( ) Preliminary Specification
(V) Final Specification

Module	27" Color TFT-LCD
Model Name	M270QAN02.1
Suffix Name	Q0
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APPROVED BY		Date: May. 11, 2017
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CUSTOMER APPROVED AND FEEDBACK		
CUSTOMER		
APPROVED BY		Date :

Note: This Specification is subject to change without notice.

AUO

Product Specification

M270QAN02.1

AU OPTRONICS CORPORATION

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Record of Revision

Document Version	Date (Y/M/D)	Page	Description
D01	2016/09/23		First Version
D02	2016/10/12	15	Modify $\triangle$Vs Max. value from 5.4V to 3.6 V
		22	Modify Connector Pin Assignment Pin 9,10,11 to NC pin.
D03	2016/12/05	5	Modify Panel Weight
		6	Modify Color Coordinates
D04	2016/12/23	6	Modify Vertical Viewing Angle
		6	Modify Response Time
D05	2016/12/29	12	Modify Recommended Operating Condition
D06	2017/05/05	6-9	Modify Description of Note
		11	Remove Note 4-3
D07	2017/05/11	30-31	Modify Panel Drawing

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 or modify the Module Assembly.

8. Do not press the reflector sheet at the back of the module to any directions.

9. In case if a Module has to be put back into the packing container slot after once it was taken out from the container, do not press the center of the LED lightbar 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. 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.

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. Please avoid touching COF Position while you are doing mechanical design.

14. When storing modules as spares for a long time, the following precaution is necessary:
    a. Store them in a dark place. Do not expose the module to sunlight or fluorescent light.
    b. Keep the temperature between 5℃ and 35℃ at normal humidity.

2. General Description

This specification applies to the 27 inch wide color a-Si TFT-LCD Module M270QAN02.1-A000 The display supports the UHD - 3840(H) x 2160(V) screen format and 1.07B colors (RGB 8bits + Hi-FRC). The linput interface is 8-lanes eDP and this module doesn't contain an driver board for backlight.

Display Characteristics

The following items are characteristics summary on the table under 25℃ condition:

ITEMS	Unit	SPECIFICATIONS
Screen Diagonal	mm	684(26.93")
Active Area	mm	596.16 (H) x 335.34 (V)
Pixels H x V		3840x3(RGB) x 2160
Pixel Pitch	um	155.25(per one triad) ×155.25
Pixel Arrangement		R.G.B. Vertical Stripe
Display Mode		AHVA Mode (Advanced Hyper-Viewing Angle), Normally Black
White Luminance (Center)	cd/m^2	300 cd/m^2 (Typ.)
Contrast Ratio		1000(Typ.)
Optical Response Time	msec	12ms (Typ., Gray to Gray)
Power Consumption (VDD line + LED line)	Watt	Total=27.5 W(Typ) LCD module: PDD (Typ)=10.8 @ white pattern 60 HZ 12V Backlight unit: PBLU (Typ)=16.7@ IS=80 mA
Color Gamut	%	sRGB 100% (typ)
Weight	Grams	2380(Typ.)
Outline Dimension	mm	608.8(H)x354.91(V)x14.58(D)
Electrical Interface		8-lanes eDP, 10 bits RGB data input (RGB 8bits + Hi-FRC)
Support Color		1.07B colors
Surface Treatment		Anti-Glare, 3H
Temperature Range Operating Storage (Shipping)	℃ ℃	0 to +50 -20 to +60
RoHS Compliance		RoHS Compliance
TCO Compliance		TCO 7.0 Compliance

Optical Characteristics

The optical characteristics are measured under stable conditions at 25℃ :

Test Condition：

1.Equiment setuo:Please refer to Note 2-1

2.Panel Lighting:30 Minutes

3.DD=12.0V, Fv=60Hz, Is=80mA, Ta=25℃

Symbol	Description		Min.	Typ.	Max.	Unit	Remark
L$_W$	White Luminance (Center of screen)		240	300	-	[cd/m^2]	*Note 2-1*
L$_{uni}$	Luminance Uniformity (9 points)		75	80	-	[%]	*Note 2-2*
CR	Contrast Ratio (Center of screen)		600	1000	-	-	*Note 2-3*
θ$_R$	Horizontal Viewing Angle (CR=10)	Right	75	89	-	[degree]	*Note 2-4*
θ$_L$		Left	75	89	-		
Φ$_R$	Vertical Viewing Angle (CR=10)	Up	75	89	-		
Φ$_L$		Down	75	89	-		
θ$_R$	Horizontal Viewing Angle (CR=5)	Right	75	89	-		
θ$_L$		Left	75	89	-		
Φ$_R$	Vertical Viewing Angle (CR=5)	Up	75	89	-		
Φ$_L$		Down	75	89	-		
T$_{GTG}$	Response Time	Gray to Gray	-	12	-	[msec]	*Note 2-5*
R$_x$	Color Coordinates (CIE 1931)	Red x	0.625	0.655	0.685	-	*Note 2-6*
R$_y$		Red y	0.301	0.331	0.361		
G$_x$		Green x	0.264	0.294	0.324		
G$_y$		Green y	0.589	0.619	0.649		
B$_x$		Blue x	0.117	0.147	0.177		
B$_y$		Blue y	0.022	0.052	0.082		
W$_x$		White x	0.283	0.313	0.343		
W$_y$		White y	0.299	0.329	0.359		
CT	Crosstalk		-	-	1.5	[%]	*Note 2-7*
F$_{dB}$	Flicker (Center of screen)		-	-	-20	[dB]	*Note 2-8*

Note 2-1: Measurement method

The LCD module should be stabilized at given temperature for 30 minutes to avoid abrupt temperature change during measuring (at surface 35℃). In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 30 minutes in a stable, windless and dark room.

Photo detector (*TOPCON*

Measured distance

LCD Panel

TFT-LCD Module

Center of the screen
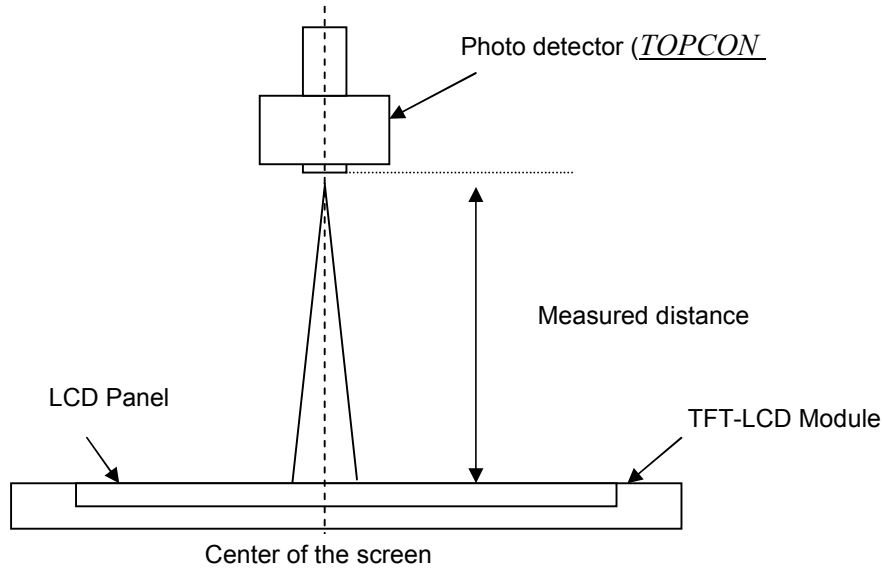
Note 2-2: Luminance uniformity of these 9 points is defined as below and measured by TOPCON SR-3

90 %↵   50 %↵   10 %↵

10 %↵

50 %↵

90 %↵
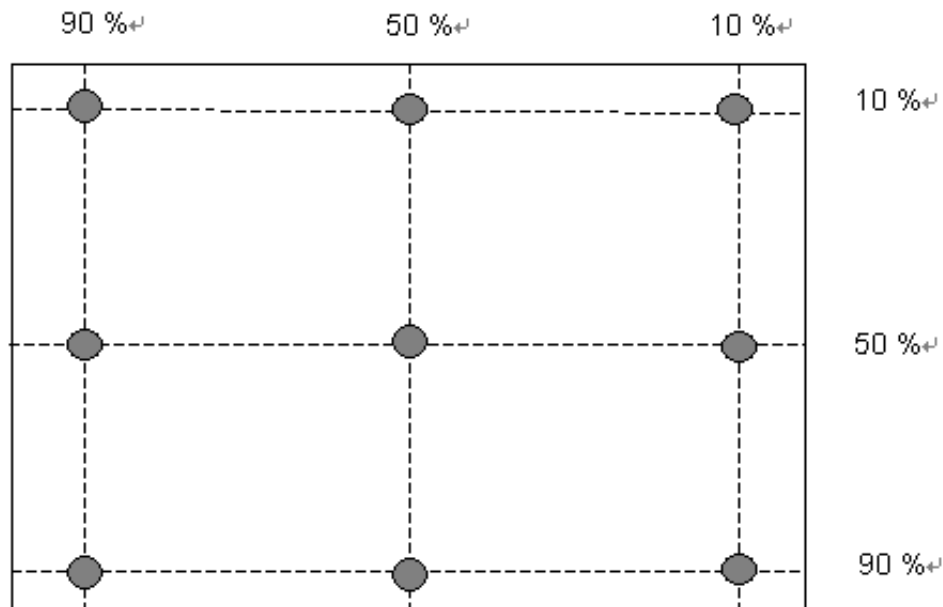
$$\text{Uniformity} = \frac{\text{Minimum Luminance in 9 points (1-9)}}{\text{Maximum Luminance in 9 Points (1-9)}}$$

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*Note2-3: Contrast ratio is measured by TOPCON SR-3*

Note 2-4: Definition of viewing angle measured by TOPCON SR-3

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.
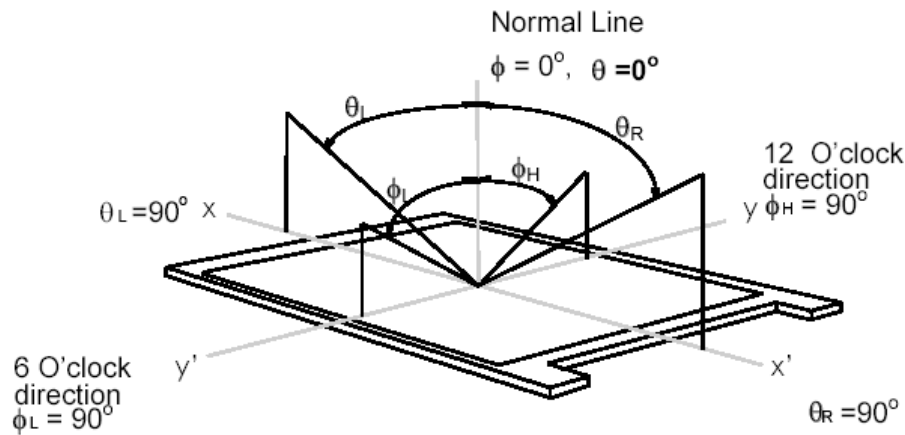
Note 2-5: Definition of Response time measured by Westar TRD-100

The output signals of photo detector are measured when the input signals are changed from "Black" to
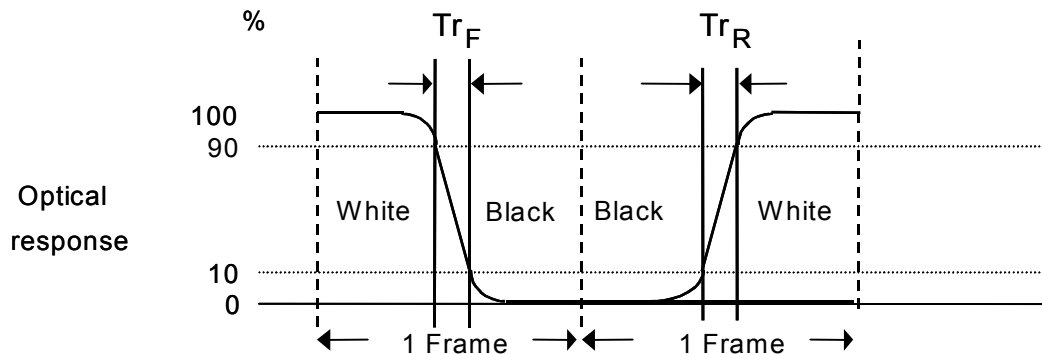
"White" (rising time, T_R), and from "White" to "Black" (falling time, T_F), respectively. The response time is interval between the 10% and 90% of optical response.(*Black & White color definition: Please refer section 3.4.3*)

Note 2-6: Color chromaticity and coordinates (CIE) is measured by TOPCON SR-3

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Note 2-7 Crosstalk is defined as below and measured by TOPCON SR-3

Crosstalk measurement

Definition:

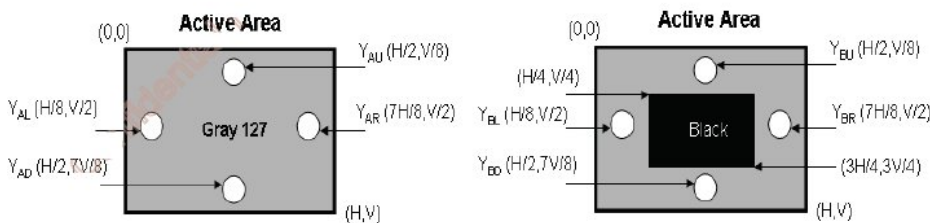$CT = Max.\ (CT_H, CT_V);$

Where

a.Maximum Horizontal Crosstalk :

$CT_H = Max.\ (|\ Y_{BL} - Y_{AL}\ |\ /\ Y_{AL} \times 100\ \%,\ |\ Y_{BR} - Y_{AR}\ |\ /\ Y_{AR} \times 100\ \%);$

Maximum Vertical Crosstalk:

$CT_V = Max.\ (|\ Y_{BU} - Y_{AU}\ |\ /\ Y_{AU} \times 100\ \%,\ |\ Y_{BD} - Y_{AD}\ |\ /\ Y_{AD} \times 100\ \%);$

b. $Y_{AU}, Y_{AD}, Y_{AL}, Y_{AR}$ = Luminance of measured location without Black pattern

$Y_{BU}, Y_{BD}, Y_{BL}, Y_{BR}$ = Luminance of measured location with Black pattern

Note 2-8: Test Patern: Subchecker Pattern measured by TOPCON SR-3

Flicker measurement

a. Test pattern: It is listed as following.
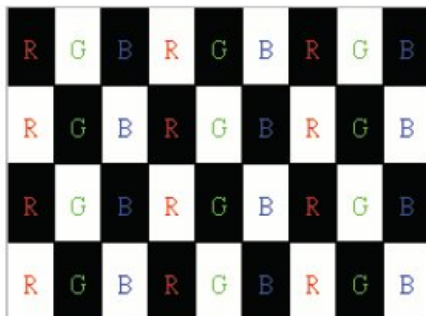
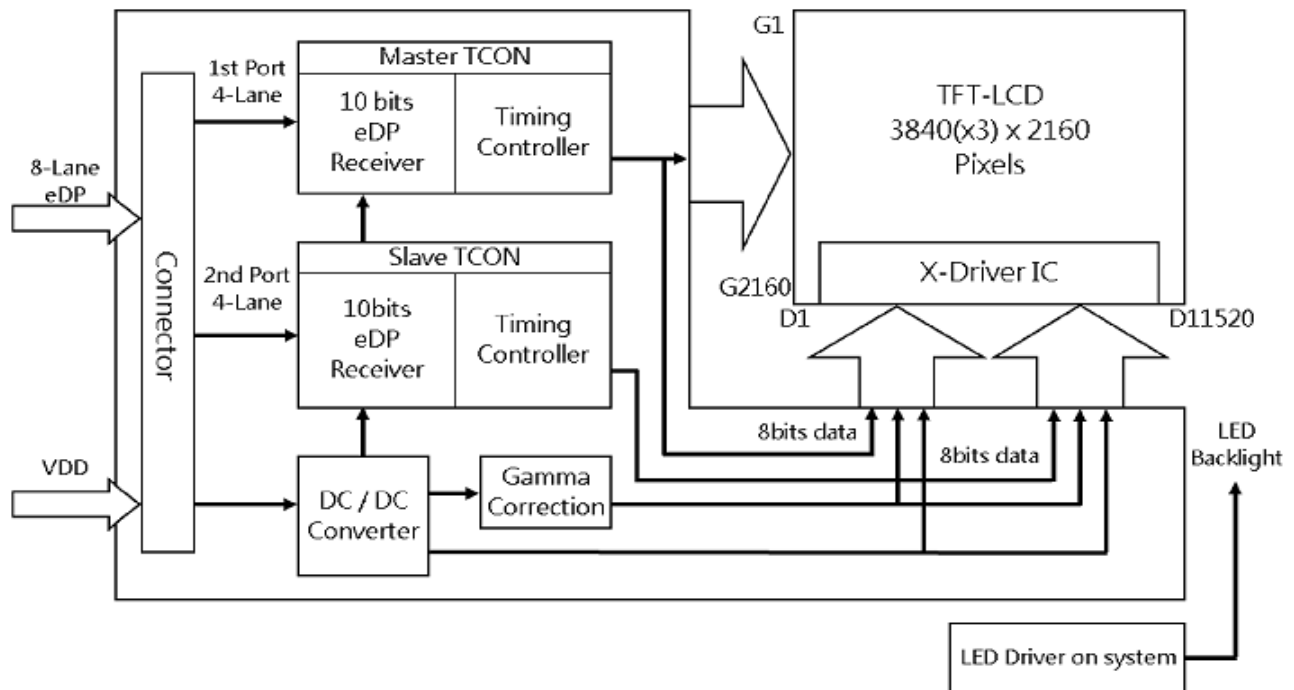Gray level = L0

Gray level = L127

R: Red, G: Green, B:Blue

b. Measured position: Center of screen & perpendicular to the screen

3. Functional Block Diagram

3.TFT-LCD

3-1. Block Diagram

The following shows the block diagram of the 27.0 inch Color TFT-LCD Module.

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4. Absolute Maximum Ratings

Backlight Unit

|	Symbol	Min	Typ	Max	Unit	Conditions
LED Current	ILED	-	80	120	[mA]	*Note 4-1,4-2*

Absolute Ratings of Environment

Item	Symbol	Min.	Max.	Unit	Conditions
Operating Temperature	TOP	0	+50	[^{o}C]	
Center Glass Surface temperature (Operation)	TGS	0	+65	[^{o}C]	
Operation Humidity	HOP	5	90	[%RH]	
Storage Temperature	TST	-20	+60	[^{o}C]	
Storage Humidity	HST	5	90	[%RH]	

Note 4-1: With in Ta (25℃)

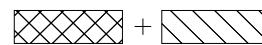*Note 4-2: Permanent damage to the device may occur if exceeding maximum values*

1. 90% RH Max (Ta ≦39℃)
2. Max wet-bulb temperature at 39℃ or less (Ta ≦39℃)
3. No condensation
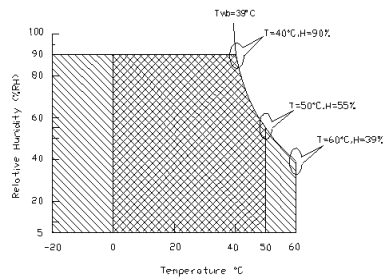
Operating Range

Storage Range

5. Electrical characteristics-TFT LCD Module

Power Specification – TFT-LCD

Input power specifications are as following:

5.1 Absolute Maximum Rating

.

Symbol	Description	Min	Max	Unit	Remark
VDD	Power Supply Input Voltage	GND-0.3	14	[Volt]	Ta=25℃

5.2 Recommended Operating Condition

Symbol	Description	Min	Typ	Max	Unit	Remark
VDD	Power Supply Input Voltage	10.8	12	13.2	[Volt]	
IDD	Power Supply Input Current $_{(RMS)}$	-	0.9	1.08	[A]	VDD= 12.0V, White Pattern, Fv= 60Hz
PDD	VDD Power Consumption	-	10.8	12.96	[Watt]	VDD= 12.0V, White Pattern, Fv= 60Hz
IRush	Inrush Current	-	-	3.0	[A]	**Note 5-1**
VDDrp	Allowable LCD Ripple Voltage	-	-	VDD*5%	[mV]	VDD= 12.0V, White Pattern, Fv= 60Hz

Note 5-1: Measurement conditions:

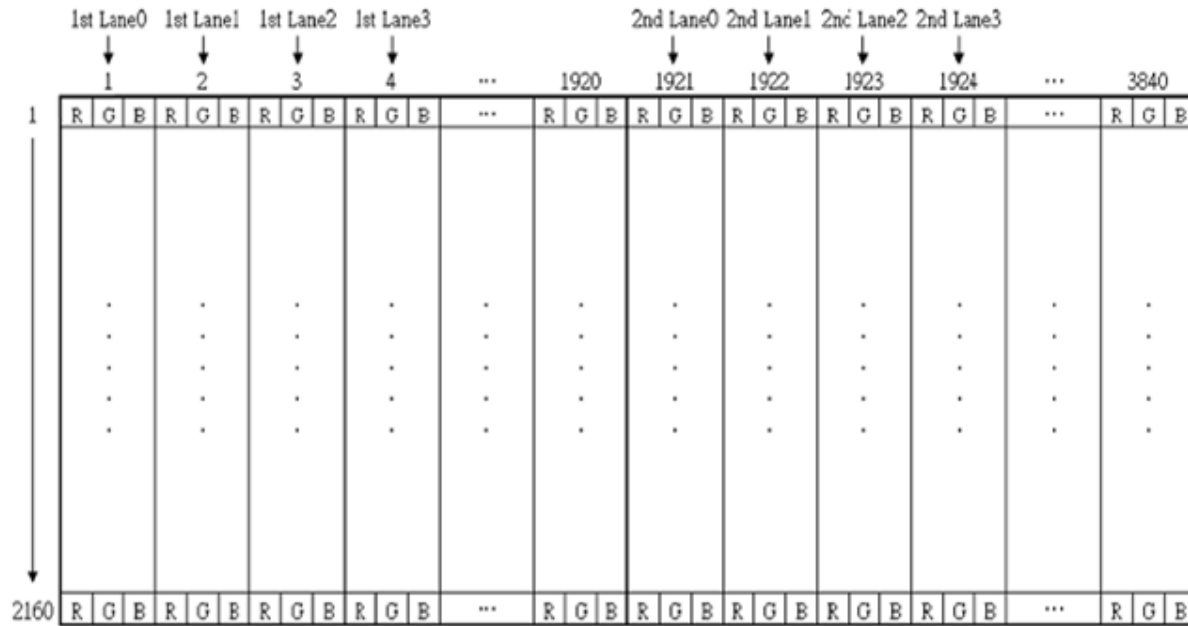Inrush Current measurement:

Test circuit:
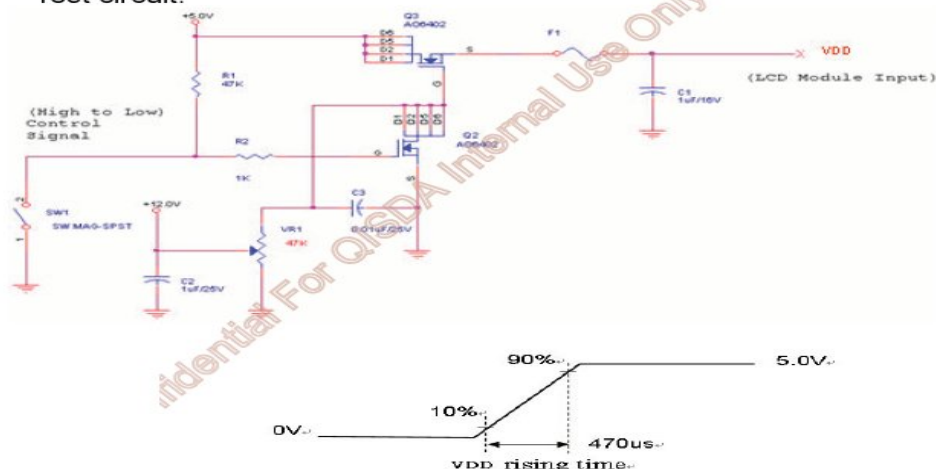
The duration of VDD rising time: 470us.

5.3 LCD Pixel Format

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


5.4 eDP Data Format

1st Lane0	1st Lane1	1st Lane2	1st Lane3	2nd Lane0	2nd Lane1	2nd Lane2	2nd Lane3
R1-9:2	R2-9:2	R3-9:2	R4-9:2	R1921-9:2	R1922-9:2	R1923-9:2	R1924-9:2
R1-1:0IG1-9:4	R2-1:0IG2-9:4	R3-1:0IG3-9:4	R4-1:0IG4-9:4	R1921-1:0IG1921-9:4	R1922-1:0IG1922-9:4	R1923-1:0IG1923-9:4	R1924-1:0IG1924-9:4
G1-3:0IB1-9:6	G2-3:0IB2-9:6	G3-3:0IB3-9:6	G4-3:0IB4-9:6	G1921-3:0IB1921-9:6	G1922-3:0IB1922-9:6	G1923-3:0IB1923-9:6	G1924-3:0IB1924-9:6
B1-5:0IR5-9:8	B2-5:0IR6-9:8	B3-5:0IR7-9:8	B4-5:0IR8-9:8	B1921-5:0IR1925-9:8	B1922-5:0IR1926-9:8	B1923-5:0IR1927-9:8	B1924-5:0IR1928-9:8
R5-7:0	R6-7:0	R7-7:0	R8-7:0	R1925-7:0	R1926-7:0	R1927-7:0	R1928-7:0
G5-9:2	G6-9:2	G7-9:2	G8-9:2	G1925-9:2	G1926-9:2	G1927-9:2	G1928-9:2
G5-1:0IB5-9:4	G6-1:0IB6-9:4	G7-1:0IB7-9:4	G8-1:0IB8-9:4	G1925-1:0IB1925-9:4	G1926-1:0IB1926-9:4	G1927-1:0IB1927-9:4	G1928-1:0IB1928-9:4
B5-3:0IR9-9:6	B6-3:0IR10-9:6	B7-3:0IR11-9:6	B8-3:0IR12-9:6	B1925-3:0IR1929-9:6	B1926-3:0IR1930-9:6	B1927-3:0IR1931-9:6	B1928-3:0IR1932-9:6
R9-5:0IG9-9:8	R10-5:0IG10-9:8	R11-5:0IG11-9:8	R12-5:0IG12-9:8	R1929-5:0IG1929-9:8	R1930-5:0IG1930-9:8	R1931-5:0IG1931-9:8	R1932-5:0IG1932-9:8
G9-7:0	G10-7:0	G11-7:0	G12-7:0	G1929-7:0	G1930-7:0	G1931-7:0	G1932-7:0
B9-9:2	B10-9:2	B11-9:2	B12-9:2	B1929-9:2	B1930-9:2	B1931-9:2	B1932-9:2
B9-1:0IR13-9:4	B10-1:0IR14-9:4	B11-1:0IR15-9:4	B12-1:0IR16-9:4	B1929-1:0IR1933-9:4	B1930-1:0IR1934-9:4	B1931-1:0IR1935-9:4	B1932-1:0IR1936-9:4
R13-3:0IG13-9:6	R14-3:0IG14-9:6	R15-3:0IG15-9:6	R16-3:0IG16-9:6	R1933-3:0IG1933-9:6	R1934-3:0IG1934-9:6	R1935-3:0IG1935-9:6	R1936-3:0IG1936-9:6
G13-5:0IB13-9:8	G14-5:0IB14-9:8	G15-5:0IB15-9:8	G16-5:0IB16-9:8	G1933-5:0IB1933-9:8	G1934-5:0IB1934-9:8	G1935-5:0IB1935-9:8	G1936-5:0IB1936-9:8
B13-7:0	B14-7:0	B15-7:0	B16-7:0	B1933-7:0	B1934-7:0	B1935-7:0	B1936-7:0
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.

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Power Specification – LED Back light

5.5 Absolute Maximum Rating

Parameter damage may occur if exceeding the following maximum rating.

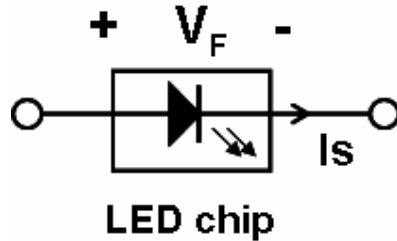| Symbol	Description	Min.	Max.	Unit	Remark
Is	LED String Current	0	150	[mA]	*100% duty ratio*
			300	[mA]	*Duty ratio 10% Pulse time=10ms*
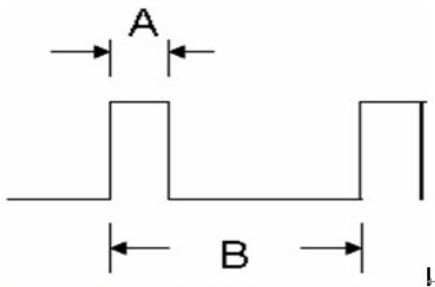
Duty ratio= (A / B) X 100% ; (A: Pulse time, B: Period)

5.5.1 Parameter guideline for LED driving is under stable conditions at 25℃ (Room Temperature):

Symbol	Parameter	Min.	Typ.	Max.	Unit	Note
IR_{LED}	LED Operation Current	-	80	88	[mA]	Operating with fixed driving current
V_{LB}	Light Bar Operation Voltage (for reference)	46.8	52.2	57.6	[Volt] Note 7-1 Note 7-5	
ΔVs	Maximum Vs Voltage Deviation of light bar			3.6	[Volt] Note 7-2	
P_{BLU}	BLU Power consumption (for reference)		16.7	18.43	[Watt] Note 7-3	
LT_{LED}	LED life Time (Typical)	30,000		-	[Hour] Note 7-4	

Note 7-1: Vs (Typ.) = VF (Typ.) X LED No. (one string);

a. V_F: LED chip forward voltage, V_F (Min.)=2.6V, V_F(Typ.)=2.9V, V_F(Max.)=3.2V

b. The same euqation to calculate Vs(Min.) & Vs (Max.) for respective V_F (Min.) & V_F(Max.);

LED chip

Note 7-2: ΔVs (Max.) = ΔVF X LED No. (one string);

   a. ΔVF: LED chip forward voltage deviation; (0.2 V , each Bin of LED VF)

Note 7-3: P_{BLU} (Typ.) = Vs (Typ.) X Is (Typ.) X 4 ; (4 is total String No. of LED Light bar)

   P_{BLU} (Max.) = Vs (Max.) X Is (Typ.) X 4 ;

Note 7-4: Definition of life time:

   a. Brightness of LED becomes to 50% of its original value

   b. Test condition: Is = 80mA and 25℃ (Room Temperature)

Note 7-5: Recommendation for LED driver power design:

   Due to there are electrical property deviation in LED & monitor set system

   component after long time operation. AUO strongly recommend the design value of

   LED driver board OVP (over voltage protection) should be 10% higher than max. value

   of LED string voltage (Vs) at least.

Note 7-6: AUO strongly recommend "Analog Dimming" method for backlight brightness control

   for Wavy Noise Free. Otherwise, recommend that Dimming Control Signal (PWM

   Signal) should be synchronized with Frame Frequency.

6. Signal Characteristic

3.4.3 Color versus Input Data

The following table is for color versus input data (10bit). The higher the gray level, the brighter the color.

| Color	Gary Level	RED data (MSB:R9,LSB:R0)										GREEN data (MSB:G9,LSB:G0)										BLUE data (MSB:B9,LSB:B0)										Remark
		R9	R8	R7	R6	R5	R4	R3	R2	R1	R0	G9	G8	G7	G6	G5	G4	G3	G2	G1	G0	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0	
Black	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
White	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
L511	-	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	
Red	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L1023	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Green	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L1023	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	
Blue	L0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Black
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	
	L1023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	

6.2 eDP Specification (Follow as VESA Displayport Standard Version 1.1)

eDP Specification

a. DisplayPort main link signal:

DisplayPort main link		Min	Typ	Max	unit
VCM	RX input DC Common Mode Voltage	0	-	2.0	V
VDiff$_{P-P}$	Peak-to-peak Voltage at a receiving Device	150	-	-	mV
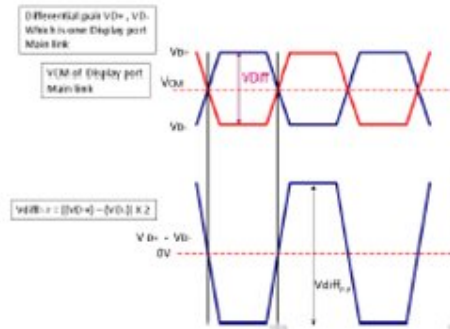
b. DisplayPort AUX_CH signal:

DisplayPort AUX_CH		Min	Typ	Max	unit
VCM	AUX DC Common Mode Voltage	0	-	2.0	V
VDiff$_{P-P}$	AUX Peak-to-peak voltage at a receiving device	0.27	-	1.36	V
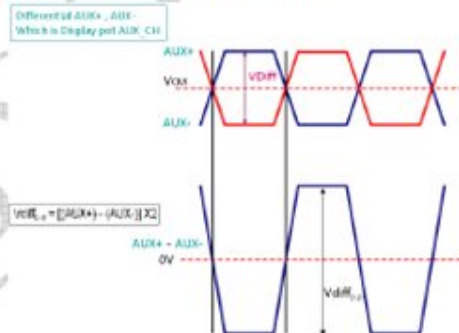
c. DisplayPort VHPD signal:

DisplayPort VHPD		Min	Typ	Max	unit
VHPD	HPD Voltage	2.25	-	3.6	V

6.3 Input timing is shown as the following table

The input timing is shown as the following table.

Symbol	Description		Min.	Typ.	Max.	Unit	Remark
Tv	Vertical Section	Period	2180	2200	4500	Th	
Tdisp (v)		Active	2160	2160	2160	Th	
Tblk (v)		Blanking	20	40	2340	Th	
Fv		Frequency	29	60	65	Hz	Note 3-6 Note 3-7
Th	Horizontal Section	Period	2000	2100	3520	Tclk	
Tdisp (h)		Active	1920	1920	1920	Tclk	
Tblk (h)		Blanking	80	180	1600	Tclk	
Fh		Frequency	40	132	151	kHz	Note 3-4
Tclk	Pixel Clock	Period	3.330	3.608	12.500	ns	1/Fclk
Fclk		Frequency	80	277	300.3	MHz	Note 3-5
Link Rate per Lane				2.7		Gbps	

Note 3-4: The equation is listed as following. Please don't exceed the above recommended value.

$$Fh\ (Min.) = Fclk\ (Min.) / Th\ (Min.)$$
$$Fh\ (Typ.) = Fclk\ (Typ.) / Th\ (Typ.)$$
$$Fh\ (Max.) = Fclk\ (Max.) / Th\ (Min.)$$

Note 3-5: The equation is listed as following. Please don't exceed the above recommended value.

1st Lane N & 2nd Lane N skew < 200ns

$$Fclk\ (Typ.) = Fv\ (Typ.) \times Th\ (Typ.) \times Tv\ (Typ.)$$
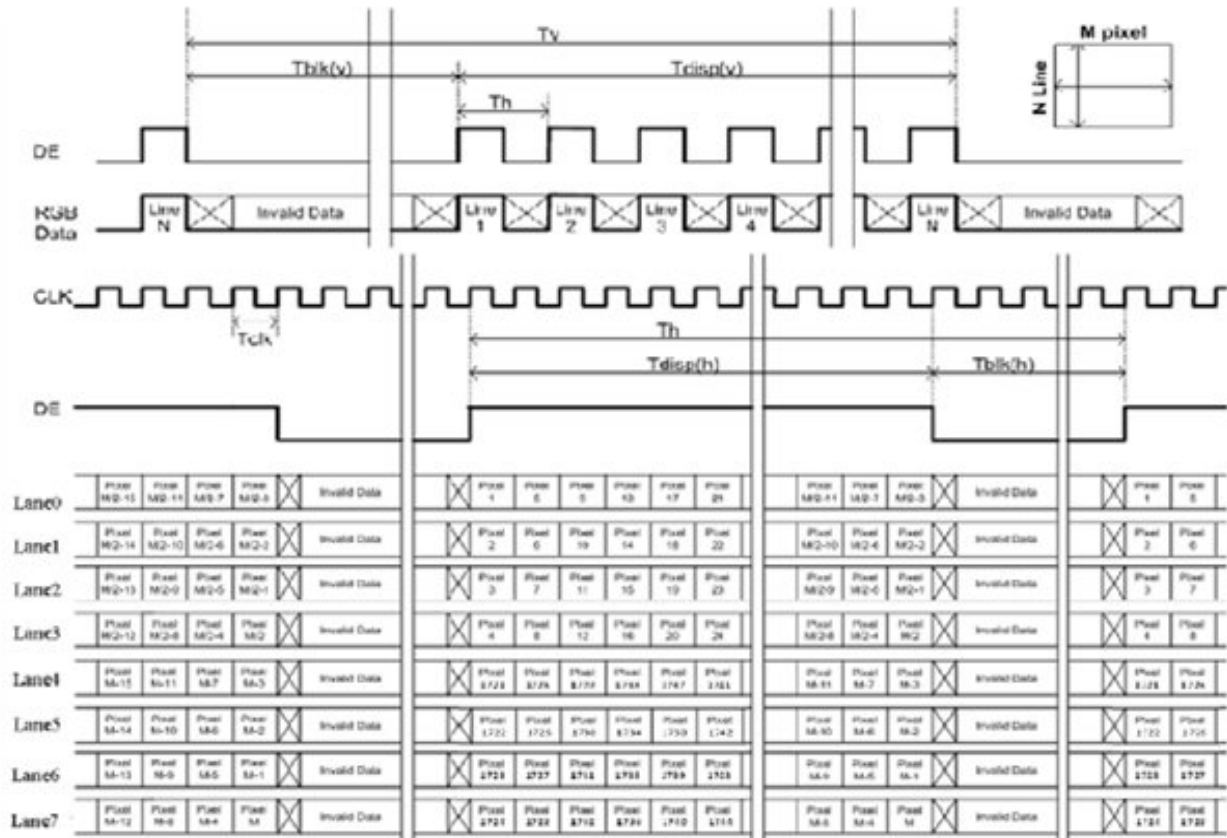$$Fclk\ (Min.) \leq Fv \times Th \times Tv \leq Fclk\ (Max.)$$

Note 3-6: The equation is listed as following. Please don't exceed the above recommended value.

$$Fv = Fclk(Typ.) / (Tv \times Th)$$

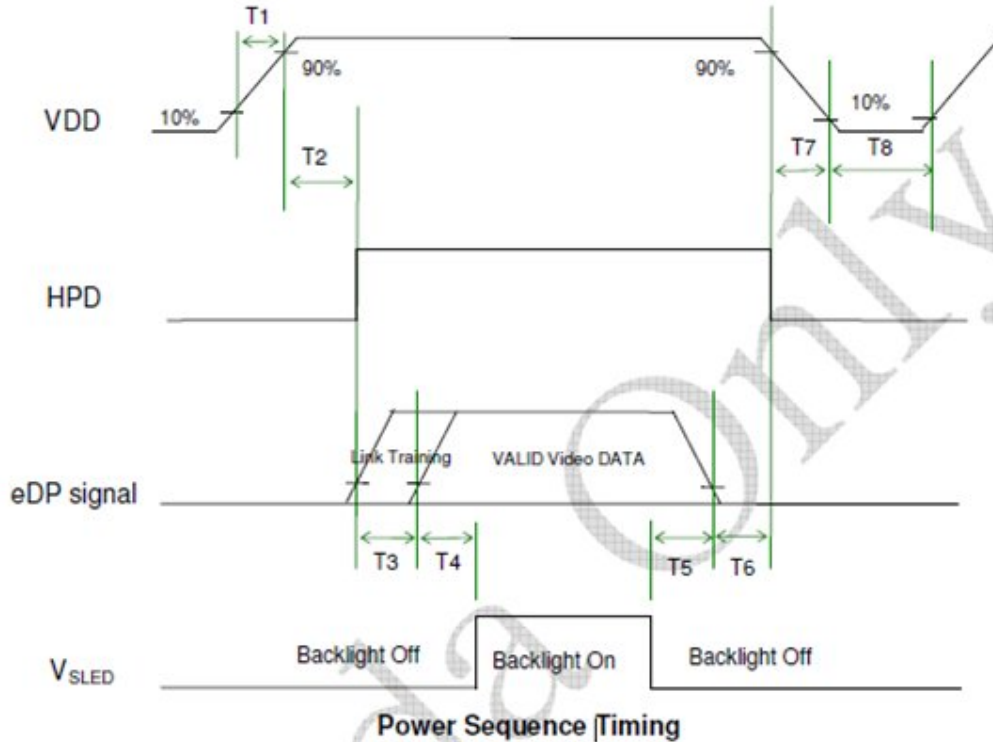**Note 3-7:** The optimal Vertical Frequency is 50~65 Hz for best picture quality.

Timing diagram

(Lane0~7 eDP data:1, 2, 3, 4, 1921, 1922, 1923, 1924)

6.4 Power ON/OFF Sequence

VDD power,eDP signal and backlight on/off sequence are as following. eDP signals from any system shall be Hi-Z state when VDD is off.

Power Sequence Timing

Symbol	Value			Unit	Remark
	Min.	Typ.	Max.		
T1	0.5	-	10	[ms]	
T2	0	-	200	[ms]	
T3	0	-	-	[ms]	Note 3-8
T4	500	-	-	[ms]	
T5	100	-	-	[ms]	
T6	0	-	50	[ms]	Note 3-9 Note 3-10
T7	0	-	200	[ms]	Note 3-10 Note 3-11
T8	1000	-	-	[ms]	

Note 3-8: During T3 period , eDP link training time by customer's system.
Note 3-9: Recommend setting T6 = 0ms to avoid electronic noise when VDD is off.
Note 3-10: During T6 and T7 period , please keep the level of input eDP signals with Hi-Z state.
Note 3-11: Voltage of VDD must decay smoothly after power-off.(customer system decide this value)

7. Connector & Pin Assignment
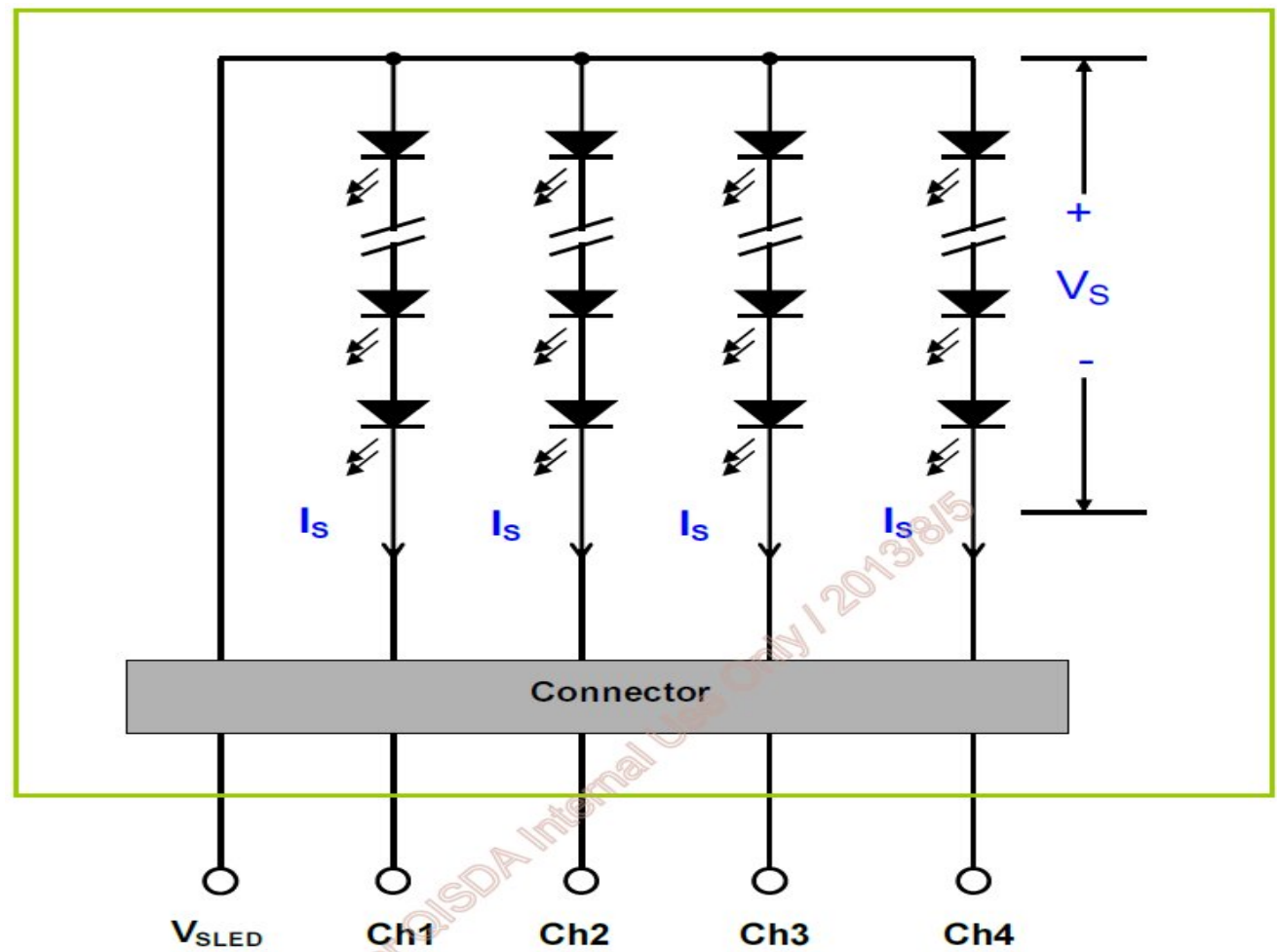
Physical interface is described as for the connector on module. These connectors are capable of accommodating the following signals and will be following components.

TFT LCD Module

7.1 Block Diagram
The following shows the block diagram of the 27 inch Backlight Unit. And it includes 72pcs LED in the LED light bar 2pcs. (4 strings and 18 pcs LED of one string).

7.2 Connector Type

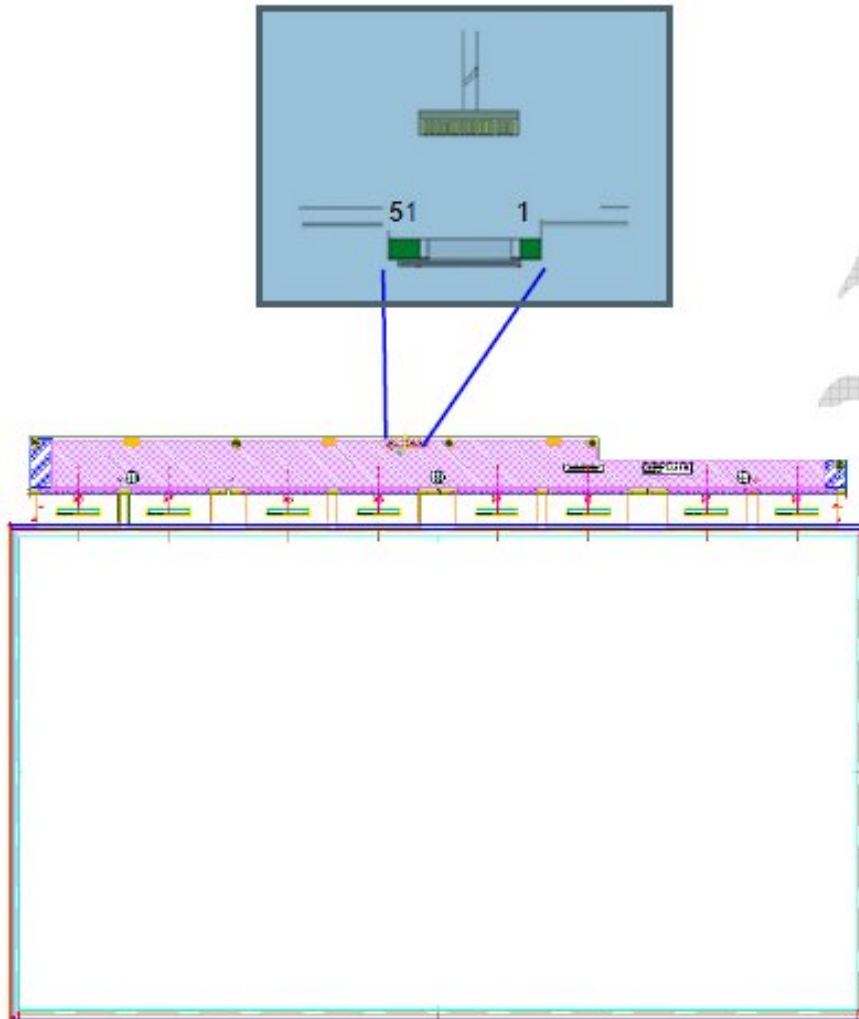| TFT-LCD Connector	Manufacturer	P-TWO	JAE
	Part Number	187059-5122	FI-RTE51SZ-HF
Mating Connector	Manufacturer	JAE or compatible	
	Part Number	FI-RE51CL	

7.2.1 Connector Pin Assignment

PIN #	Symbol	Description	Remark
1	VDD	Power +12V	
2	VDD	Power +12V	
3	VDD	Power +12V	
4	VDD	Power +12V	
5	VDD	Power +12V	
6	GND	Ground	
7	GND	Ground	
8	GND	Ground	
9	NC	No connection (for AUO test only. Do not connect)	
10	NC	No connection (for AUO test only. Do not connect)	
11	NC	No connection (for AUO test only. Do not connect)	
12	NC	No connection (for AUO test only. Do not connect)	
13	NC	No connection (for AUO test only. Do not connect)	
14	NC	No connection (for AUO test only. Do not connect)	
15	NC	No connection (for AUO test only. Do not connect)	
16	NC	No connection (for AUO test only. Do not connect)	
17	GND	Ground	
18	1st Lane3_N	Negative eDP differential data input	
19	1st Lane3_P	Positive eDP differential data input	
20	GND	Ground	

21	1st Lane2_N	Negative eDP differential data input	
22	1st Lane2_P	Positive eDP differential data input	
23	GND	Ground	
24	1st Lane1_N	Negative eDP differential data input	
25	1st Lane1_P	Positive eDP differential data input	
26	GND	Ground	
27	1st Lane0_N	Negative eDP differential data input	
28	1st Lane0_P	Positive eDP differential data input	
29	GND	Ground	
30	1st AUX_CH_P	Positive AUX Channel differential data input	
31	1st AUX_CH_N	Negative AUX Channel differential data input	
32	GND	Ground	
33	NC	No connection (for AUO test only. Do not connect)	
34	GND	Ground	
35	2nd Lane3_N	Negative eDP differential data input	
36	2nd Lane3_P	Positive eDP differential data input	
37	GND	Ground	
38	2nd Lane2_N	Negative eDP differential data input	
39	2nd Lane2_P	Positive eDP differential data input	
40	GND	Ground	
41	2nd Lane1_N	Negative eDP differential data input	
42	2nd Lane1_P	Positive eDP differential data input	
43	GND	Ground	
44	2nd Lane0_N	Negative eDP differential data input	
45	2nd Lane0_P	Positive eDP differential data input	
46	GND	Ground	
47	2nd AUX_CH_P	Positive AUX Channel differential data input	
48	2nd AUX_CH_N	Negative AUX Channel differential data input	
49	GND	Ground	

| 50 | HPD | Hot plug detection | |
| 51 | GND | Ground | |

Note: input signals of port 1 to port 4 clocks shall be the same timing

7.3 LED Connector Type

This connector is mounted on LED light-bar.

Connector Name / Designation	Light Bar Connector
Manufacturer	CVILUX
Type Part Number	CI1406M1VL0-NH

7.3.1 LED Connector Pin Assignment

Pin#	Symbol	Description	Remark
1	Ch1	LED Current Feedback Terminal (Channel 1)	
2	Ch2	LED Current Feedback Terminal (Channel 2)	
3	V_{SLED}	LED Power Supply Voltage Input Terminal	
4	V_{SLED}	LED Power Supply Voltage Input Terminal	
5	Ch3	LED Current Feedback Terminal (Channel 3)	
6	Ch4	LED Current Feedback Terminal (Channel 4)	

7.3.2 Backlight Connector dimension:

Pin 1　　Pin 6
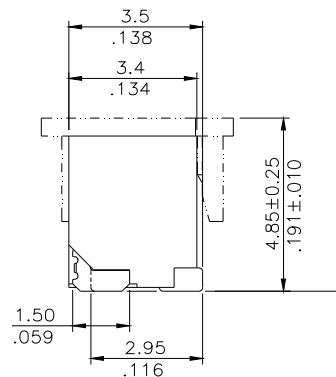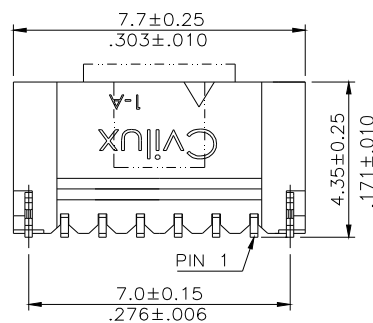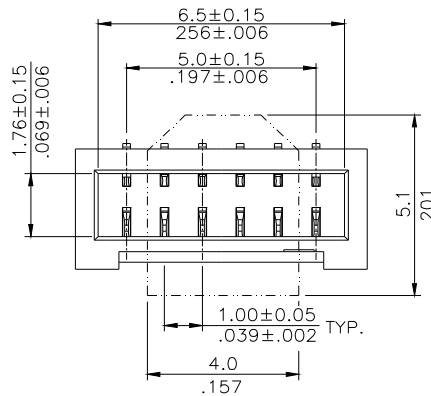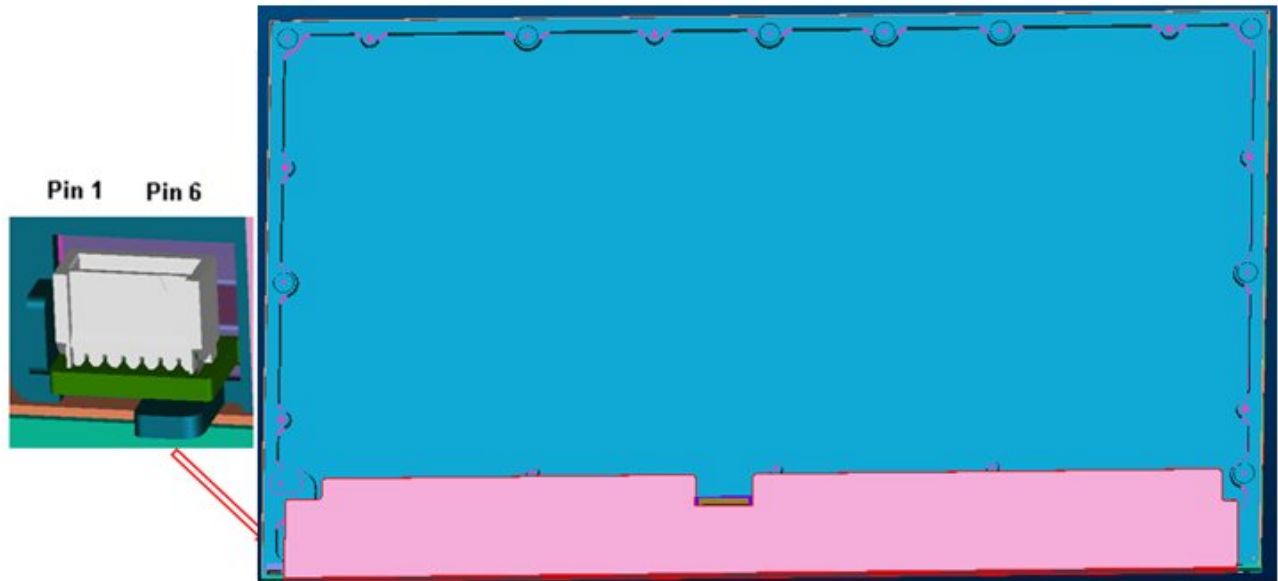
8. Reliability Test

Environment test conditions are listed as following Monitor test condition.

| Items	Required Condition	Note
Temperature Humidity Bias (THB)	Ta= 50°C, 80%RH, 300 hours	
High Temperature Operation (HTO)	Ta= 50°C, 50%RH, 300 hours	
Low Temperature Operation (LTO)	Ta= 0°C, 300 hours	
High Temperature Storage (HTS)	Ta= 60°C, 300 hours	
Low Temperature Storage (LTS)	Ta= -20°C, 300 hours	
Vibration Test (Non-operation)	Acceleration: 1.5 Grms Wave: Random Frequency: 10 - 200 Hz Duration: 30 Minutes each Axis (X, Y, Z)	
Shock Test (Non-operation)	Acceleration: 50 G Wave: Half-sine Active Time: 20 ms Direction: ±X, ±Y, ±Z (one time for each Axis)	
Drop Test	Height: 46 cm, package test	
Thermal Shock Test (TST)	-20°C/30min, 60°C/30min, 100 cycles	*Note 1*
On/Off Test	On/10sec, Off/10sec, 30,000 cycles	
ESD (Electro Static Discharge)	Contact Discharge: ± 15KV, 150pF(330Ω) 1sec, 15 points, 25 times/ point Air Discharge: ± 15KV, 150pF(330Ω) 1sec 15 points, 25 times/ point	*Note 2*
Altitude Test	Operation: 18,000 ft Non-Operation: 40,000 ft	

Note 1: The TFT-LCD module will not sustain damage after being subjected to 100 cycles of rapid temperature change. A cycle of rapid temperature change consists of varying the temperature from -20°C to 60°C, and back again. Power is not applied during the test. After temperature cycling, the unit is placed in normal room ambient for at least 4 hours before power on.

Note 2: EN61000-4-2, ESD class B: Certain performance degradation allowed:

➢ No data lost

➢ Self-recoverable

➢ No hardware failures

9. Shipping label
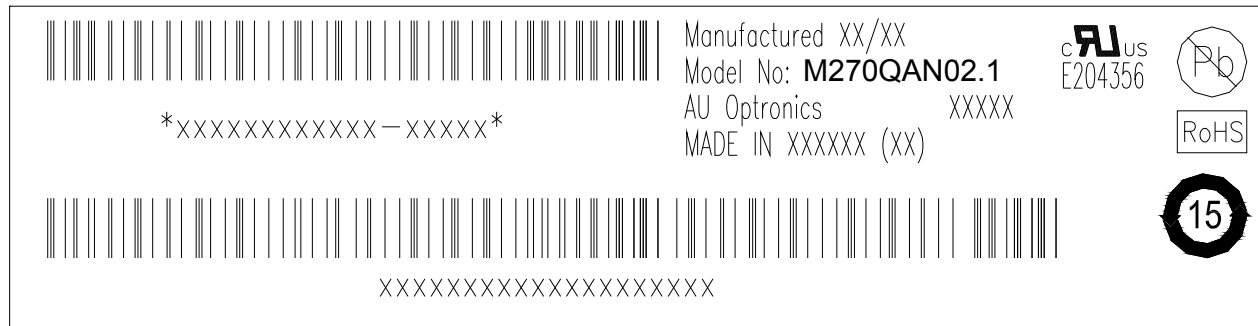
Note 9-1: For Pb Free products, AUO will add ⊕ for identification.

Note 9-2: For RoHS compatible products, AUO will add [RoHS] for identification.

Note 9-3: For China RoHS compatible products, AUO will add ⑮ for identification.

Note 9-4: The Green Mark will be presented only when the green documents have been ready by AUO Internal Green Team.

10. Packing Precautions

TFT-LCD Module (or monitor) should be stand or be placed face up in traffic or storage conditions; please do not keep TFT-LCD Module face down (polarizer side down).

Monitor maker should add the notice above in packing description; See the configuration example as below:
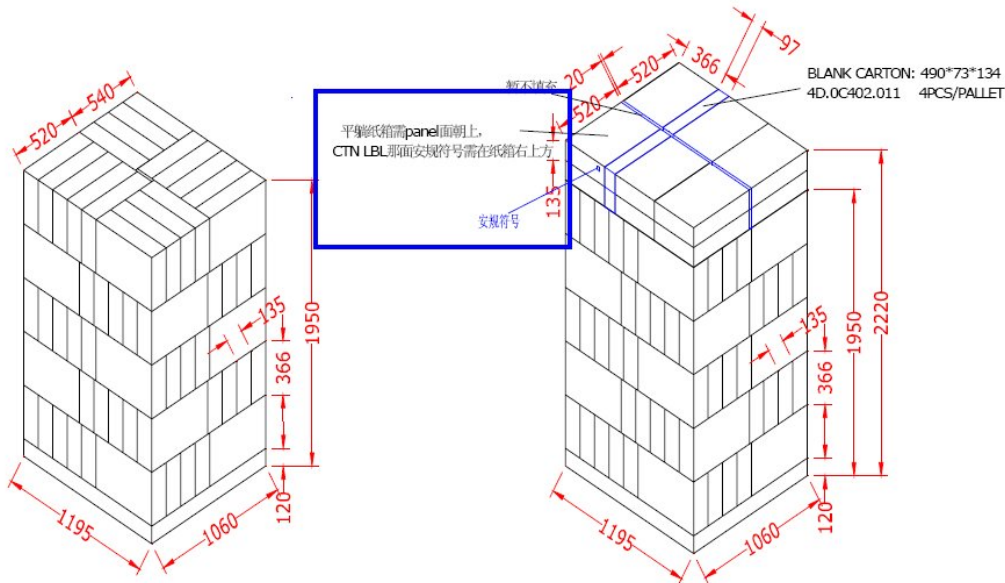
栈板尺寸参照: 1199*1061*120

18*5+12=102 PCS

608.8±0.5（OUTLINE）

596.16±0.5 (ACTIVE AREA)

304.4

298.08

9.99±0.5

6.32

5.66

354.91±0.5 (OUTLINE)

335.34±0.5 (ACTIVE AREA)

173.33

167.67

6.32

0.5 +0.25 / 0

13.24±0.5

14.58±0.5

PART NO	REV	SYMBOL	DESCRIPTION	LOCATED	REASON	SIGN	DATE

MODEL	Q270QAE00	NAME	Q270QAE00 Panel
DRN		MATERIAL	
DSN		FINISH	
CKD		SCALE	DIM IN mm
APPD		SHEET	OF CAVITIES

TOLERANCE UNLESS OTHERWISE SPECIFIED (±1)

CLASS	A	B	C	D	E	F	G
< 8mm	0.05	0.1	0.1	0.2	0.2	0.4	0.4
8 ~ 25mm	0.08	0.15	0.15	0.3	0.3	0.6	0.6
25 ~ 80mm	0.12	0.2	0.25	0.4	0.5	0.8	1.0
80 ~ 250mm	0.25	0.3	0.4	0.6	0.8	1.2	1.5
250 ~ 800mm	0.5	0.6	0.8	1.0	1.5	2.0	3.0
> 800mm	1.0	1.0	1.5	1.7	3.0	4.0	6.0
ANGLE	0.5						

58.4

71.3   71.47

135.97   136.14

220.34   220.51

285.01   285.18

2 ≤ Screw Length ≤ 4

BL

S