

SPECIFICATION FOR AMOLED Module

MODULE No:	ID-151WQOEN001-SP001A-HDMI
CUSTOMER:	

I-DISPLAY	INITIAL	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

CUSTOMER	INITIAL	DATE
APPROVED BY		

Revision History

[illegible]

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* **Description**

This is a color active matrix AMOLED module using Low Temperature Poly-silicon Thin Film Transistors as active switching devices, plus an HDMI board. This module has a 15.05 inch diagonally measured active area with 2560 horizontal by 1600vertical pixel arrays. Each pixel is divided into RED and GREEN dots, or BLUE and GREEN dots, and two pixels share RED or BLUE dots which are arranged in vertical stripe and this module can display RGB 8 bit colors.

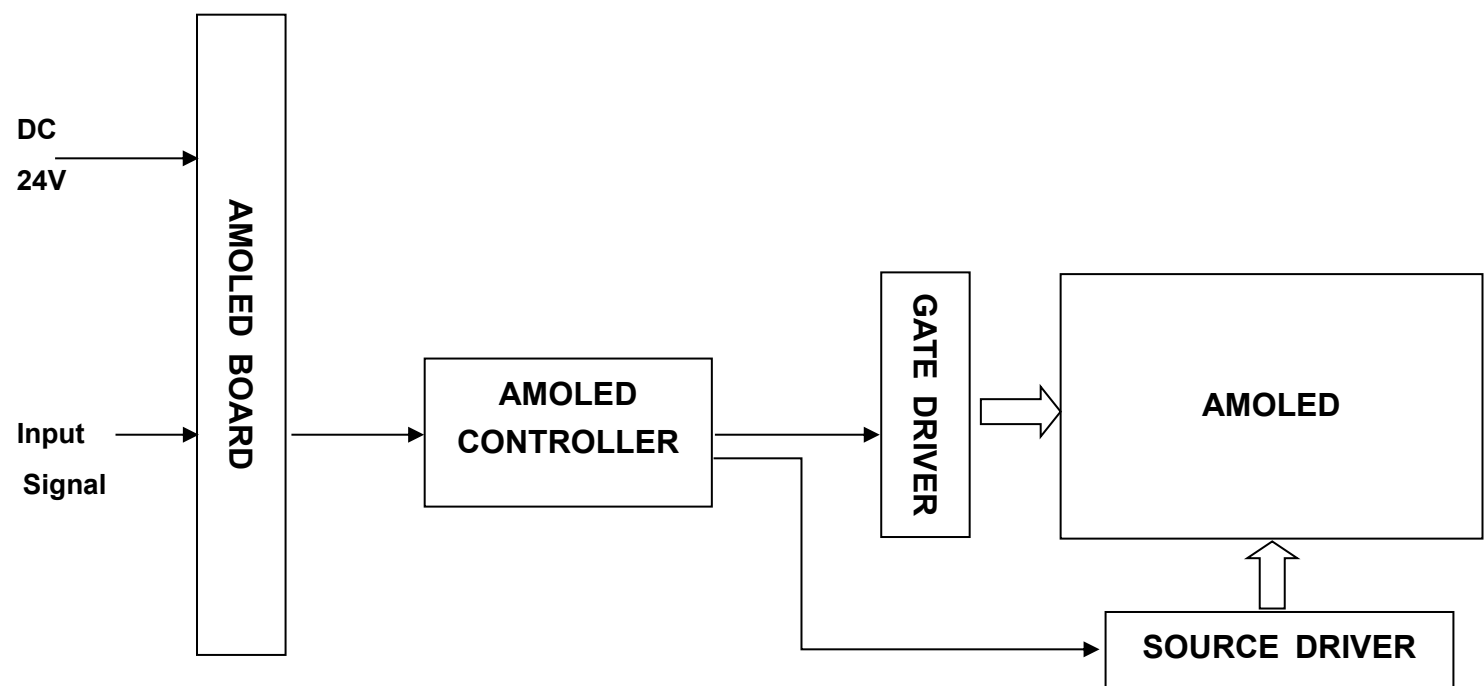
* **Features**

General Information Items	Specification	Unit	Note
	Main Panel		
Display area(AA)	324.096(H)*202.56(V) (15.05 inch)	mm	
Driver element	TFT active matrix	-	
Display colors	RGB 8 bit	colors	
Number of pixels	2560(RGB)*1600	dots	
Pixel arrangement	Real RGB arrangement	-	
Pixel pitch	0.1266	mm	
Viewing angle	ALL	o'clock	
Interface	HDMI(Type A)	-	
Operating temperature	-40~+85	℃	
Storage temperature	-40~+90	℃	

* **Mechanical Information**

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)		328.896		mm	-
	Vertical(V)		210.46		mm	-
	Depth(D)			5.8	mm	PCB
Weight			235		g	-

1. Block Diagram



3. Input terminal Pin Assignment

3.1 Power Input

CON1(DC-044 Socket)

NO.	SYMBOL	DISCRIPTION	I/O
1	DC_IN	Power supply (DC 24V).	P
2	GND	Ground	P
3	GND	Ground	P

3.2 HDMI Input

The type of HDMI connector is a type A.

NO.	SYMBOL	DISCRIPTION	I/O
1	RX_D2+	HDMI Receiver channel 2 positive analog input.	I/O
2	GND	Ground.	P
3	RX_D2-	HDMI Receiver channel 2 negative analog input.	I/O
4	RX_D1+	HDMI Receiver channel 1 positive analog input.	I/O
5	GND	Ground.	P
6	RX_D1-	HDMI Receiver channel 1 negative analog inpsut.	I/O
7	RX_D0+	HDMI Receiver channel 0 positive analog input.	I/O
8	GND	Ground.	P
9	RX_D0-	HDMI Receiver channel 0 negative analog input.	I/O
10	RX_CLK+	HDMI Receiver clock positive analog input.	I
11	GND	Ground.	P
12	RX_CLK-	HDMI Receiver clock negative analog input.	I
13	CEC/DET_HDMI	No connection.	
14	NC	No connection.	
15	HDMI_SCL	HDMI Receiver DDC data channel.	I
16	HDMI_SDA	HDMI Receiver DDC clock channel.	I/O
17	GND	Ground.	P
18	HDMI_5V	HDMI Supply voltage (5.0V).	P
19	HPD	HDMI Receiver hot plug detect output	O

4. AMOLED Optical Characteristics

4.1 Optical specification

Item		Symbol	Conditio	Min.	Typ.	Max.	Unit.	Note	
Contrast Ratio		CR	Θ=0 Normal	5000	--	--		(1)(2)	
Response time			25℃	--	3		msec	(1)(3)	
			-20℃	--	4				
LCM Luminance		LV		450	550		cd/m2		
Color gamut		S(%)		95	100	--	%	(1)	
Color Filter Chromaticity	White	W _x		-0.04	0.323	+0.04		(1)(4)	
		W _y			0.350				
	Red	R _x			0.675				
		R _y			0.324				
	Green	G _x			0.230				
		G _y			0.685				
	Blue	B _x			0.139				
		B _y			0.046				
OLED Life Time			T80@25	20000		30000	--		
			T80@85	1200					
Option View Direction		ALL							(5)

Measuring Condition

Measuring surrounding : dark room

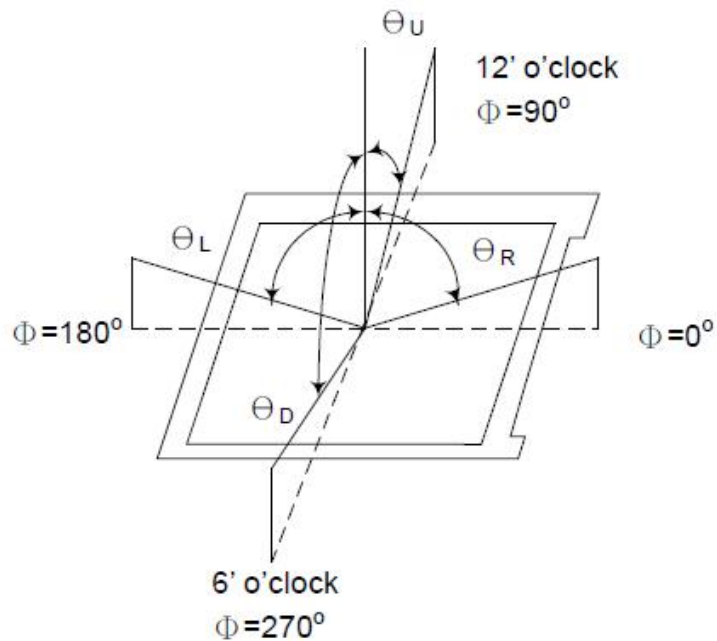
Ambient temperature : 25±2°C

15min. warm-up time.

Measuring Equipment

FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

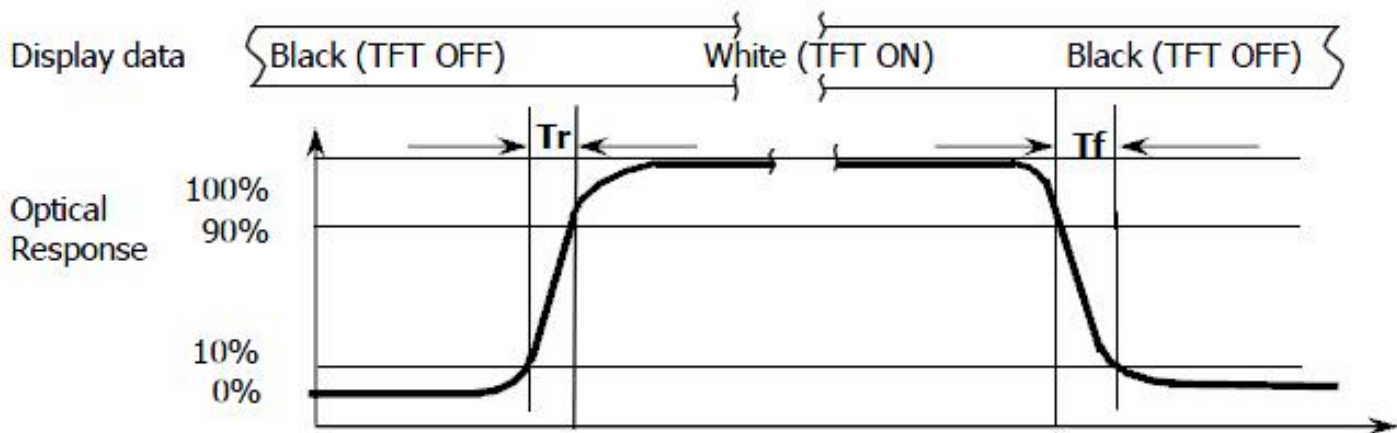
Note (1): Definition of Viewing Angle :



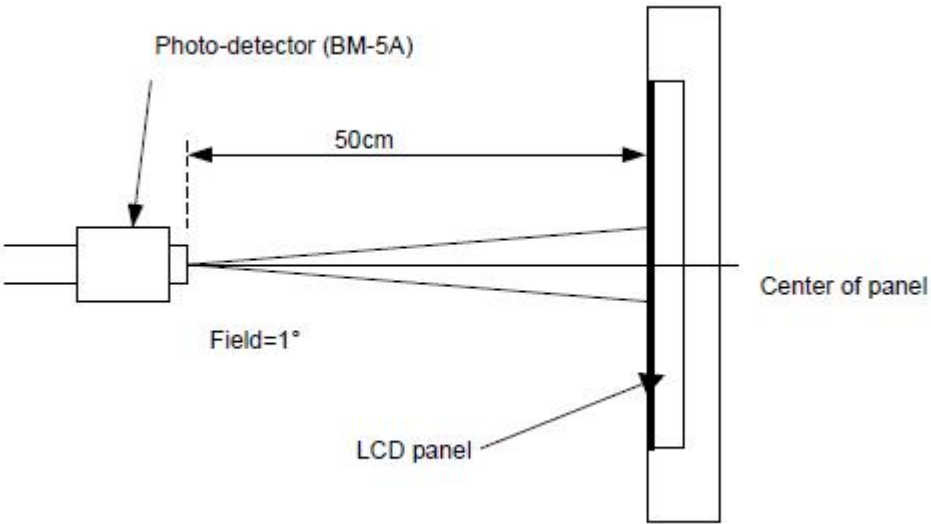
Note (2): Definition of Contrast Ratio(CR) :measured at the center point of panel

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

Note (3): Response Time



Note (4): Definition of optical measurement setup



5. AMOLED Electrical Characteristics

5.1 Absolute Maximum Rating (Ta=25 VSS=0V)

Characteristics	Symbol	Min.	Max.	Unit	Note
Power Supply Voltage	DC_IN	-0.5	24	V	Note1
Operating temperature	T _{OP}	-40	+85	°C	
Storage temperature	T _{ST}	-20	+90	°C	

NOTE: If the absolute maximum rating of even is one of the above parameters is exceeded even momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum ratings.

5.2 DC Electrical Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage	DC_IN	--	--	24	V	
Normal mode Current consumption	I _{DC_IN}	--	180	--	mA	DC_IN=24V

6. Reliability Test Result

Item	Condition	Inspection after test
High Temperature Operating	85°C,96H	
Low Temperature Operating	-40°C, 96HR	
High Temperature Storage	90°C, 96HR	
Low Temperature Storage	-40°C, 96HR	
High Temperature & High Humidity Storage	+60°C, 90% RH ,96 hours.	
Thermal Shock (Non-operation)	-40°C,30 min ↔ 85°C,30 min, Change time:5min 20CYC.	
ESD test	C=150pF, R=330,5points/panel Air:±10KV, 5times; Contact:±6KV, 5 times; (Environment: 15°C~35°C, 30%~60%).	
Vibration (Non-operation)	5Hz to 200Hz logarithm sweep for 20 min/cycle 5Hz to 12.2Hz:The amplitude is 10mmp-p 12.2Hz to 100Hz : The acceleration is 3.0G 0-pk 101Hz to 200Hz : The acceleration is1.5G 0-pk 3 axis,18 sweeps per axis	
Box Drop Test	1 Corner 3 Edges 6 faces,80cm(MEDIUM BOX)	

- Remark:
- 1.The test samples should be applied to only one test item.
 - 2.Sample size for each test item is 5~10pcs.
 - 3.For Damp Proof Test, Pure water(Resistance > 10MΩ) should be used.
 - 4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
 - 5.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.
 - 6. The color fading mura of polarizing filter should not care.

7. Cautions and Handling Precautions

7.1 Handling and Operating the Module

- (1) When cleaning ITO pad, avoid using hard and abrasive material or corrosive solution.
- (2) Keep module away from direct sunlight or fluorescent light, and keep it at room temperature and humidity.
- (3) Strong impact & pressure on module and packing is prohibited.
- (4) Following normal power on/off sequence is necessary for preventing abnormal display or permanent damage to display.
- (5) Optimal contrast ratio under ideal voltage is AMOLED module's characteristic, hence it is recommended a voltage control function available.
- (6) Image sticking may occur if an image displays for an extended period of time.
- (7) When interfered by system's overall mechanical design, an abnormal display may occur.
- (8) After considering emitting energy, you should plan your design to satisfy EMI standards.
- (9) Host side should place a surge-prevent circuit at power trace (ie: VCI, Vddi) to protect AMOLED module.

7. Packing

----TBD-----