Innolux	PRODUCT GROUP	REV	ISSUE DATE
	Customer SPEC	Rev. P0	May.26,20’

TITLE :M215HJJ-P02
Product Specification
Rev. P0

Customer		Recipient's recognition	
Take charge		Establishment	YiXian He
Audit		Audit	
Approved		Approved	

Contents

REVISION HISTORY

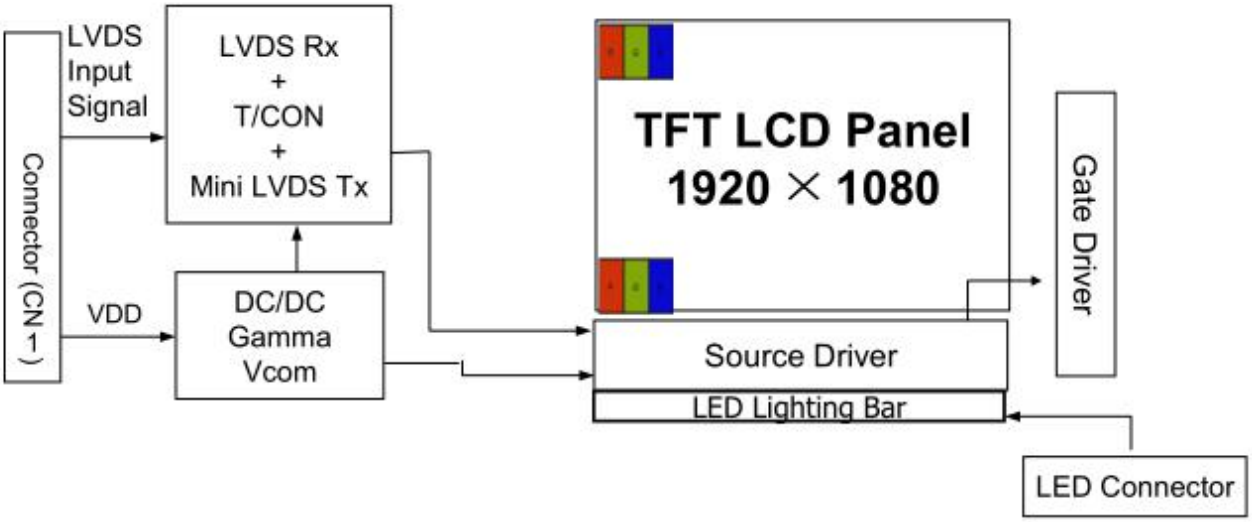
(●)preliminary specification
( )Final specification

Revision No.	Page	Description of changes	Date	Prepared
Rev.0		Initial Release	May.26,20’	YiXian He

1.0 GENERAL DESCRIPTION

1.1 Introduction

M215HJJ-P02 is a diagonal 21.5” color active matrix LCD open cell with 1ch-LVDS interface. This open cell is a transmissive type display operating in the normally black mode. It supports 1920 * 1080 FHD resolution and can display up to
16.7M colors (8bit). Each pixel is divided into Red, Green and Blue sub-pixels which are arranged in vertical stripe. This open cell dedicates for LCD TV & Monitor products and provides excellent performance which includes high brightness, ultra wide viewing angle, high color saturation and high color depth. CSOT open cell comply with RoHS for identification.



2. General Description

2.1 Product Features

- FHD Resolution (1920 * 1080)
- Very High Contrast Ratio: 3000:1
- Fast Response Time
- Ultra Wide Viewing Angle: 178°(H)/178°(V) (CR10)
- DE (Data Enable)Mode
- LVDS (Low Voltage Differential Signaling) Interface

1.3 Application

- Desktop Type of PC & Workstation Use
- Slim-Size Display for Stand-alone Monitor
- Display Terminals for Control System
- Monitors for Process Controlle

1.4 General Information

Parameter	Specification	Unit	Remarks
Active area	476.64 (H) * 268.11 (V)	MM	
Number of pixels	1920(H) ×1080(V)	pixels	
Pixel pitch	0.08275*0.24825	MM	
Pixel arrangement	RGB Vertical stripe		
BLU Brightncs	1000	Cd/㎡	
Display colors	16.7M	colors	
Display mode	Transmissive Mode, Normally Black		
Dimensional outline	495.6(H) × 292.4(V) × 10.5(D) typ.		
Weight			
Surface Treatment	Anti-glare, Haze 2%, Hard Coating (3H)		
Back-light	2-LED Lighting Bar type		

2.0 ABSOLUTE MAXIMUM RATINGS

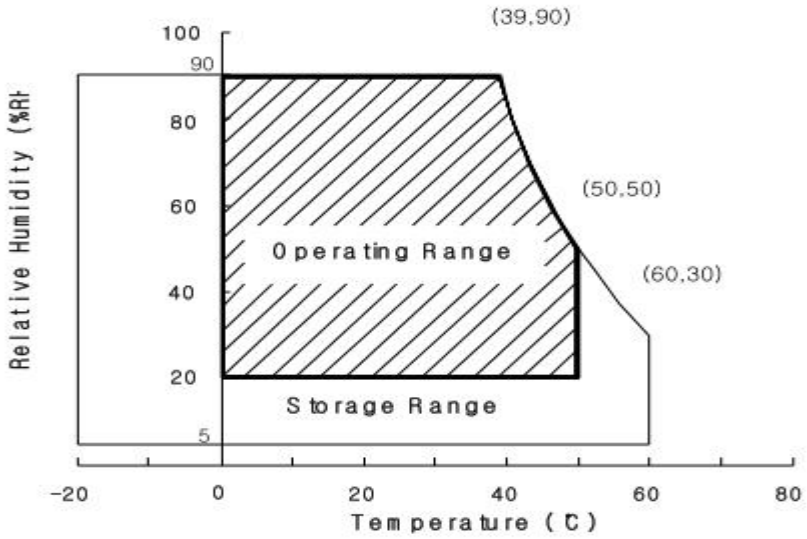
The followings are maximum values which, if exceed, may cause faulty operation or damage to the unit. The operational and non-operational maximum voltage and current values are listed in Table 2

< Table 2. Absolute Maximum Ratings>

Parameter	Symbol	Min.	Max.	Unit	Remarks
Power Supply Voltage	V DD	-0.3	5.5	V	Ta = 25 ℃
Logic Supply Voltage	V IN	VSS-0.3	V DD +0.3	V	
Operating Temperature	T OP	0	50	℃	1)
Storage Temperature	T ST	-20	60	℃	1)

Note : 1) Temperature and relative humidity range are shown in the figure below.

Wet bulb temperature should be 39 O C max. and no condensation of water.



3. Electrical Specifications

3.1 Open Cell Power Consumption (TA = 25 ± 2 °C)

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Power Supply Voltage		V CC	4.5	5.0	5.5	V	(1)
Rush Current		I RUSH	-	-	1.91	A	(2)
Power Supply Current	White Pattern	I cc	-	0.96	1.25	A	(3)
	Horizontal Stripe	I cc	-	1.27	1.66	A	
	Black Pattern	I cc	-	0.75	0.98	A	

Note:

(1) The ripple voltage should be controlled less than 10% of V CC .

(2) Measurement condition: V CC =5V, Rising time = 470μs.

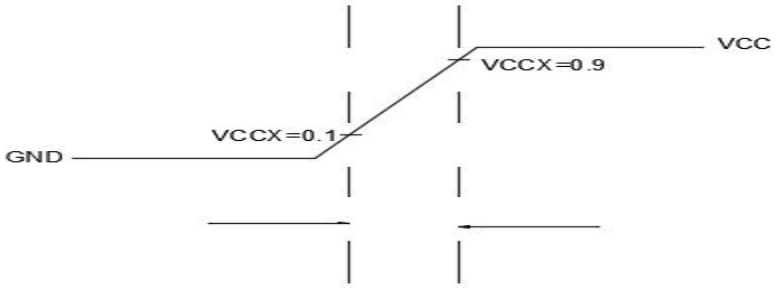
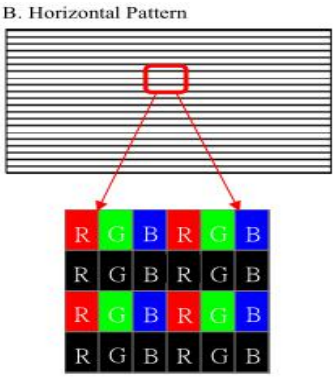


Fig. 3.1 V CC rising time condition

(3) Measurement condition: V CC = 5V, Ta = 25 ± 2ºC, F = 75 Hz. The test patterns are shown as below.

A. White Pattern

B. Horizontal Pattern



C. Black Pattern

Fig. 3.2 Test patterns

3.2 LVDS Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
LVDS Interface	Differential Input High Threshold Voltage	V TH	+100	-	-	MV	
	Differential Input Low Threshold Voltage	V TL	-	-	-100	MV	
	Common Input Voltage	V CM	1.0	1.2	1.4	V	
	Differential Input Voltage	|V ID |	100	-	600	MV	
	Terminating Resistor	R T	87.5	100	112.5	ohm	
CMOS Interface	Input High Threshold Voltage	VIH	2.7	-	3.3	V	
	Input Low Threshold Voltage	VIL	0	-	0.7	V	

4. Input Terminal Pin Assignment

4.1 Interface Pin Assignment

CN1: 300B30-0000RA-M4 (Starconn) or equivalent (see Note (1))

PIN NO	Symbol	Description	Note
1	RO(0)N	Odd LVDS Signal-	
2	RO(0)P	Odd LVDS Signal+	
3	RO(1)N	Odd LVDS Signal-	
4	RO(1)P	Odd LVDS Signal+	
5	RO(2)N	Odd LVDS Signal-	

6	RO(2)P	Odd LVDS Signal+	
7	GND	Ground	
8	ROCLK-	Odd LVDS Clock-	
9	ROCLK+	Odd LVDS Clock +	
10	RO(3)N	Odd LVDS Signal-	
11	RO(3)P	Odd LVDS Signal+	
12	RE(0)N	Even LVDS Signal-	
13	RE(0)P	Even LVDS Signal+	
14	GND	Ground	
15	RE(1)N	Even LVDS Signal-	
16	RE(1)P	Even LVDS Signal+	
17	GND	Ground	
18	RE(2)N	Even LVDS Signal-	
19	RE(2)P	Even LVDS Signal+	
20	RECLK-	Even LVDS Clock-	
21	RECLK+	Even LVDS Clock +	
22	RE(3)N	Even LVDS Clock-	
23	RE(3)P	Even LVDS Clock +	

24	GND	Ground	
25	WP	Write Protect (High: Write Enable, Low or Open: Write Disable)	
26	SCL	I2C Serial Clock (for adjust VCOM)	
27	SDA	I2C Serial Clock (for adjust VCOM)	
28	5V	DC power supply	
29	5V	DC power supply	
30	5V	DC power supply	

Note:

(1) The direction of pin assignment is shown as below:

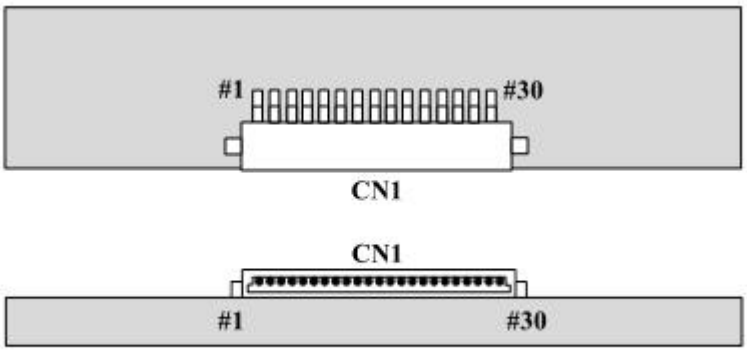


Fig. 4.1 LVDS connector direction sketch map

(2) a. Please let it open (Do not line out from PCBA connector) if it do not used.(for example：TV set)

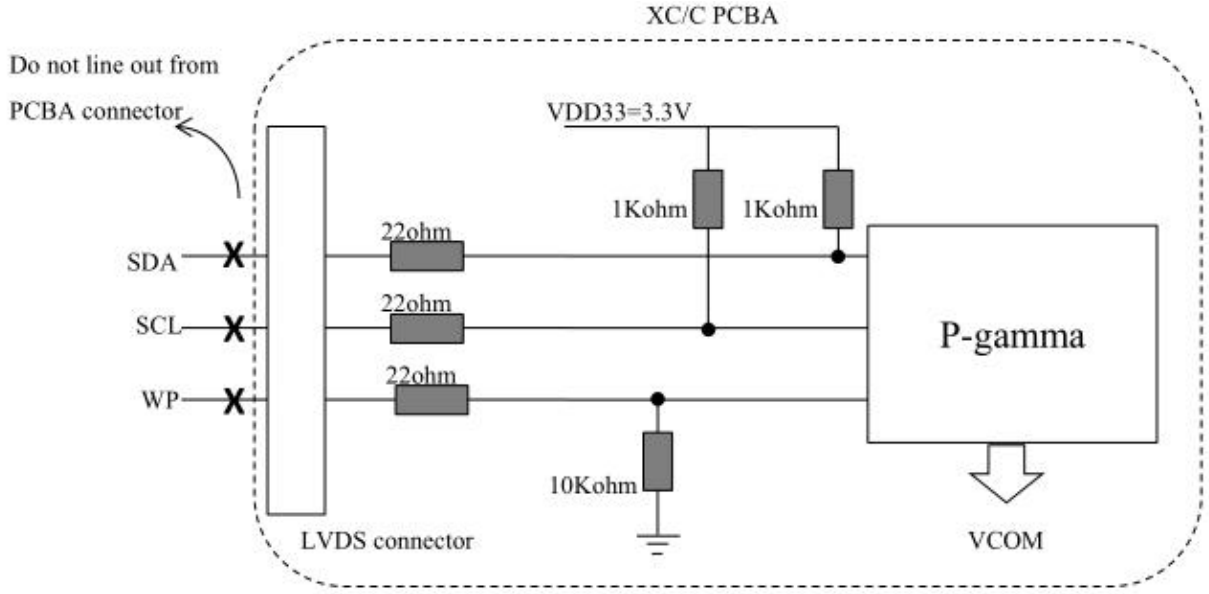


Fig. 4.2 WP/SDA/SCL PCBA set

b. For the VCOM (Flicker) regulation and control, SDA and SCL must pull high in the flicker set, and the flicker

set’s VDD must ready before the input power (VCC5V)

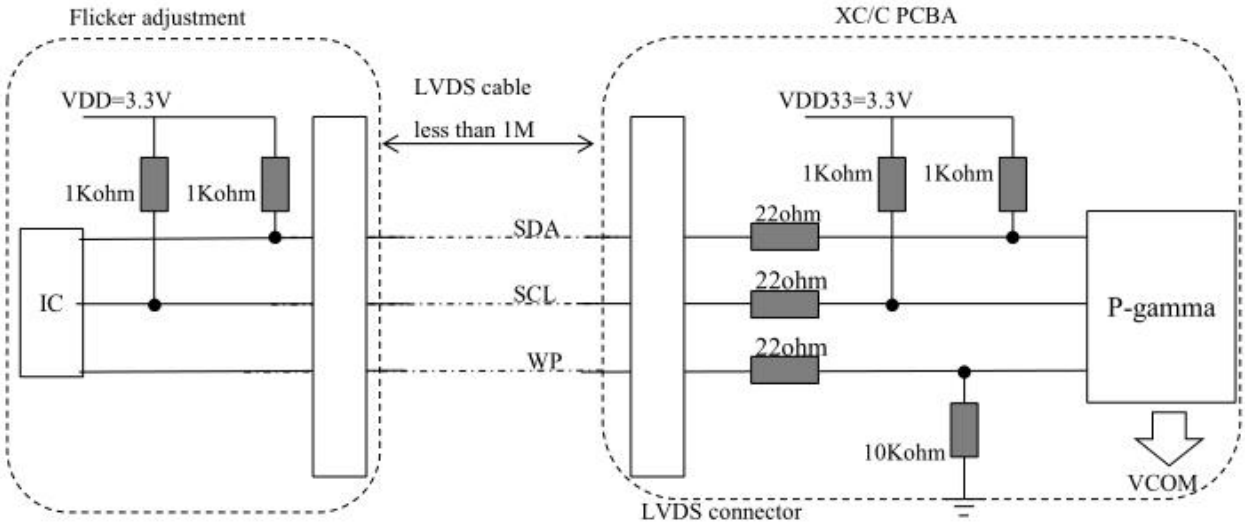


Fig. 4.3 WP/SDA/SCL flicker set

4.2Block Diagram of Interface

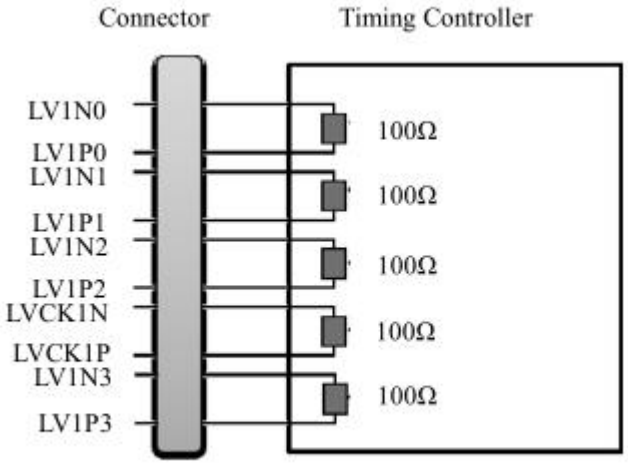


Fig. 4.4 Block diagram of interface

5.1 Backlight Unit

Parameter		Min.	Typ.	Max.	Unit	Remarks
LED Light Bar Input Voltage Per Input Pin	VPIN	-	52.8	58	V	Duty 100%
LED Light Bar Input Current Per Input Pin	IPIN	75	80	85	MA	Note1,2,
LED Power Consumption	P BL	-	33.79	39.44	W	Note 3
LED Life-Time	-	30000			Hrs	Note 4

LED bar consists of 72LED packages,4 strings(parallel)*18packages(serial)

Note1: There are two light bar ,and the specified current is input LED chip 100% duty current

Note2: The sense current of each input pin is 80mA

Note3: P BL =4 Input pins*VPIN ×IPIN

Note4: The lifetime is determined as the time at which luminance of LED become 50% of the initial brightness or not normal lighting at IPIN=80mA on condition of continuous operating at 25 ±2 ℃

6.0 APPENDIX

Figure 1. Measurement Set Up

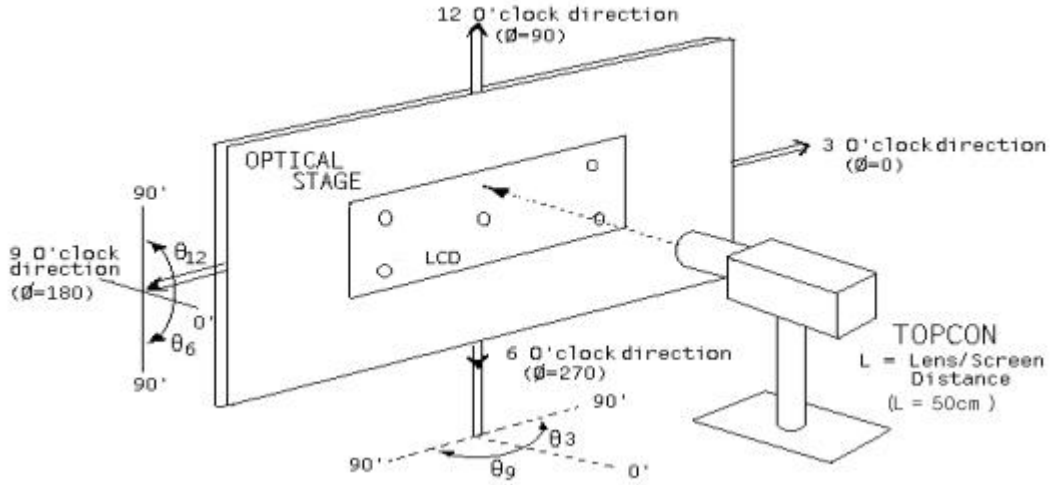


Figure 2. White Luminance and Uniformity Measurement Locations (9 points)

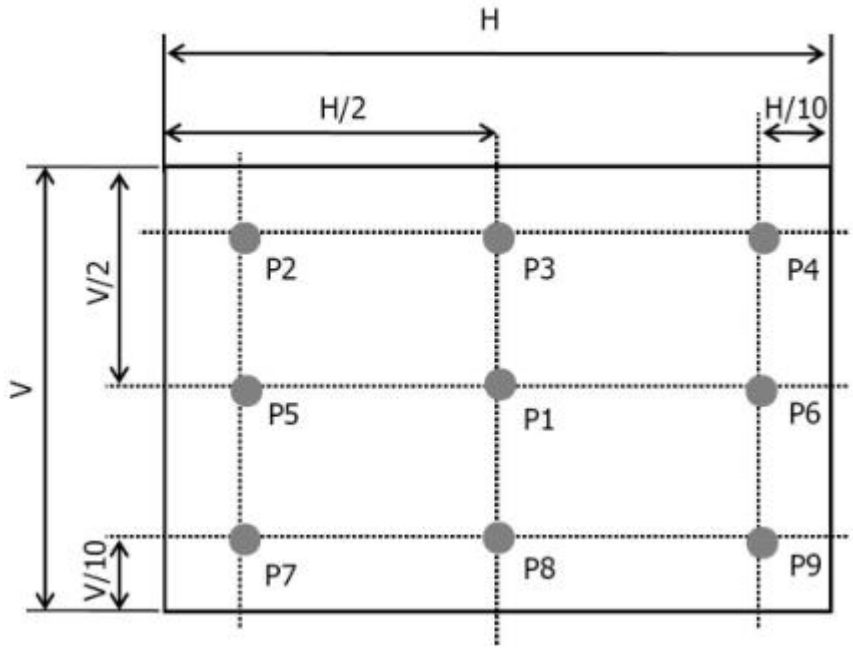


Figure 3. Response Time Testing

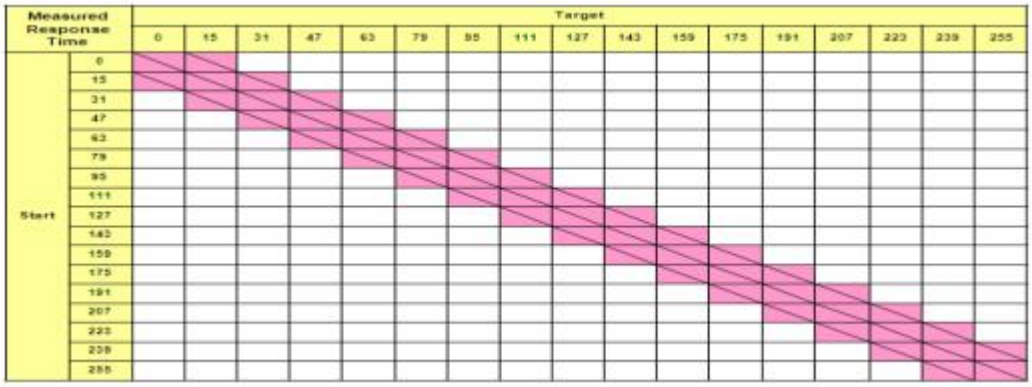
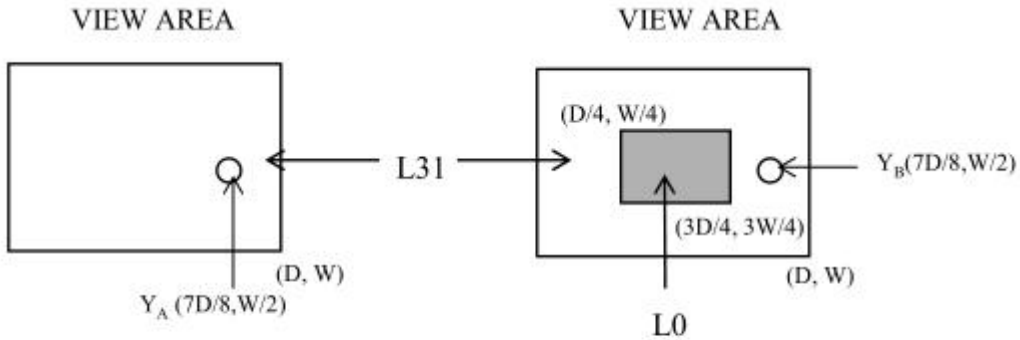


Figure 4. Cross Modulation Test Description



$$\text{Cross-Talk (\%)} = \left| \frac{Y_B - Y_A}{Y_A} \right| \times 100$$

Where: Y A = Initial luminance of measured area (cd/m 2)

Y B = Subsequent luminance of measured area (cd/m 2)

The location measured will be exactly the same in both patterns

Figure 5. TFT-LCD Module Outline Dimensions (Front view)

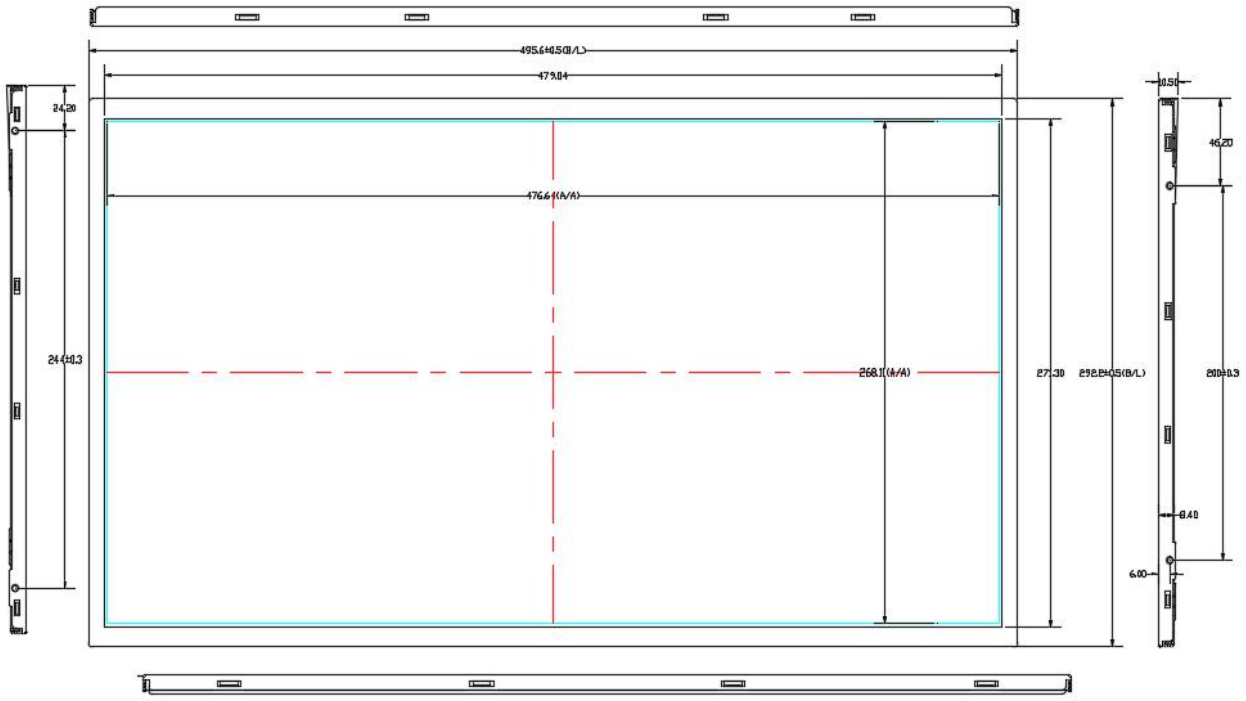
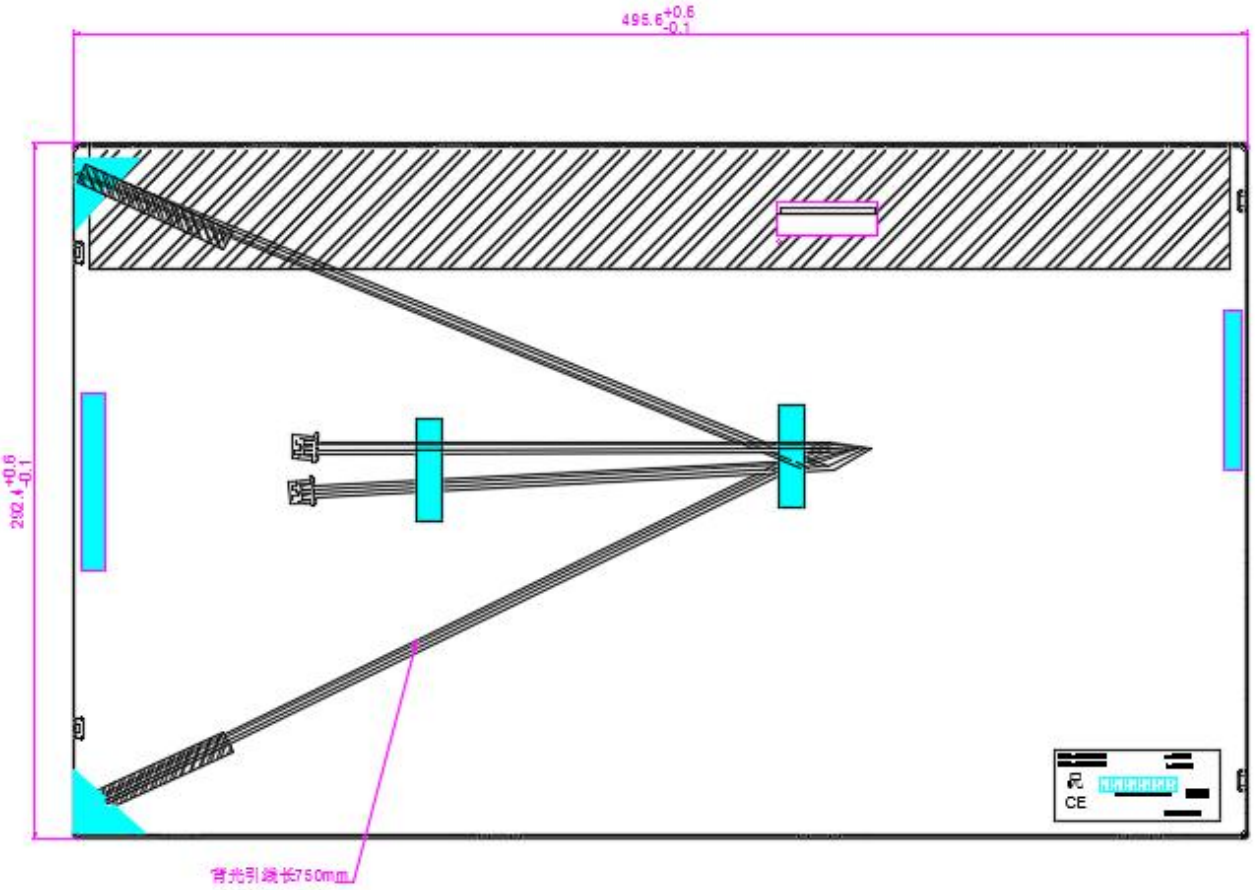
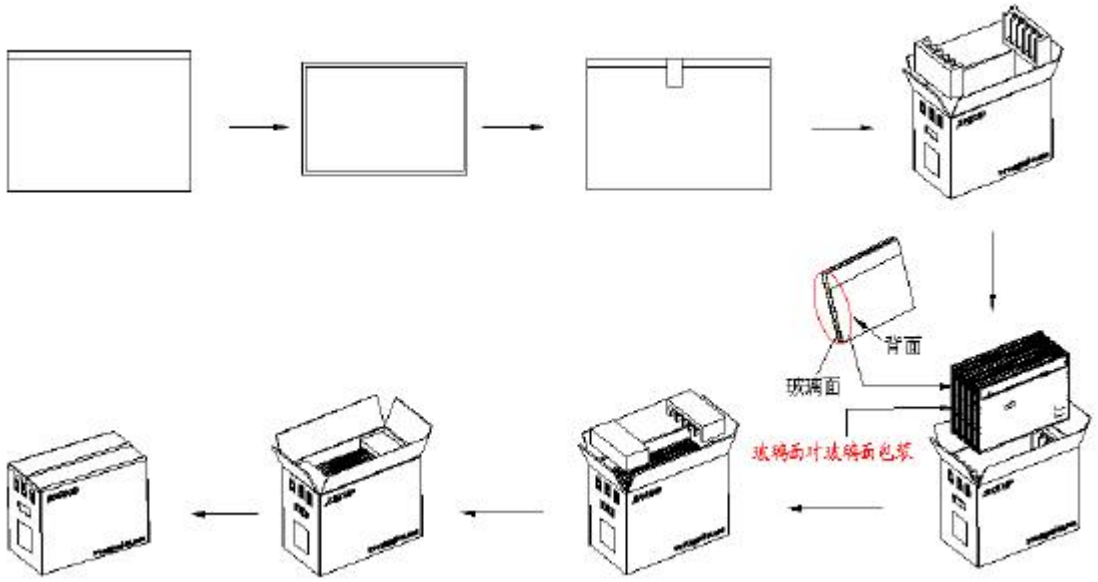


Figure 6. TFT-LCD Module Outline Dimensions (Rear view)



7.0 Packing

7.1 Packing Order



8.General Precautions

8.1Storage

1. Stor the module ina dark room where must keep at 25±10℃, 65±10%RH, the module shall be exposed under strong light such as direct sunlight.
2. Do not store the produce in surroundings containing organic solvent or corrosive gas

3. Store the module in an anti-electrostatic container or film .

8.2 Handing

1. Do not subject the module to mechanical shock or to excessive force On its surface
2. To avoid contamination on the display surface, do not touch the module Surface with bare hands

3. Must be the correct way to connec the power cable,otherwise it will Cause damage

8.3 transportation

1. In transporting,Goods are strictly prohibited during the ultra-high stacking Extrusion,upside down,entire vehicle liading and unloading.
2. Persons who handle the module should be grounded through adequate methods.

8.4 Other

1. About this specification,if any question,go through both sides agreement Post-processing.
2. Any changes must get into contant with each other,get tht agreement then To change ,and update the contents to record.