Product Specification Short Form for TFT Module

Model Name	XF185FHD03A-ILHL
Customer	
Note	

■Preliminary Specification

☐Final Specification

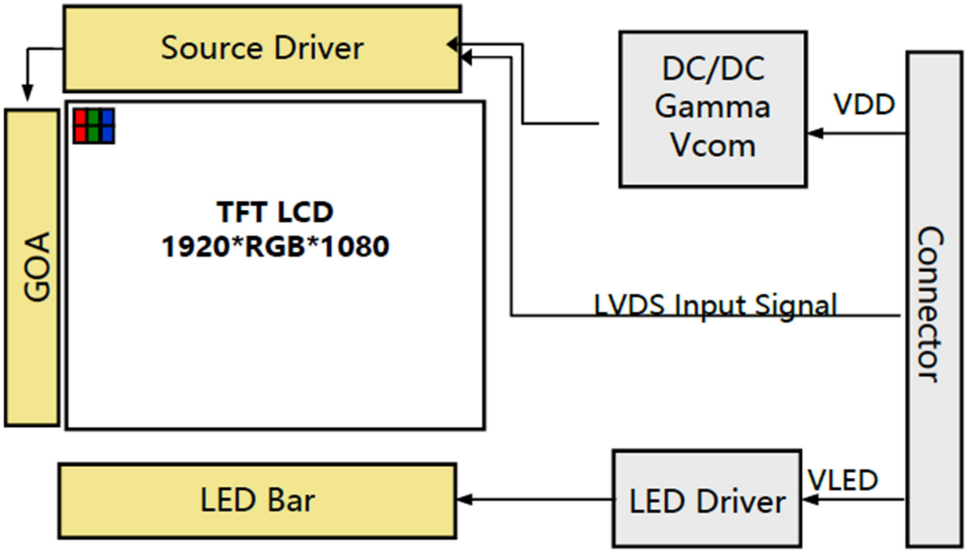
☐CUSTOMER'S APPROVAL
BY: **DATE:**

Comment	PRESENTED BY

Contents

1. General Description

XF185FHD03A-ILHL is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin Film Transistors) as an active switching devices. This module has a 18.5 inch diagonally measured active area with FHD resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED, GREEN, BLUE dots which are arranged in vertical stripe and this module can display 16.7 M colors.



1.1 Features

- LED back-light
- LVDS interface
- RoHS Compliant
- 16.7M color depth

1.2 General Specification

< Table 1. General Specifications >

Items	Specification	Unit	Note
Active Screen Size	18.5	inch	
Number of Pixels	1920 X 1080	Pixel	
Display Area	408.96 (H) x 230.04(V)	mm	
Bezel Opening	410.96(H) x 232.04(V)	mm	
Outline Dimension	430.4(H) x 254.6(V) x 12.0(D)	mm	
Luminance, White	1000 (Center 1 point,Typ.)	cd/m2	
Power Supply Input Voltage	12 (Typ)	V	Backlight
Power Supply Voltage	5.0 (Typ)	V	OC
Power Consumption	Total = 24 (Typ.)	W	
Contrast Ratio	1200:1	--	
Response time	30 (Typ.)(Tr+Td)	ms	
Color temperature	9188	K	
Weight	1.8 (Typ)	Kg	
Operating Temperature	-20 ~ 70	℃	
Storage Temperature	-20~70	℃	

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. Environment Absolute Maximum Ratings> [Ta =25±2 ℃]

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remarks
Power Supply Input Voltage	VCC	3.5	5	5.8	V	Ta = 25 ℃ Note 1&2
Operating Temperature	Top	-20		+70	℃	Note 3,4,5,6
Storage Temperature	TST	-20		+70	℃	

Note:

1. These range above is maximum value not the actual operating temperature . Actual Operating temperature is no more than 40℃ and temperature refers to the LCM surface temperature ;
2. BOE is not responsible for product problems beyond the use conditions.
3. When the ambient temperature is T ℃, the surface temperature of Panel can not exceed (T+15)℃.
4. Temperature and relative humidity range is shown in the figure below.
5. 5.90 %RH Max. (Ta ＜40 ºC).
6. Wet-bulb temperature should be 39 ºC Max. (Ta > 40 ºC).
7. No condensation
8. For Module only

3. Electrical specifications

3.1 TFT LCD Module

< Table 3. LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter	Symbol	Values			Unit	Notes
		Min.	Typ.	Max.		
Power Supply Input Voltage	V_{DD}	4	5	5.8	V	Note 1
Power Supply Current	I_{DD}	-	500	-	mA	
Positive-going Input Threshold Voltage	V_{IT+}	-		+100	mV	Vcom = 1.2Vtyp.
Negative-going Input Threshold Voltage	V_{IT-}	-100		-	mV	
Differential input common mode voltage	V_{com}		1.2		V	V_{IH}=100mV, V_{IL}=-100mV

Notes :

The supply voltage is measured and specified at the interface connector of LCM. The current draw and power consumption specified is for 5V at 25 ℃. Max value at Black Pattern

< Table 4. Electrical specification >

Parameter	Symbol	Values			Unit	Notes
		Min.	Typ.	Max.		
LED Driver :						
Power Supply Input Voltage	VBL	11.5	12.0	12.5	Vdc	1
Power Supply Input Current	IBL	1.65	1.78	1.92	A	1
Power Supply Input Current (In-Rush)	In-rush	-	-	(TBD)	A	VBL = 12.0V ExtVBR-B = 100% 3
Power Consumption	PBL					
LED :	-					
Life Time:						

Notes :

1. Electrical characteristics are determined after the unit has been 'ON' and stable for approximately 60 minutes at 25±2°C. The specified current and power consumption are under the typical supply Input voltage 12Vand VBR (ExtVBR-B : 100%), it is total power consumption.
2. The life time (MTTF) is determined as the time which luminance of the LED is 50% compared to that of initial value at the typical LED current (ExtVBR-B :100%) on condition of continuous operating in LCM state at 25±2°C.
3. The duration of rush current is about 200ms. This duration is applied to LED on time.

3.2 Specification of LED driver Board

(1)Dimension of P.C.B. ：L 95mm、W 42mm、H 10mm Unit : mmTolerance : ±0.5mm

Figure 1-1 PCB Dimension

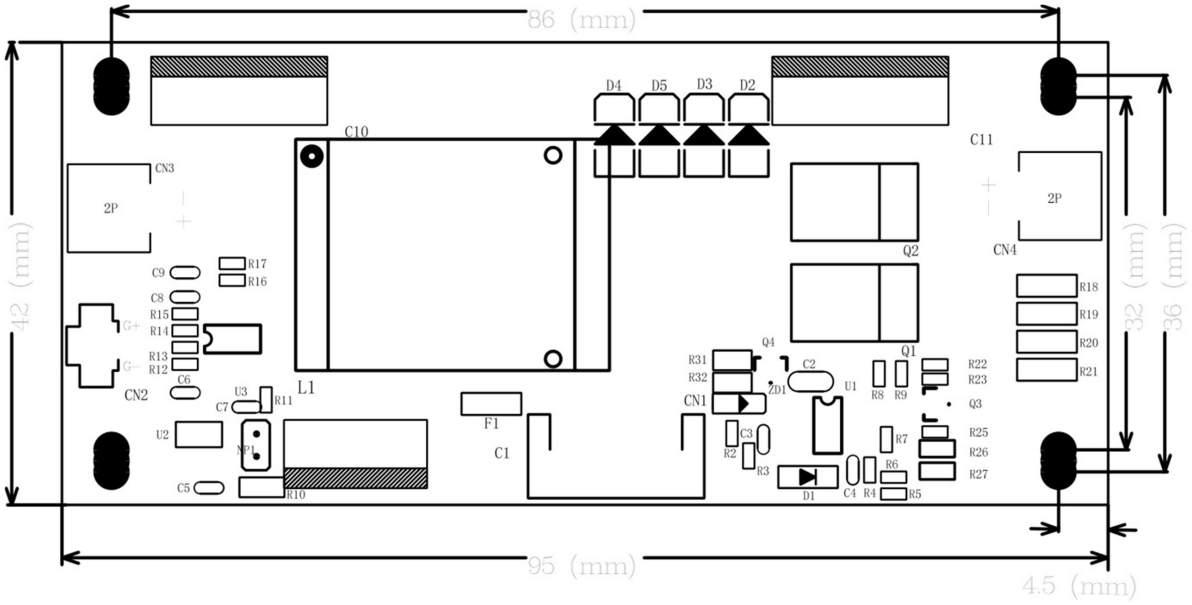
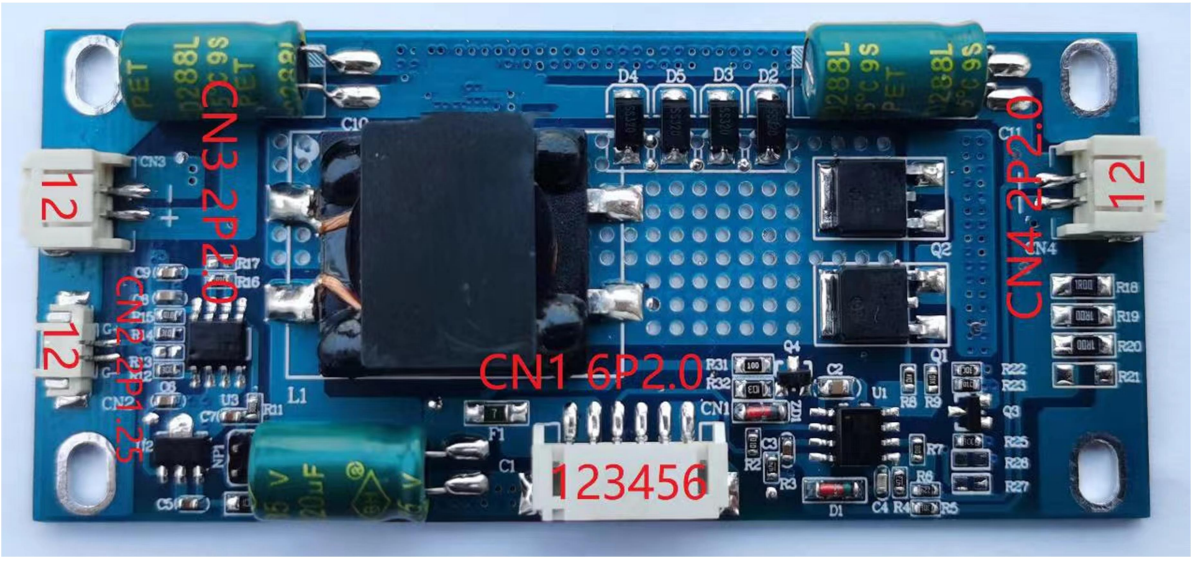


Figure 1-2 General view



CN1(6P2.0:Power input port) Are defined follows:	
1-2	Mains input+12V
5-6	Mains input-12V(GND)
3	ON/OFF on-off control (+3.3V)
4	PWM/DIM brillance control

4. Interface Pin Connection

The electronics interface connector IS100-L30R-C23 (UJU) or equivalent.

The LED connector is CI4205M2HRD-NH or equivalent.

The connector interface pin assignments are listed in Table 5.

<Table 5. Pin Assignments for the Interface Connector>

Pin No.	Symbol	Description	Remark
1	RxOIN0-	LVDS data input	
2	RxOIN0+	LVDS data input	
3	RxOIN1-	LVDS data input	
4	RxOIN1+	LVDS data input	
5	RxOIN2-	LVDS data input	
6	RxOIN2+	LVDS data input	
7	VSS	Ground	
8	RxOCLKIN-	LVDS clock input	
9	RxOCLKIN+	LVDS clock input	
10	RxOIN3-	LVDS data input	
11	RxOIN3+	LVDS data input	
12	RxEIN0-	LVDS data input	
13	RxEIN0+	LVDS data input	
14	VSS	Ground	
15	RxEIN1-	LVDS data input	
16	RxEIN1+	LVDS clock input	
17	VSS	Ground	
18	RxEIN2-	LVDS clock input	
19	RxEIN2+	LVDS clock input	
20	RxECLKIN-	LVDS clock input	
21	RxECLKIN+	LVDS clock input	
22	RxEIN3-	LVDS clock input	
23	RxEIN3+	LVDS clock input	
24	VSS	Ground	
25	SCL	I2C	Only BOE use
26	SDA	I2C	Only BOE use
27	WP	EEPROM write EN	Only BOE use
28	VCC	Power supply(5V)	

29	VCC	Power supply(5V)	
30	VCC	Power supply(5V)	

5. Optical Specification

The test of view angle range shall be measured in a dark room (ambient luminance ≦1lux and temperature = 25±2℃) with the equipment of Luminance meter system (Goniometer system and TOPCON BM-7) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to θ Ø=0 (=θ 3) as the 3 o' clock direction (the "right"), θ Ø=90 (= θ 12) as the 12 o'clock direction ("upward"), θ Ø=180 (= θ 9) as the 9 o'clock direction ("left") and θ Ø=270(= θ6) 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 luminance, color and uniformity (etc.) should be tested by BM-7. The backlight should be operating for 10 minutes prior to measurement. VDD shall be 3.3 ± 0.3V at 25°C. Optimum viewing angle direction is 6 o'clock.

<Table 6. Optical Specifications>

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Anglerange	Horizontal	Θ_3	CR > 10	80	85	-	Deg.	Note 1
		Θ_9		80	85	-	Deg.	
	Vertical	Θ_{12}		80	85	-	Deg.	
		Θ_6		80	85	-	Deg.	
Luminance Contrast ratio		CR	Θ = 0° (Center) Normal Viewing Angle	900	1200			Note 2
Luminance of White		Y_w		900	1000		cd/m²	Note 3
White luminance uniformity		ΔY		-	-		%	Note 4
Reproduction of color	White	W_x		-0.05	0.2784	+0.05	-	Note 5
		W_y			0.3041		-	
	Red	R_x			0.6514		-	
		R_y			0.3253		-	
	Green	G_x			0.2944		-	
		G_y			0.6128		-	
	Blue	B_x			0.1433		-	
		B_y			0.0612		-	
ResponseTime	GTG	T_g			30	35	ms	Note 6
Cross Talk		CT		-	-	-	%	Note 7

Notes : 1. Viewing angle is the angle at which the contrast ratio is greater than 10. The viewing angles are determined for the horizontal or 3, 9 o'clock direction and the vertical or 6, 12 o'clock direction with respect to the optical axis which is normal to the LCD surface (see FIGURE 1).

2. Contrast measurements shall be made at viewing angle of Θ= 0 and at the center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white, then to the dark (black) state . (see FIGURE 1) Luminance Contrast Ratio (CR) is defined mathematically.

$$CR = \frac{\text{Luminance when displaying a white raster}}{\text{Luminance when displaying a black raster}}$$

3. Luminance of white is defined as luminance values of center of the LCD surface. Luminance shall be measured with all pixels in the view field set first to white. This measurement shall be taken at the locations shown in FIGURE 2 for a total of the measurements per display. The luminance is measured by CS2000/CA310 when the LED current is set at 60mA.

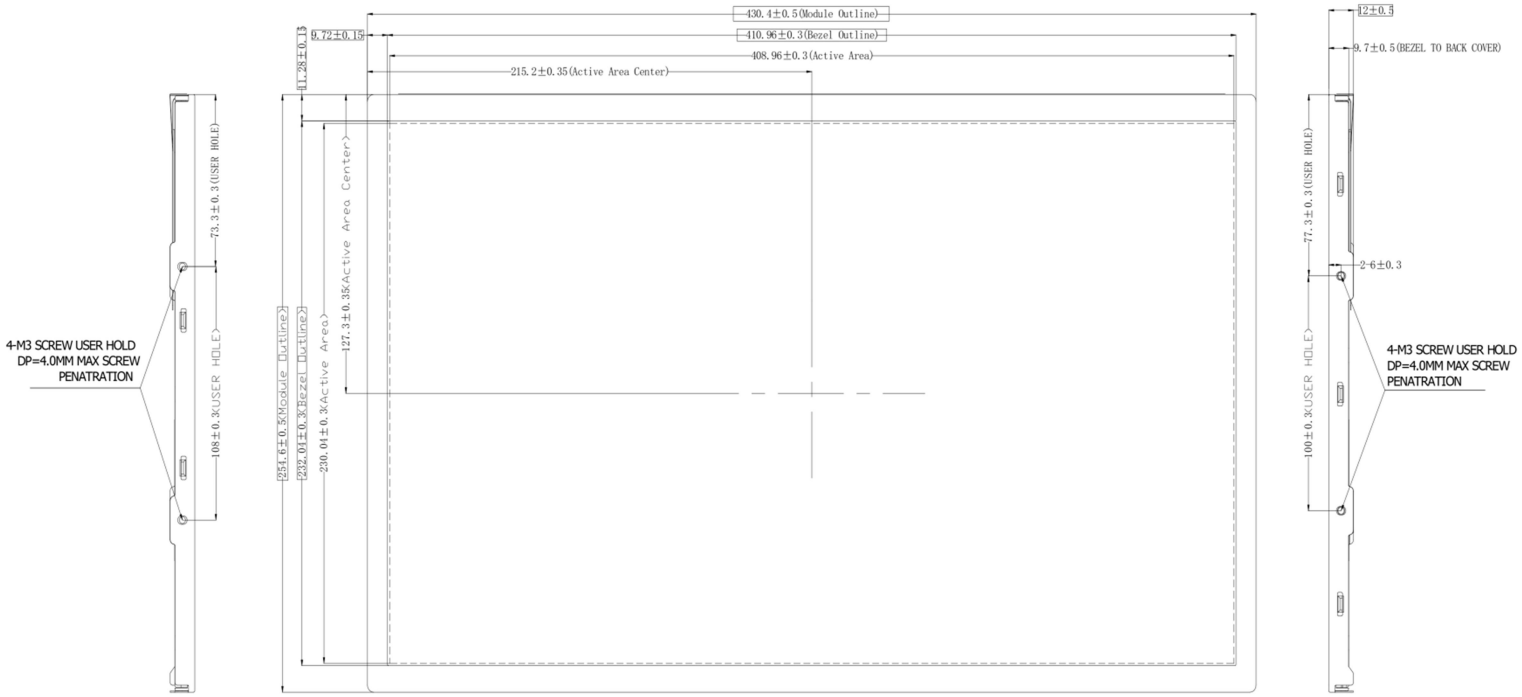
4. The White luminance uniformity on LCD surface is then expressed as : ΔY = Minimum Luminance of 9 Points Maximum Luminance of 9 Points(See FIGU
RE 2).

5. The color chromaticity coordinates specified in Table 5. shall be calculated from the spectral data measured with all pixels first in red, green, blue and white. Measurements shall be made at the center of the panel.

6. The electro-optical response time measurements shall be made as FIGURE 3 by switching the "data" input signal ON and OFF. The times needed for the luminance to change from 10% to 90% is Tr, and 90% to 10% is Td.

6. Mechanical Outline Dimension

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



NOTE:

1. BLACK LIGHT: LED WHITE;
   LCM BRIGHTNESS(CENTER POINT): 280cd/m²(Min),350cd/m²(Typ)
2. GENERAL TOLERANCE: ±0.5mm;
3. CRITICAL CONTRAL POINT [ ],
   REFERENCED DIMENSION ( );
4. CONFORMITY WITH RoHS AND HALOGEN FREE;
5. LCM HOMOCENEITY: 80%(min), 85%(typ),L255@9 Point;
6. CN1: IS100-L300-C23 CN2&CN3: CI4216S;

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