Product Specification Short Form for TFT Module

Model Name	XF3661920290A-ILHL
Customer	
Note	

■Preliminary Specification

☐Final Specification

☐CUSTOMER'S APPROVAL
BY: **DATE:**

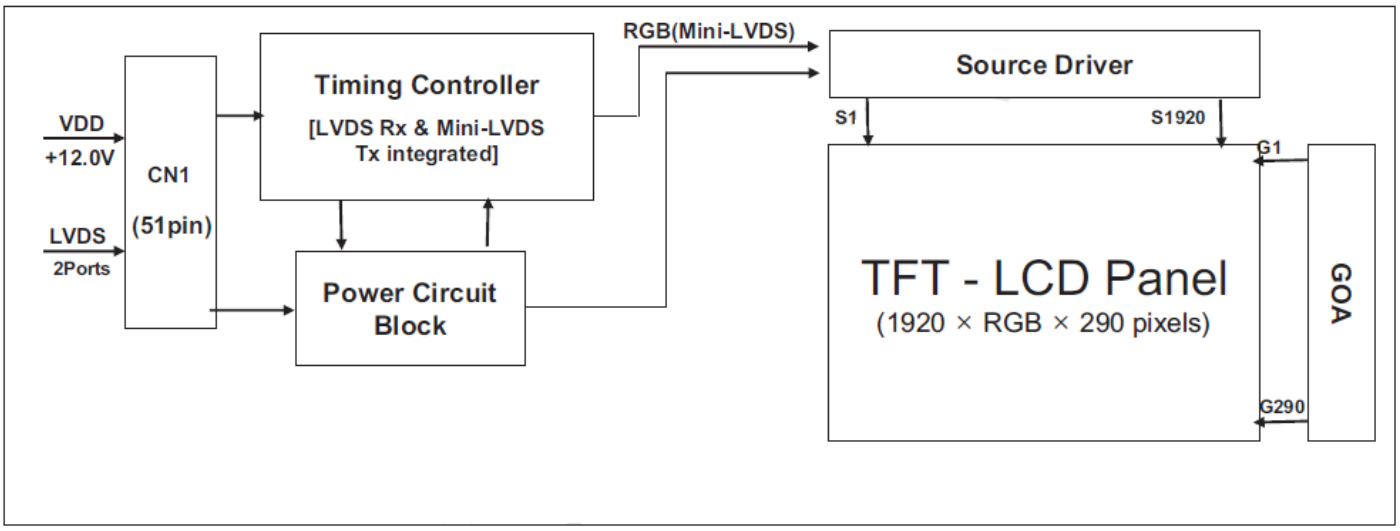
Comment

PRESENTED BY

Contents

1. General Description

XF3661920290A-ILHL is a color active matrix TFT LCD MDL using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This MDL has a 36.6 inch diagonally measured active area with FHD resolutions (1920 horizontal by 290 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors. The TFT-LCD MDL panel is adapted for a low reflection and higher color type.



1.1 Features

- LVDS interface with 2 pixel / clock
- High-speed response
- Low color shift image quality
- 8-bit color depth, display 16.7M colors
- Wide viewing angle
- DE (Data Enable) only mode
- ADS technology is applied for high display quality
- RoHS compliant

1.2 Application

- Commercial Digital Display
- Display Terminals for Control System
- Landscape and Portrait Display

1.3 General Specification

< Table 1. General Specifications >

Items	Specification	Unit	Note
Active area	919.3(H) x 138.85 (V)	mm	
Number of pixels	1920(H) x 290(V)	pixels	
Pixel pitch	159.6(H) x 478.8(V)	um	
Pixel arrangement	Pixels RGB Vertical stripe		
Display colors	16.7M	colors	8bits True
Display mode	Normally Black		
Dimensional outline	960(H)*174.35(V)*16.9(B)	mm	Detail refer to drawing
Weight	3260	g	
Power Consumption	5.4	Watt	Typ.
Bezel width (L/R/U/D)	17.85/17.85/15.25/15.25	mm	
Surface Treatment	Haze 1%		
Back-light	Down edge side, 2- LED Light bar		
Possible display type	Landscape and Portrait Enabled		

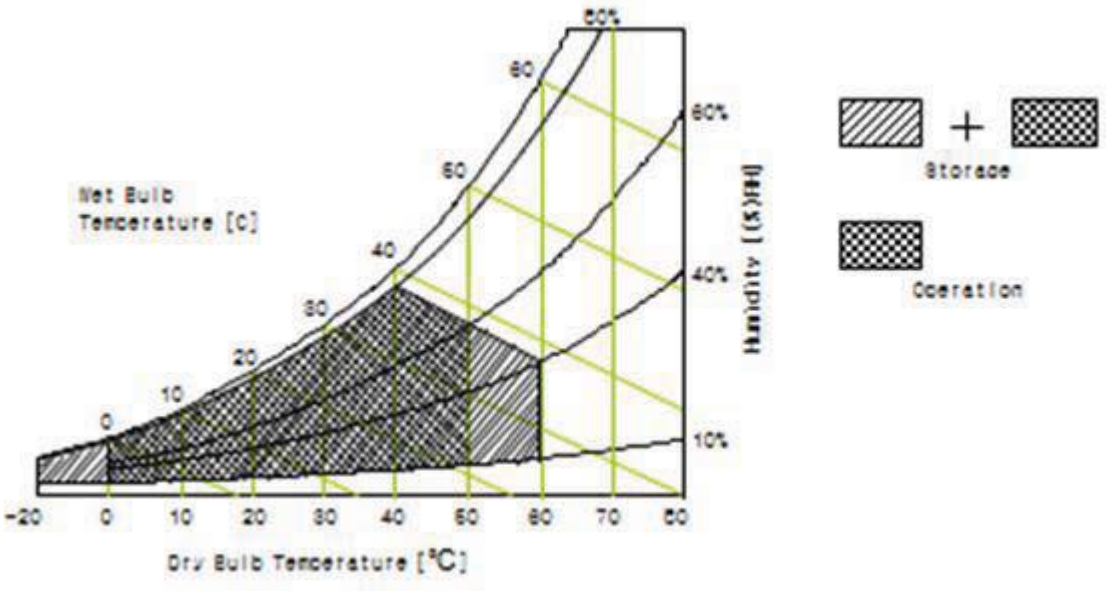
2. Absolute Maximum Ratings

The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2.

< Table 2. Open Cell Electrical Specifications > [VSS=GND=0V]

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	VDD	VSS-0.3	13.5	V	Ta = 25 ℃
Operating Temperature	TOP	0	+50	℃	Note 1
Storage Temperature	T_{SUR}	-20	+70	℃	
	T_{ST}	-20	+70	℃	
Operating Ambient Humidity	Hop	10	80	%RH	
Storage Humidity	Hst	10	80	%RH	

Note 1: Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39 ℃ max. and no condensation of water.



3. Electrical specifications

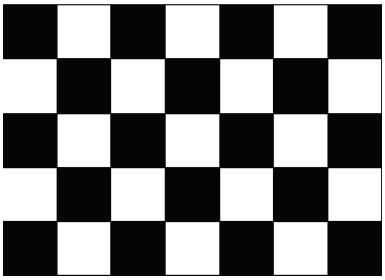
3.1 TFT LCD Open Cell

< Table 3. Open Cell Electrical Specifications > [Ta =25±2 ℃]

Parameter		Symbol	Values			Unit	Remark
			Min.	Typ.	Max.		
Power Supply Input Voltage		VDD	10.8	12	13.2	Vdc	
Power Supply Ripple Voltage		VRP	-	-	300	mV	
Power Supply Current		IDD	-	450	600	mA	Note 1
Power Consumption		PDD	-	5.4	8	Watt	
Rush current		IRUSH	-		3.0	A	Note 2
LVDS Interface	Differential Input High Threshold Voltage	VLVTH	+100	-	+300	mV	
	Differential Input Low Threshold Voltage	VLVTL	-300	-	-100	mV	
	Input Differential Voltage	| VID |	200	-	600	mV	
	Common Input Voltage	VLVC	0.6	1.2	2.4-| VID | /2	V	
CMOS Interface	Input High Threshold Voltage	VIH	2.7	-	3.3		
	Input Low Threshold Voltage	VIL	0	-	0.6	V	

Note 1 : The supply voltage is measured and specified at the interface connector of LCM. The current draw and power consumption specified is for VDD=12.0V,
Frame rate fV=60Hz and Clock frequency = 74.25MHz.
Test Pattern of power supply current

a) Typ : Mosaic 7X5 (L0/L255) b) Max : Vline Subline (L255)) c) Flicker Pattern



3.2 Backlight Unit

< Table 4. Backlight Unit Electrical Specifications >

Parameter			Min.	Typ.	Max.	Unit	Remarks
LED Forward Voltage		V_F	-	3.1	3.2	V	-
LED Forward Current		I_F	-	100	-	mA	-
LED Power Consumption		P_{LED}		34.2	-	W	Note 1
LED Life-Time		N/A	50000	-	-	Hour	IF = 100mA
PWM Control Level	PWM High Level		-	-	-	V	
	PWM Low Level		-	-	-	V	
PWM Control Frequency		F_{PWM}	-	-	-	Hz	
Duty Ratio		-	-	-	-	%	

Notes :

1. Power supply voltage12V for LED Driver, Driver efficiency 87%, Calculator Value for reference IF □

VF □96/ 0.87 = PLED

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

3.3 Backlight Input Pin Assignments

Connector type : CI0106S0000-6pin or equivalent

Pin No.	Symbol	Feature
1	CH1+	VLED OUT CH1,Blue
2	CH1-	I Return CH1,White
3	NC	NC
4	NC	NC
5	CH1+	VLED OUT CH1,Blue
6	CH1-	I Return CH1,White

DC Input specification

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
LED forward voltage per channel	VLED	-	37.2	38.4	V
LED forward current per channel	ILED	-	400	-	mA

4. Interface Pin Connection

4.1 Open Cell Input Signal & Power

- LVDS Connector : IS050-C51B-C39-S(UJU).

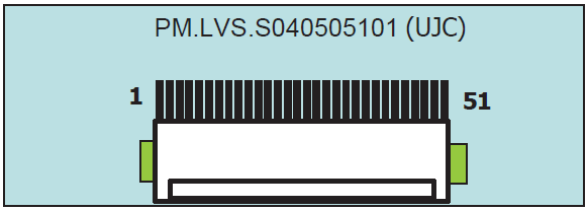
< Table 5. Open Cell Input Connector Pin Configuration >

Pin No	Symbol	Description	Pin No	Symbol	Description
1	GND	Ground	**16**	ERX2-	Even pixel Negative LVDS differential data input.
2	SCL	I2C Clock	**17**	ERX2+	Even pixel Negative LVDS differential data input.
3	SDA	I2C Data	**18**	GND	Ground
4	NC	No Connection	**19**	ECLK-	Even pixel Negative LVDS differential clock input.
5	NC	No Connection	**20**	ECLK+	Even pixel Negative LVDS differential clock input.
6	NC	No Connection	**21**	GND	Ground
7	SELLVDS	LVDS data format selection	**22**	ERX3-	Even pixel Negative LVDS differential data input.
8	NC	No Connection	**23**	ERX3+	Even pixel Negative LVDS differential data input.
9	NC	No Connection	**24**	NC	No Connection
10	NC	No Connection	**25**	NC	No Connection
11	GND	Ground	**26**	GND	Ground
12	ERXO-	Even pixel Negative LVDS differential data input.	**27**	GND	Ground
13	ERXO+	Even pixel Negative LVDS differential data input.	**28**	ORXO-	Odd pixel Negative LVDS differential data input.
14	ERX1-	Even pixel Negative LVDS differential data input.	**29**	ORXO+	Odd pixel Negative LVDS differential data input.
15	ERX1+	Even pixel Negative LVDS differential data input.	**30**	ORX1-	Odd pixel Negative LVDS differential data input.

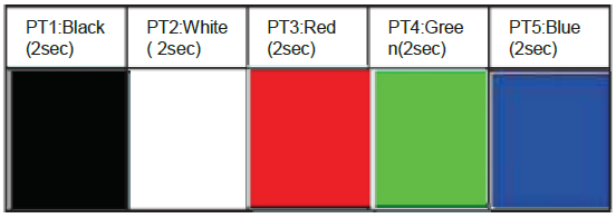
31	ORX1+	Odd pixel Negative LVDS differential data input.	**42**	GND	Ground
32	ORX2-	Odd pixel Negative LVDS differential data input.	**43**	GND	Ground
33	ORX2+	Odd pixel Negative LVDS differential data input.	**44**	GND	Ground
34	GND	Ground	**45**	GND	Ground
35	OCLK-	Odd pixel Negative LVDS differential clock input.	**46**	GND	Ground
36	OCLK+	Odd pixel Negative LVDS differential clock input.	**47**	NC	No Connection
37	GND	Ground	**48**	VCC	+12V
38	ORX3-	Odd pixel Negative LVDS differential data input.	**49**	VCC	+12V
39	ORX3+	Odd pixel Negative LVDS differential data input.	**50**	VCC	+12V
40	NC	No Connection	**51**	VCC	+12V
41	NC	No Connection			

Notes : 1. NC(Not Connected) : This pins are only used for XINSUN internal operations.
2. Input Level of LVDS signal is based on the EIA-644 Standard.

Rear view of LCM



BIST Pattern



5. Optical Specifications

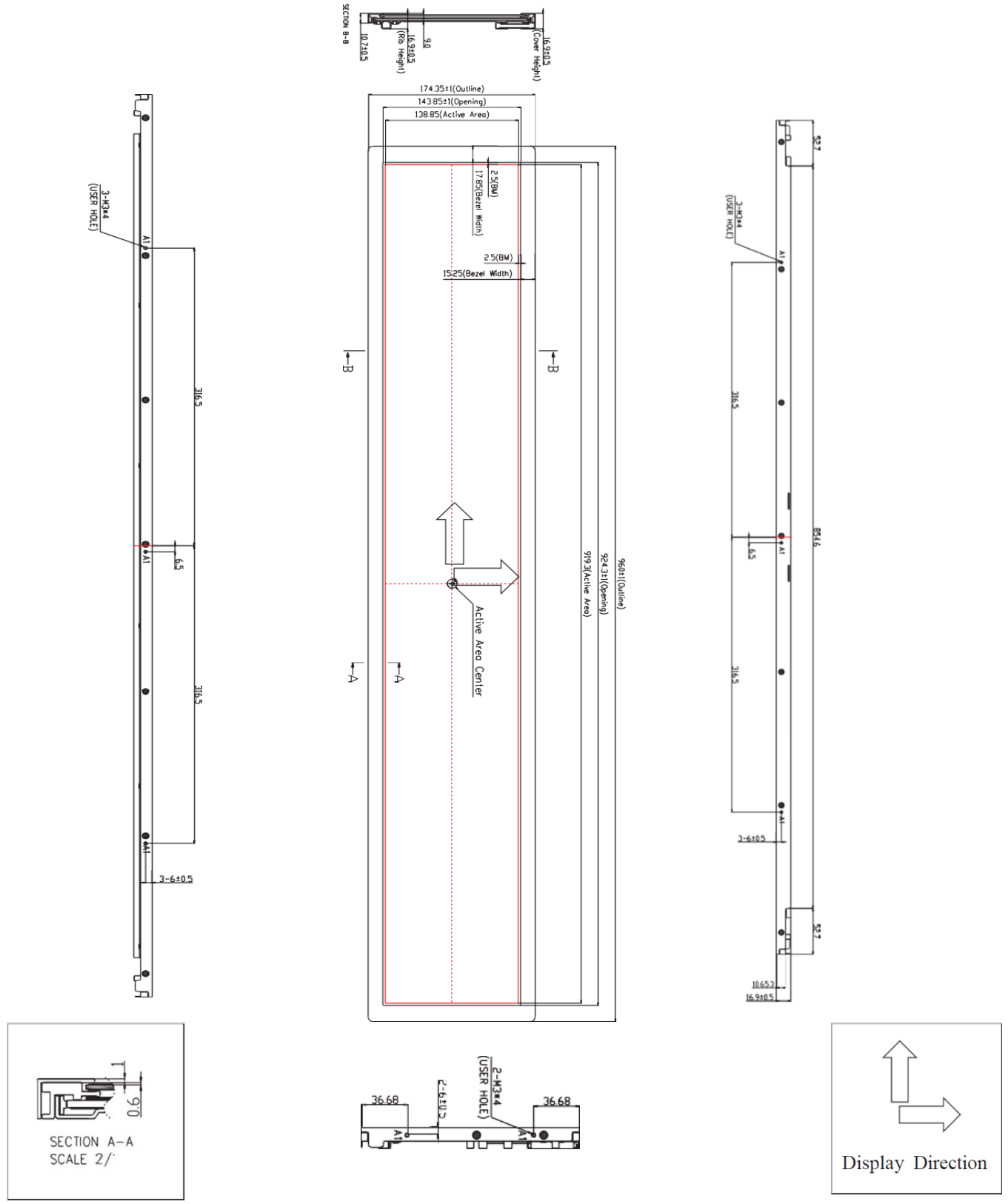
The test of optical specifications shall be measured in a dark room (ambient luminance≤1 lux and temperature=25±2°C) with the equipment of Luminance meter system (Goniometer system and PR730) and test unit shall be located at an approximate distance 180cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to $\theta_{Ø=0}$ (=θ_3) as the 3 o'clock direction (the "right"), $\theta_{Ø=90}$ (= θ_{12}) as the 12 o'clock direction ("upward"), $\theta_{Ø=180}$ (= θ_9) as the 9 o'clock direction ("left") and $\theta_{Ø=270}$(= θ_6) as the 6 o'clock direction ("bottom"). While scanning θ and/or Ø, the center of the measuring spot on the Display surface shall stay fixed. The measurement shall be executed after 30 minutes warm-up period. VDD shall be 12.0V at 25°C. Optimum viewing angle direction is 6 'clock.

<Table 6. Optical Table > [VDD = 12.0V, Frame rate = 60Hz, Ta =25±2 °C]

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle	Horizontal	Θ_3	CR > 10	80	89	-	Deg.	Note 1
		Θ_9		80	89	-	Deg.	
	Vertical	Θ_{12}		80	89	-	Deg.	
		Θ_6		80	89	-	Deg.	
Brightness		Lv	Θ = 0° (Center) Normal Viewing Angle	560	700	-	nit	
Contrast ratio		CR		800:1	1200:1	-		Note 2
White luminance uniformity		ΔY		75	-	-	%	Note 3
Reproduction of color	White	W_x		TYP. - 0.03	0.289	TYP. + 0.03		Note 4
		W_y			0.332			
	Red	R_x			0.650			
		R_y			0.341			
	Green	G_x			0.304			
		G_y			0.625			
	Blue	B_x			0.148			
		B_y			0.071			
Color Gamut				70	72	-	%	
Response Time	G to G	T_g		-	8	10	ms	Note 5

6. Mechanical Outline Dimension

< Figure 1.TFT-LCD Module Outline Dimensions (Front View) >



< Figure 2.TFT-LCD Module Outline Dimensions (Rear View) >