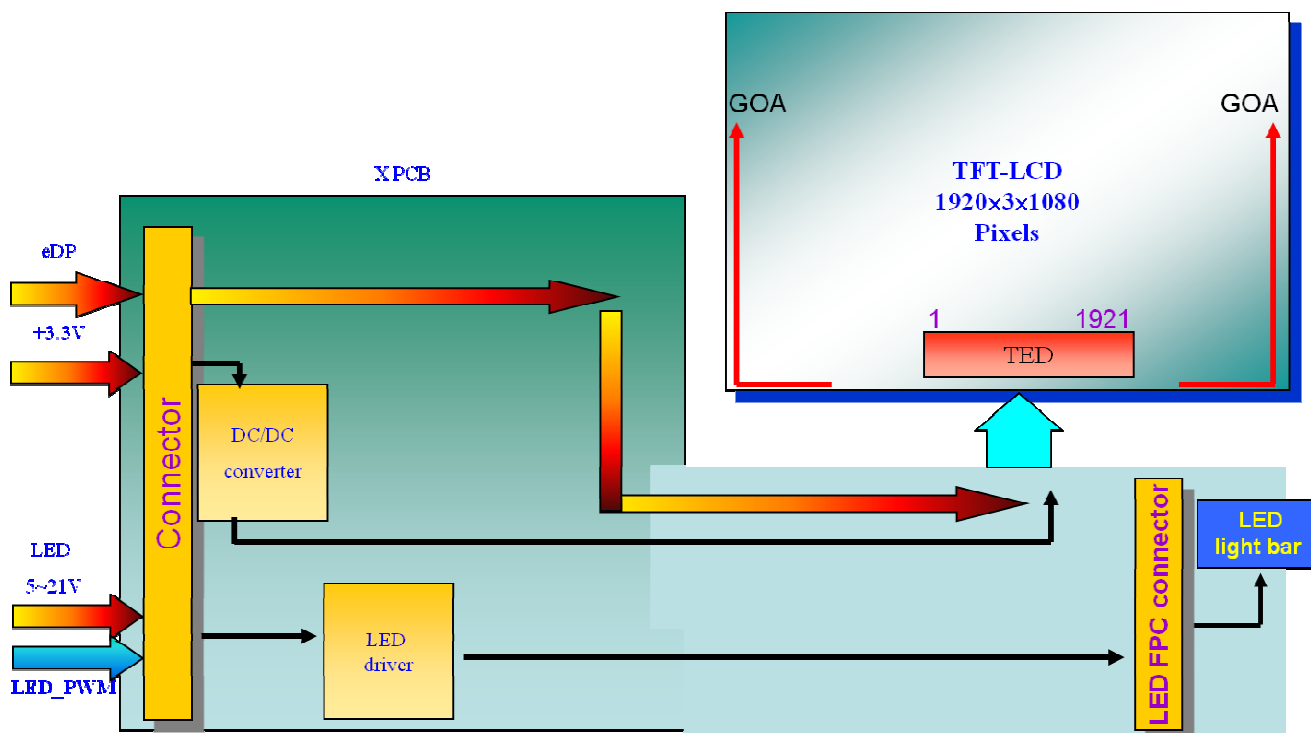


Viewing angle is the measurement of contrast ratio ≥ 10 , at the screen center, over a 180° horizontal and 180° vertical range (off-normal viewing angles). The 180° viewing angle range is broken down as follows; 90° (θ) horizontal left and right and 90° (Φ) vertical, high (up) and low (down). The measurement 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 14.0 inches wide Color TFT/LCD 30 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 Voltage	Vin	-0.3	+4.0	[Volt]	Note 1,2

4.2 Absolute Ratings of Environment

Item	Symbol	Min	Max	Unit	Conditions
Operating Temperature	TOP	0	+50	[°C]	Note 4
Operation Humidity	HOP	5	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°C)

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

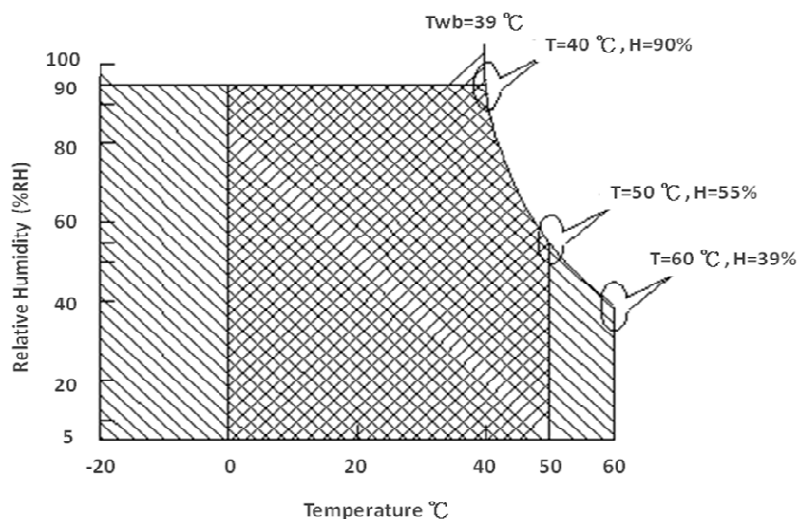
Note 3: LED specification refer to section 5.2

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

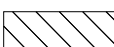
Note 5: The packing material of system forbid to involve ammonium component

Note 6: The reliability test conditions of system do not exceed the verified conditions of TFT module

Note 7: Be sure the panel test condition do not exceed the component limitation of TFT module(TN Liquid crystal , for example)



Operating Range 

Storage Range  + 

5. Electrical Characteristics

5.1 TFT LCD Module

5.1.1 Power Specification

Input power specifications are as follows;

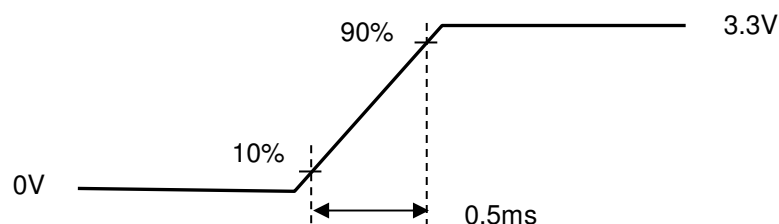
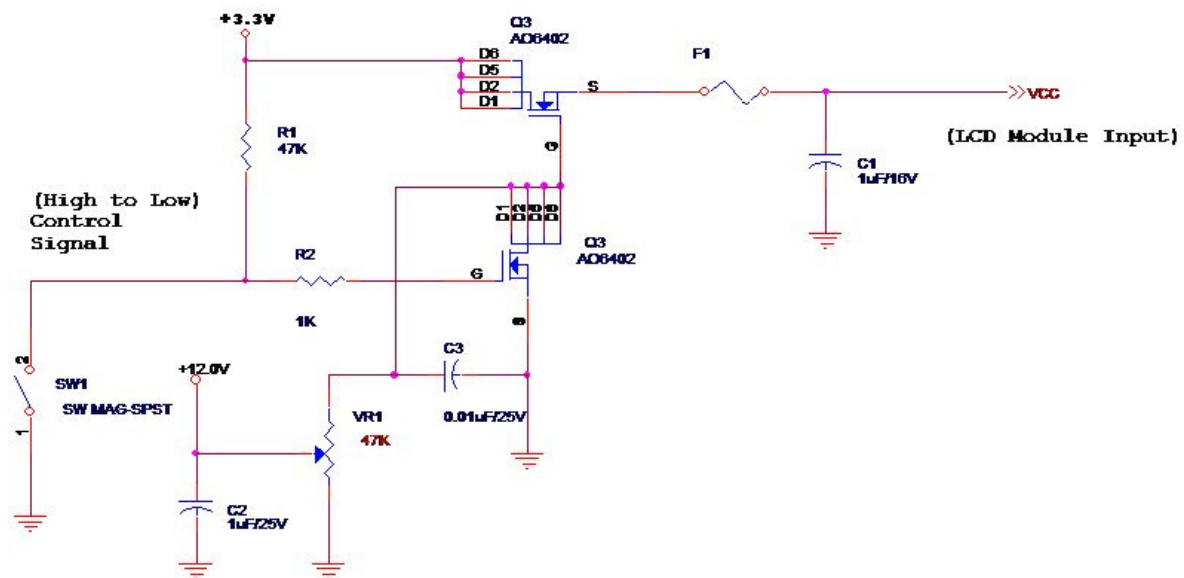
The power specification are measured under 25°C and frame frequency under 60Hz

Symble	Parameter	Min	Typ	Max	Units	Note
VDD	Logic/LCD Drive Voltage	3.0	3.3	3.6	[Volt]	
PDD	VDD Power	-	0.40	0.55	[Watt]	Note 1
IDD	IDD Current	-		183	[mA]	Note 1
IRush	Inrush Current	-		2000	[mA]	Note 2
VDDrp	Allowable Logic/LCD Drive Ripple Voltage	-		100	[mV] p-p	

Note 1 : PDD(typ)@ mosaic pattern Maximum Power; PDD(Max)@ R/G/B pattern Maximum Power

$$IDD(Max)=PDD(Max) / VDD(Min)$$

Note 2 : Measure Condition

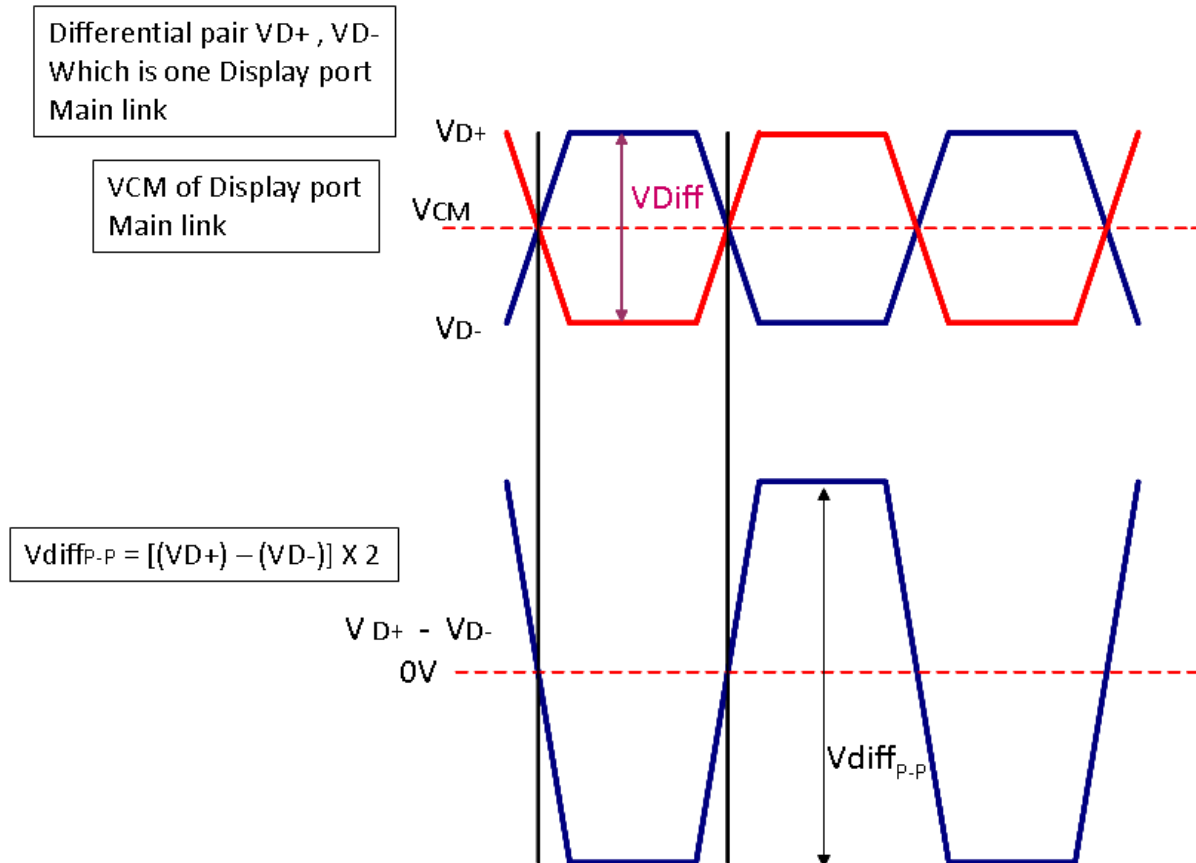


5.1.2 Signal Electrical Characteristics

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

Signal electrical characteristics are as follows;

Display Port main link signal:

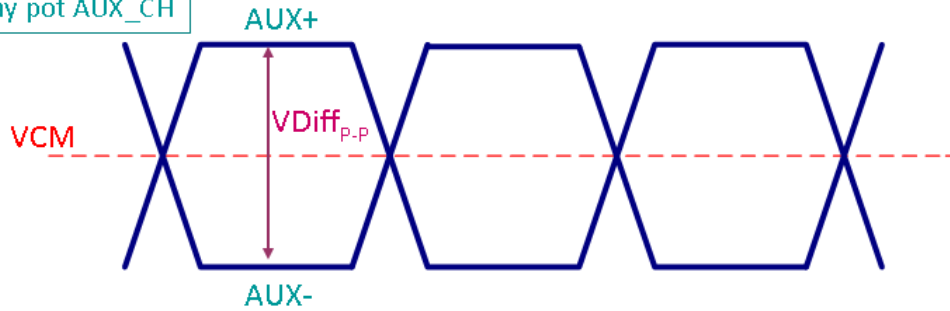


Display port main link					
		Min	Typ	Max	unit
VCM	RX input DC Common Mode Voltage		0		V
VDiff _{p.p}	Peak-to-peak Voltage at a receiving Device	HBR:150		1320	mV

Fallow as VESA display port standard V1.3

Display Port AUX_CH signal:

Differential AUX+ , AUX-
Which is Display port AUX_CH



Display port AUX_CH					
		Min	Typ	Max	unit
VCM	AUX DC Common Mode Voltage		0		V
VDiff _{p.p}	AUX Peak-to-peak Voltage at a receiving Device	400		800	mV

Fallow as VESA display port standard V1.3.

Display Port VHPD signal:

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

Fallow as VESA display port standard V1.3.



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5.2 Backlight Unit

5.2.1 LED characteristics

Parameter	Symbol	Min	Typ	Max	Units	Condition
Backlight Power Consumption	PLED	-	-	1.60	[Watt]	(Ta=25°C), Note 1 Vin =12V
LED Life-Time	N/A	15,000	-	-	Hour	(Ta=25°C), Note 2 If=9.5 mA

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

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

5.2.2 Backlight input signal characteristics

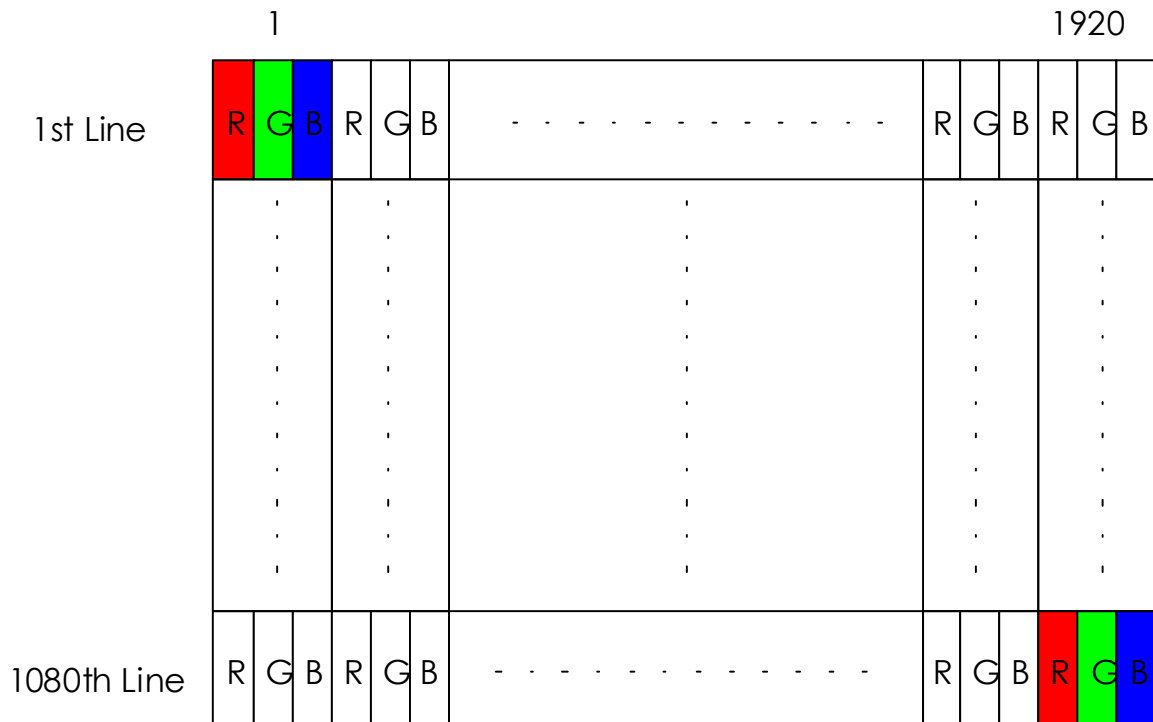
Parameter	Symbol	Min	Typ	Max	Units	Remark
LED Power Supply	VLED	5.0	12.0	21.0	[Volt]	Define as Connector Interface (Ta=25°C)
LED Enable Input High Level	VLED_EN	2.2	-	5.5	[Volt]	
LED Enable Input Low Level		-	-	0.5	[Volt]	
PWM Logic Input High Level	VPWM_EN	2.2	-	5.5	[Volt]	
PWM Logic Input Low Level		-	-	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 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.

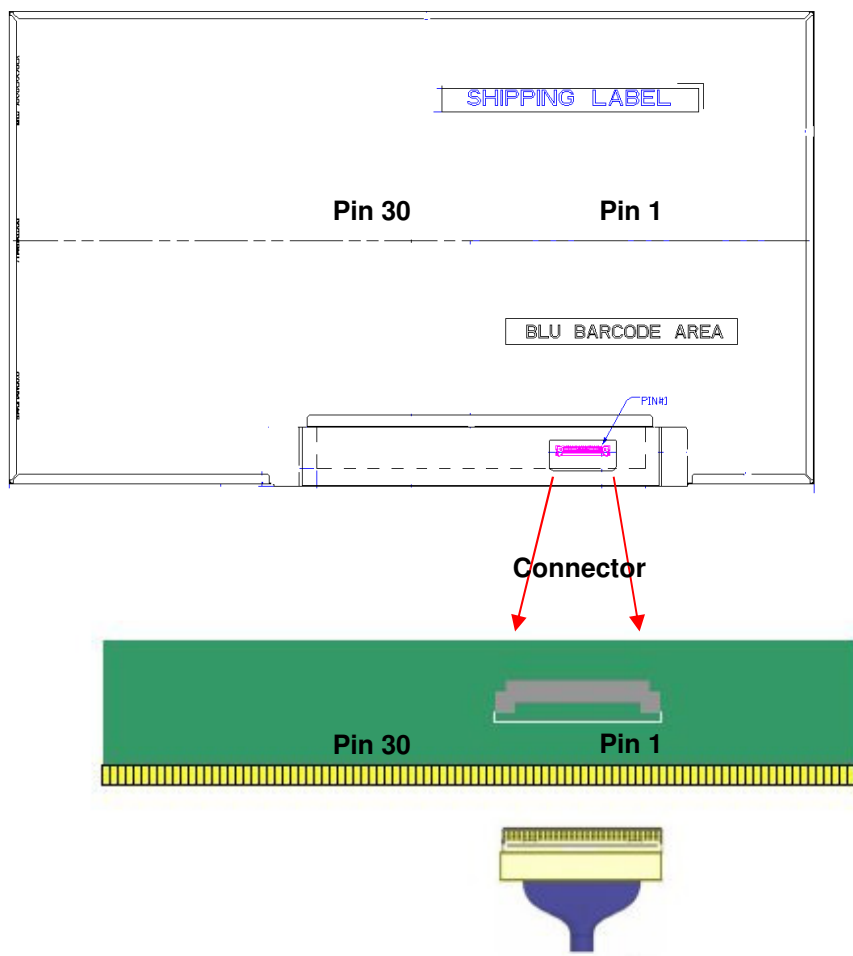
These connectors are capable of accommodating the following signals and will be following components.

Connector Name / Designation	For Signal Connector
Manufacturer	STM
Type / Part Number	STM MSAK24025P30M or compatible
Mating Housing/Part Number	I-PEX 20704-030T-I3

6.2.2 Pin Assignment (2 Lane)

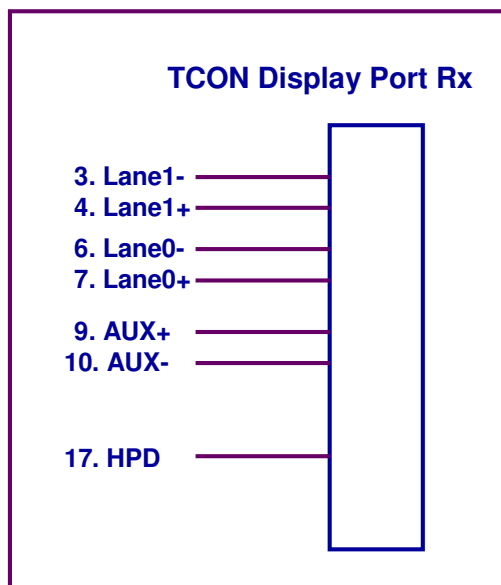
eDP lane is a differential signal technology for LCD interface and high speed data transfer device.

PIN NO	Symbol	Function
1	NC	No Connect (Reserved for DCR)
2	H_GND	High Speed Ground
3	LaneI_N	Comp Signal Lane I
4	LaneI_P	True Signal Link Lane I
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	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	H_SYNC or NC	H_SYNC function(Optional) or NC
25	NC	NC
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



Note1: Start from right side.

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



6.3 Interface Timing

6.3.1 Timing Characteristics

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

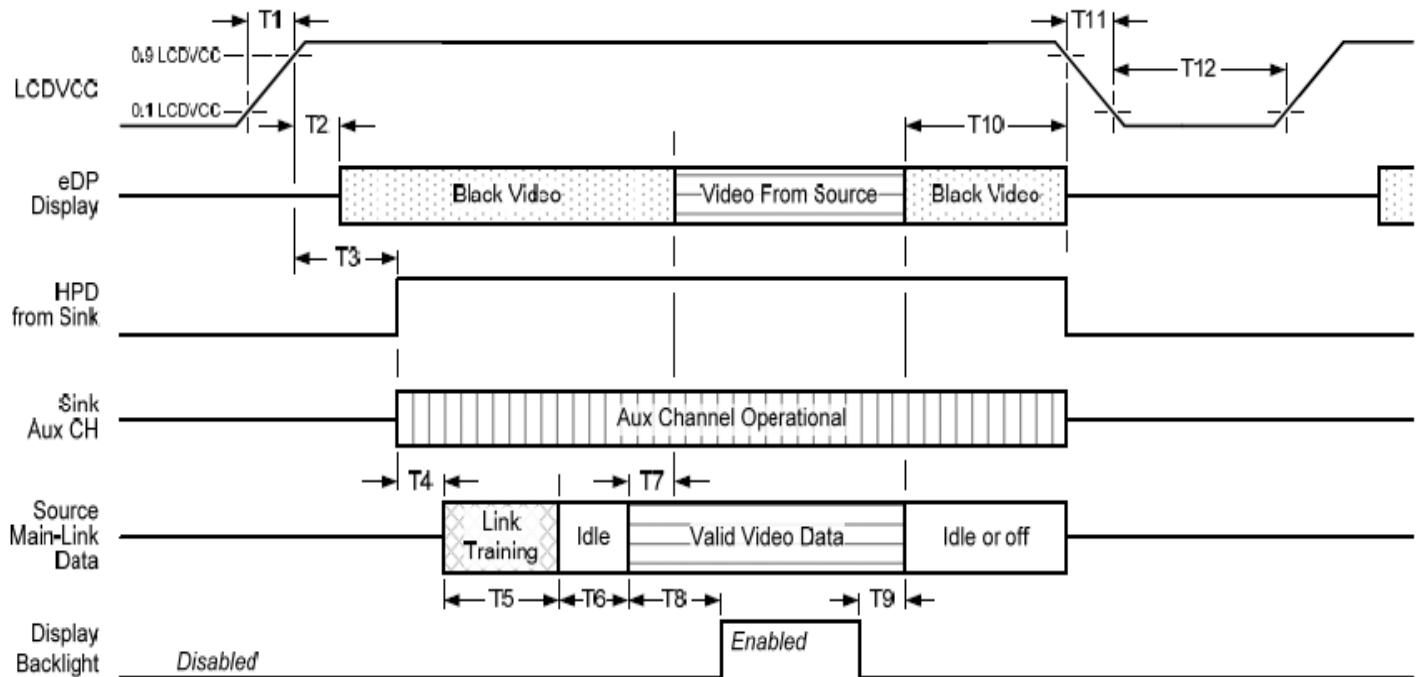
Parameter		Symbol	Min.	Typ.	Max.	Unit
Frame Rate		-	48	60	-	Hz
Clock frequency		I/ T _{Clock}	112.8	141	-	MHz
Vertical Section	Period	T _V	-1116	1116	1080+A	Vertical Section
	Active	T _{VD}	1080			
	Blanking	T _{VB}	36	36	A	
Horizontal Section	Period	T _H	2104	2104	1920+B	Horizontal Section
	Active	T _{HD}	1920			
	Blanking	T _{HB}	184	184	B	

Note 1 : The above is as optimized setting

Note 2 : The maximum clock frequency = $(1920+B) \times (1080+A) \times 60 < 150\text{MHz}$

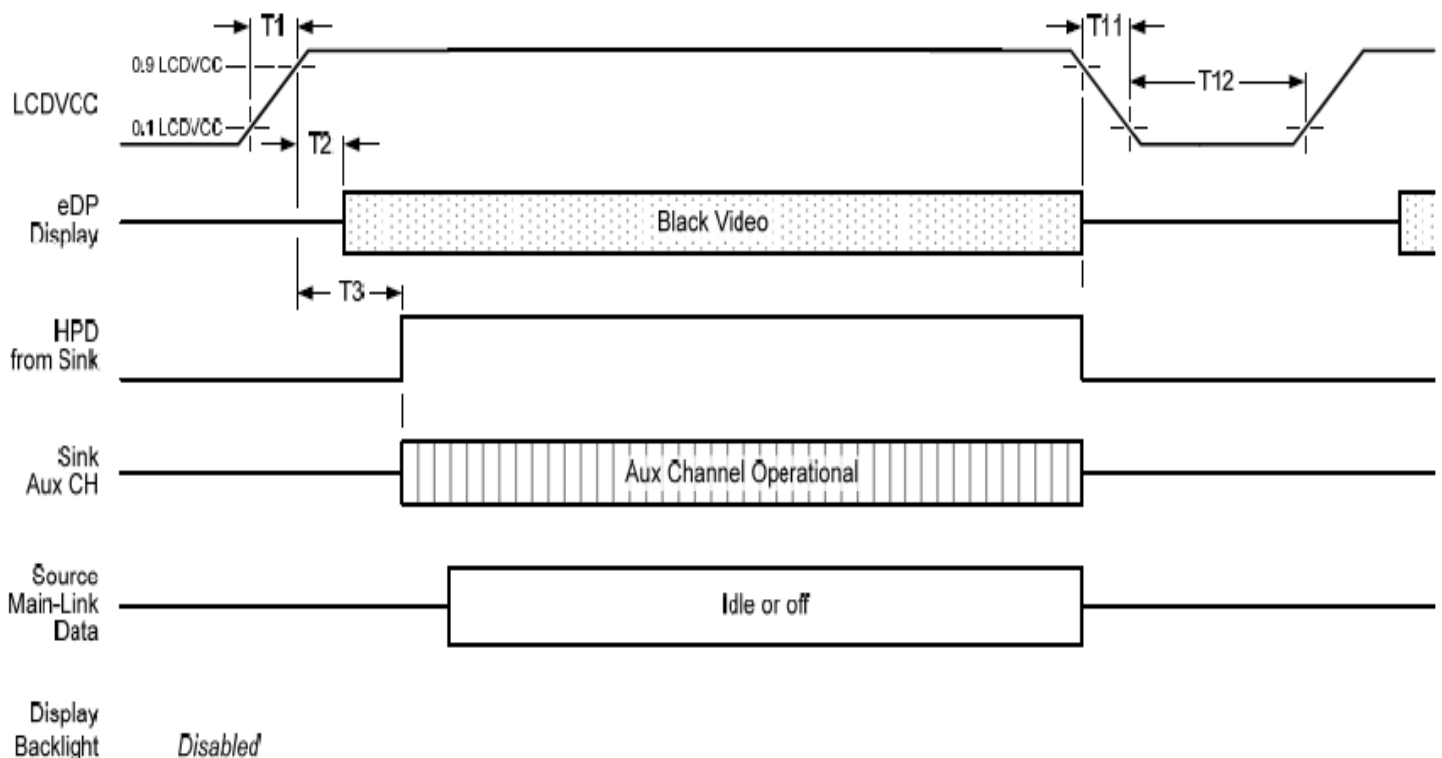
6.4 Power ON/OFF Sequence

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



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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:

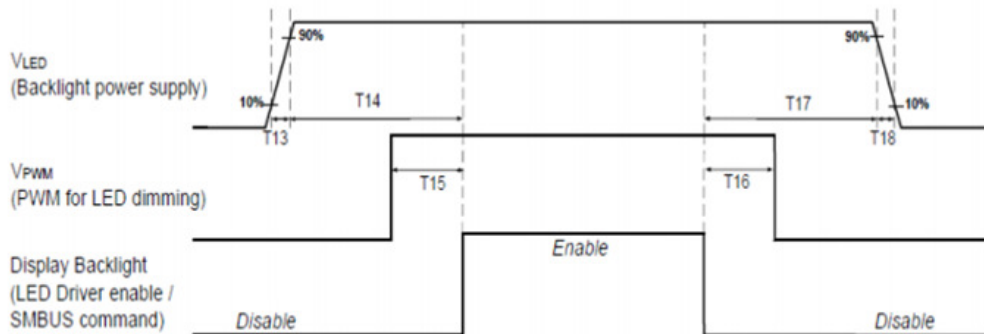
- upon LCDVDD power on (within T2 max)-when the "Novideostream_Flag" (VB-ID Bit 3) is received from the source (at the end of T9).

- 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 LCDVDD 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:

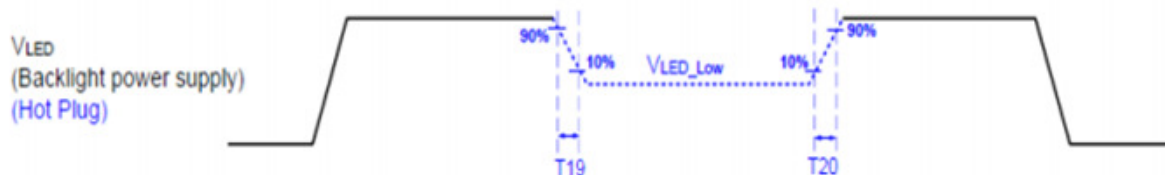


	Min (ms)	Max (ms)
T13	0.2	-
T14	0	-
T15	-	-
T16	-	-
T17	0	-
T18	0	-
T19	1*	-
T20	1*	-

Seamless change: $T19/T20 = 5 \times T_{PWM}^*$

* $T_{PWM} = 1/\text{PWM Frequency}$

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



Note : If $T19, T20 < 5 \times T_{PWM}^*$, This flash display may occur. We suggest $T19, T20 \geq 5 \times T_{PWM}^*$ to realize seamless change display.

7. Panel Reliability 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

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 Test

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, 250h	
Thermal Shock Test	Ta=-20℃ to 60℃, Duration at 30 min, 100 cycles	
ESD	Contact : ±8 KV Air : ±15 KV	Note I

Note I: According to EN 61000-4-2 , ESD class B: Some performance degradation allowed. Self-recoverable.

No data lost, No hardware failures.

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

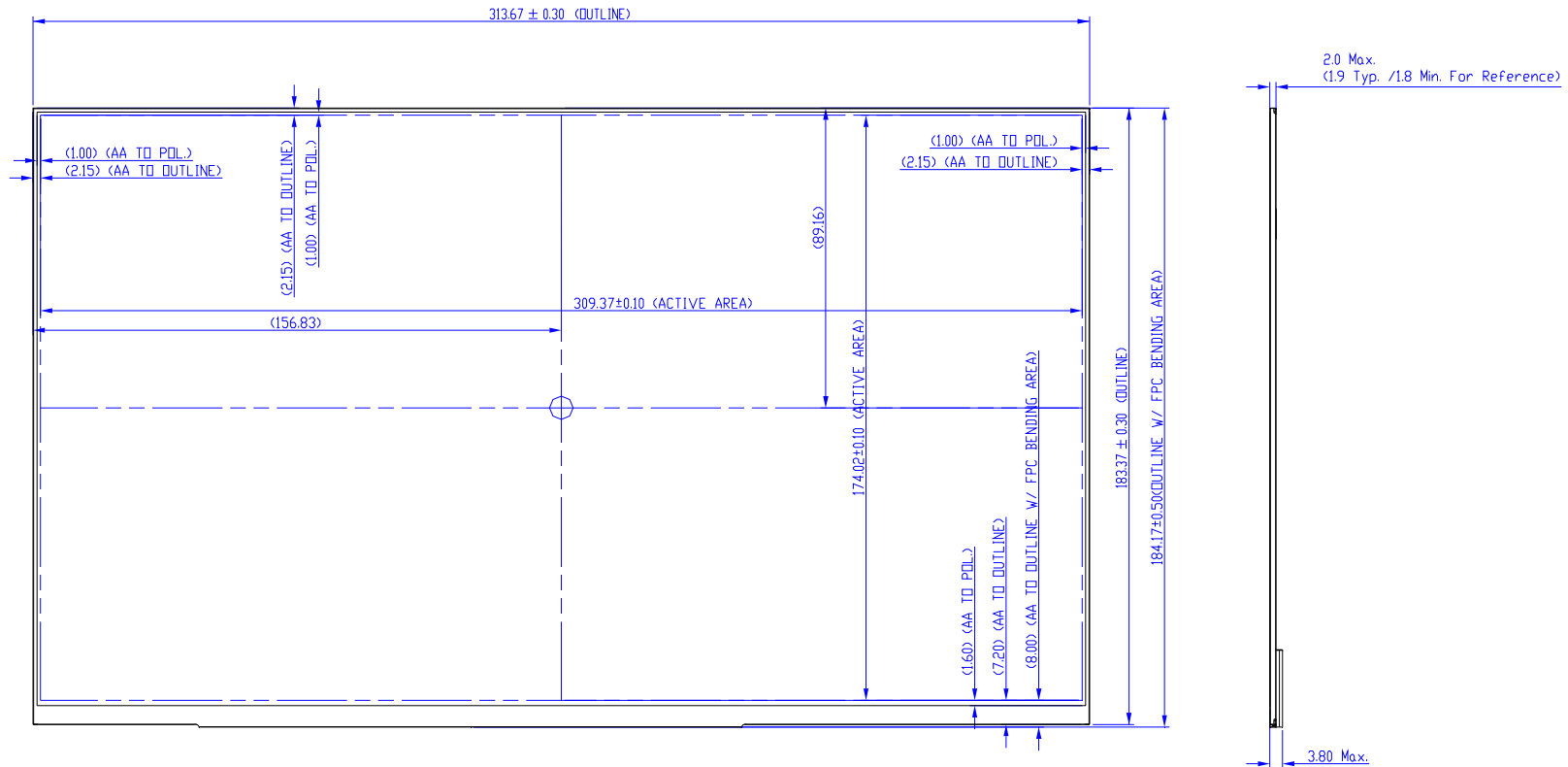


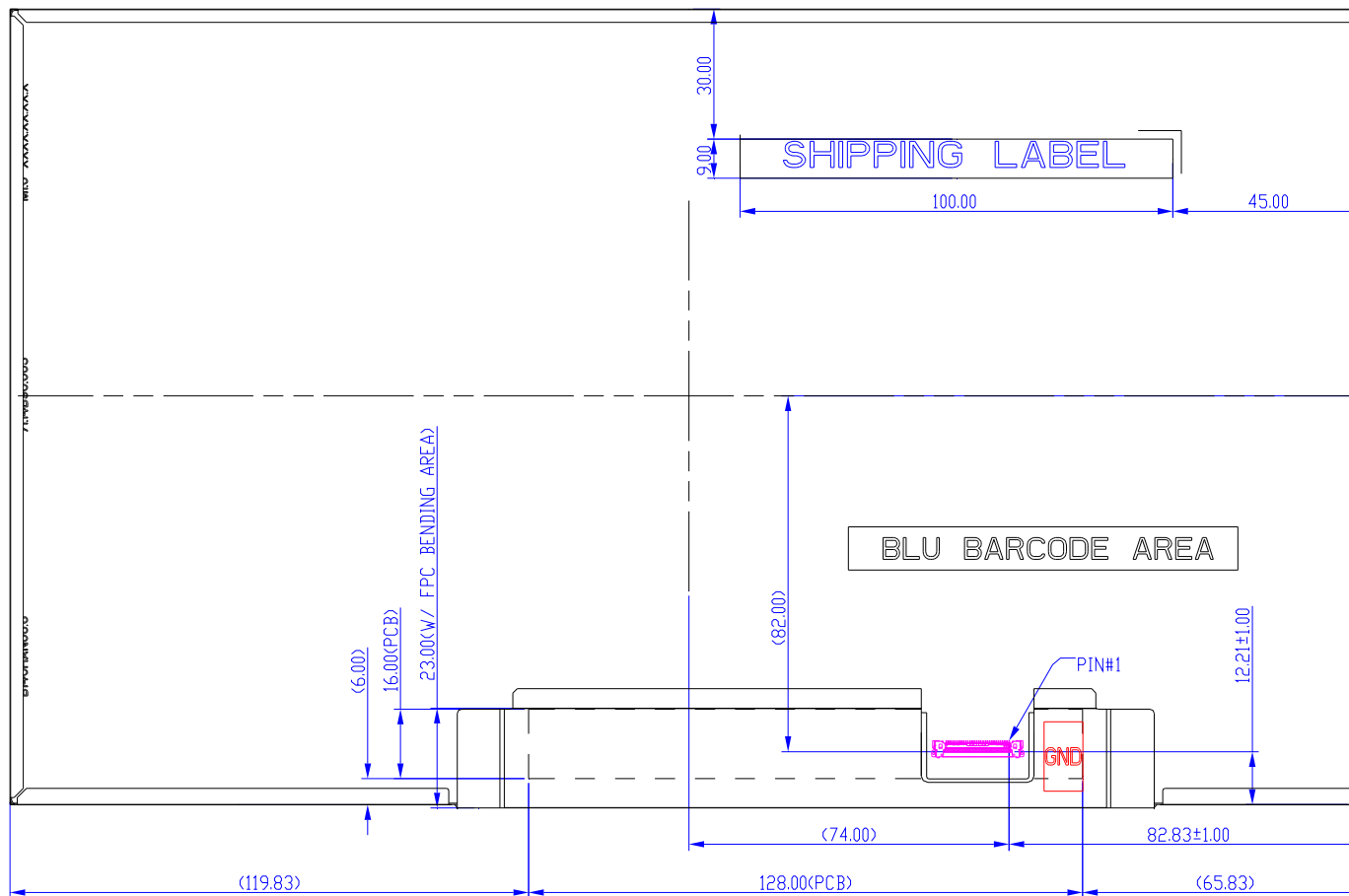
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8. Mechanical Characteristics

8.1 LCM Outline Dimension







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9. Shipping and Package

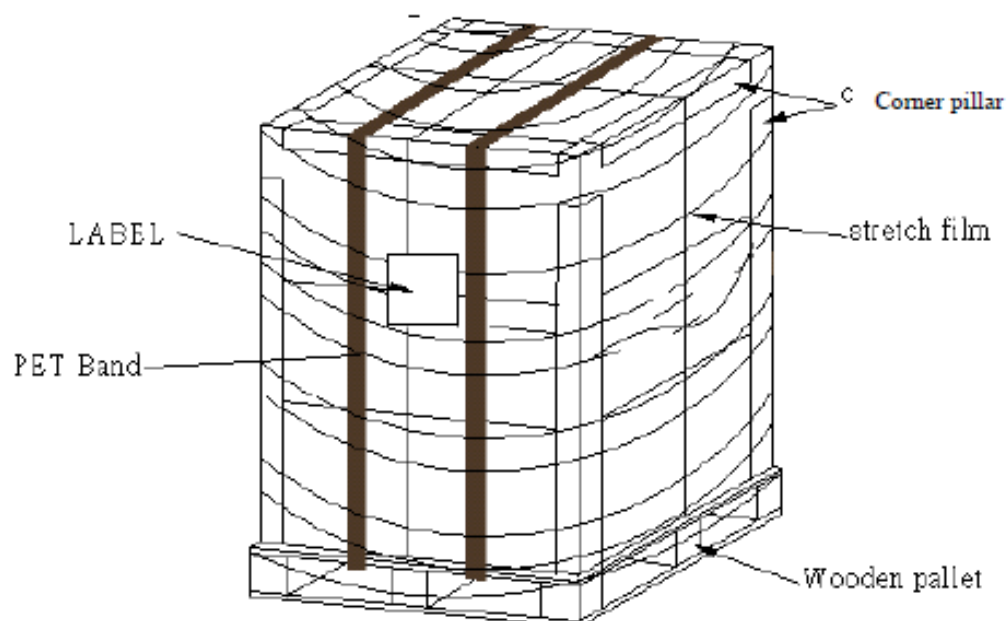
9.1 Shipping Label Format

 XXXXXXXXXXXX-XXXXXX	Manufactured YY/MM Model No: B140HAN Ø 6.6 AU Optronics	 CT:CJJMU Ø 1XXXXXXXX	c  US E204356			
H/W:0A F/W:1 MADE IN CHINA (K06)						

9.2 Carton Package

AU Optronics	QTY : XX	RoHS
MODEL NO : B140HAN06.6		Pb
PART NO : 97.14B90.670		15
CUSTOMER NO : L75936-391		
CARTON NO :		
Made in China	*ZK06XX-XXXXXXXXXX*	

9.3 Shipping Package of Palletizing Sequence



單層 pallet 打棧示意圖

One pallet illustration



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10. Appendix: EDID Description

Address	FUNCTION	Value	Value	Value
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	8A	10001010	138
0B	Product Code	4F	01001111	79
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	1D	00011101	29
12	EDID Structure Ver.	01	00000001	1
13	EDID revision #	04	00000100	4
14	Video input def. (<i>digital I/P, non-TMDS, CRGB</i>)	A5	10100101	165
15	Max H image size (<i>rounded to cm</i>)	1F	00011111	31
16	Max V image size (<i>rounded to cm</i>)	11	00010001	17
17	Display Gamma (<i>=(gamma*100)-100</i>)	78	01111000	120
18	Feature support (<i>no DPMS, Active OFF, RGB, tmg Blk#1</i>)	03	00000011	3
19	Red/green low bits (Lower 2:2:2 bits)	EE	11101110	238
1A	Blue/white low bits (Lower 2:2:2 bits)	95	10010101	149
1B	Red x (Upper 8 bits)	A3	10100011	163
1C	Red y/ highER 8 bits	54	01010100	84
1D	Green x	4C	01001100	76
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



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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 Lower 8bits	80	10000000	128
39	Horz blanking Lower 8bits	B8	10111000	184
3A	HorzAct:HorzBlnk Upper 4:4 bits	70	01110000	112
3B	Vertical Active Lower 8bits	38	00111000	56
3C	Vertical Blanking Lower 8bits	24	00100100	36
3D	Vert Act : Vertical Blanking (upper 4:4 bit)	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 Upper 2bits	00	00000000	0
42	Horizontal Image Size Lower 8bits	35	00110101	53
43	Vertical Image Size Lower 8bits	AE	10101110	174
44	Horizontal & Vertical Image Size (upper 4:4 bits)	10	00010000	16
45	Horizontal Border (zero for internal LCD)	00	00000000	0
46	Vertical Border (zero for internal LCD)	00	00000000	0
47	Signal (non-intr, norm, no stero, sep sync, neg pol)	18	00011000	24
48	Pixel Clock/10,000 (LSB)	B8	10111000	184
49	Pixel Clock/10,000 (MSB)	24	00100100	36
4A	Horizontal Addressable Pixels, lower 8 bits	80	10000000	128
4B	Horizontal Blanking Pixels, lower 8 bits	B8	10111000	184
4C	H Pixels, upper nibble : H Blanking, upper nibble	70	01110000	112
4D	Vertical Addressable Lines, lower 8 bits	38	00111000	56
4E	Vertical Blanking Lines, lower 8 bits	24	00100100	36
4F	V lines, upper nibble : V blanking, upper nibble	40	01000000	64
50	Horizontal Front Porch, lower 8 bits	10	00010000	16
51	Horizontal Sync Pulse, lower 8 bits	10	00010000	16
52	V Front Porch, lower nibble : V Sync Pulse, lower nibble	3E	00111110	62
53	VFP, 2 bits: VSP 2 bits: HFP 2 bits: HFP 2 bits	00	00000000	0
54	Horizontal Image Size in mm, lower 8 bits	35	00110101	53
55	Vertical Image Size in mm, lower 8 bits	AE	10101110	174
56	H Image Size, upper nibble : V Image Size, upper nibble	10	00010000	16
57	Horizontal Border	00	00000000	0
58	Vertical Border	00	00000000	0
59	Bit Encode Sync Information	18	00011000	24
5A	DC	00	00000000	0



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5B	HTOTAL	00	00000000	0
5C	HA	00	00000000	0
5D	HBL	00	00000000	0
5E	HFP	00	00000000	0
5F	HFPe	00	00000000	0
60	HBP	00	00000000	0
61	HB	00	00000000	0
62	HSO	00	00000000	0
63	HS	00	00000000	0
64	VTOTAL	00	00000000	0
65	VA	00	00000000	0
66	VBL	00	00000000	0
67	VFP	00	00000000	0
68	VBP	00	00000000	0
69	VB	00	00000000	0
6A	VSO	00	00000000	0
6B	VS	00	00000000	0
6C	Detail Timing Description #4	00	00000000	0
6D	Flag	00	00000000	0
6E	Reserved	00	00000000	0
6F	For Brightness Table and Power Consumption	02	00000010	2
70	Flag	00	00000000	0
71	PWM % [7:0] @ Step 0	0C	00001100	12
72	PWM % [7:0] @ Step 5	2D	00101101	45
73	PWM % [7:0] @ Step 10	FF	11111111	255
74	Nits [7:0] @ Step 0	10	00010000	16
75	Nits [7:0] @ Step 5	3C	00111100	60
76	Nits [7:0] @ Step 10	C8	11001000	200
77	Panel Electronics Power @ 32x32 Chess Pattern =	0A	00001010	10
78	Backlight Power @ 60 nits =	06	00000110	6
79	Backlight Power @ Step 10 =	14	00010100	20
7A	Nits [7:0] @ 100% PWM Duty =	C8	11001000	200
7B	Flag	20	00100000	32
7C	Flag	20	00100000	32
7D	Flag	20	00100000	32
7E	Extension Flag	00	00000000	0
7F	Checksum	82	10000010	130



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10.2 Notes

DPCD Ver.	sDRRS	DMRRS	PSR	MBO	VESA DSC	MSO	Free-Sync	HDR	Dimming
1.4	On	On	PSR2+LRR	Off	On	Off	Off	Off	Off