

# LC-GD104VGA

## Open frame monitor with VGA and Video input

10.4", resolution 800xRGBx600

### 1. Profile

Display system with Video and VGA signal input.

- automatic identifying and converting of NTSC/PAL signals,
- built-in OSD (on-screen display) offers adjustment of brightness, contrast and color
- 10.4" high contrast TFT display with CCFL backlight

### 2. Application

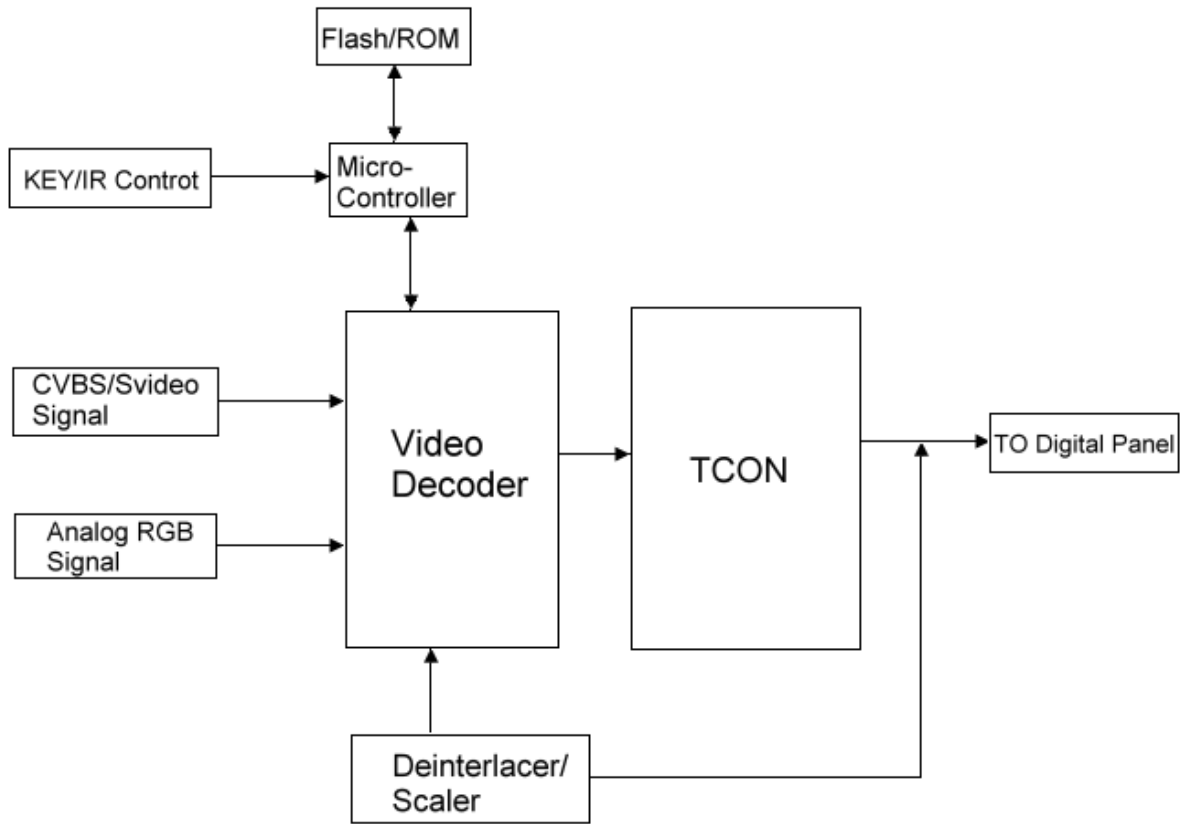
This module applies to

- Office electronic equipment
- Instrument and measure appliance
- Machinery and equipment
- Audiovisual (Car Monitor, Portable DVD Player, Long-distance terminal display)
- Household (Video door phone, Video phone)

### 3. Main Parameters:

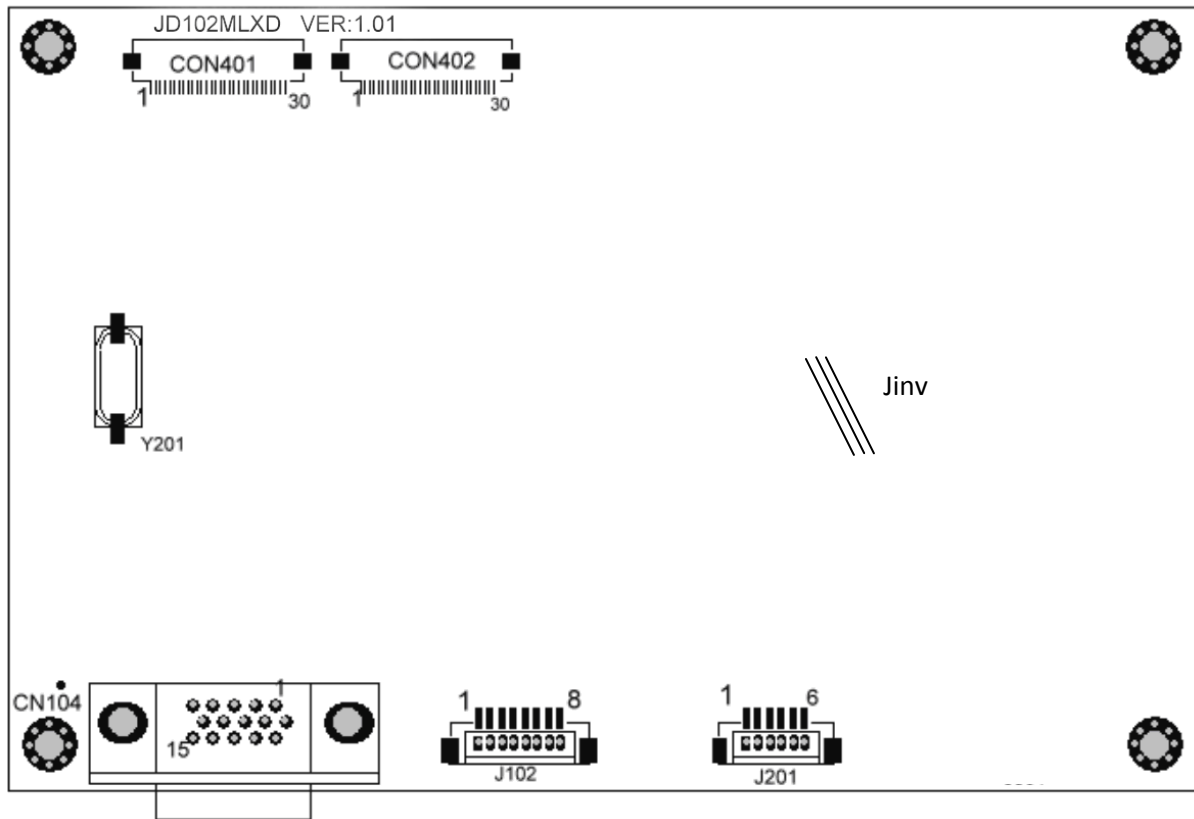
- 10,4" TFT Display
- Resolution: 800(H) x RGB x 600(V)
- View angle (U/D/L/R) : (45/65/65/65)
- Luminance: ~ 230 cd/m<sup>2</sup>
- Backlight: CCFL
- System: PAL/NTSC (automatic identifying and converting)
- Signal Input: Video, VGA
- Power Supply Voltage: DC+12V(9-15V) (+12V 750mA)
- Active Area(mm): 211.2 (H) x 158.4 (V)
- Outside dimension of Display (mm): 236.0 (W) x 176.9 (H) x 5.6 (D)
- Structural dimension of PCB (mm): 128,8 (W) x 85,4 (H) x 15.7 (D)
- Operation temperature: -20°C ~+ 70°C
- Environment relative Humidity: 5~95 % RH
- Storage temperature: -30 °C~+80 °C

#### 4. Block Diagram:



supports graphic resolutions of 640x480, 800x600 and 1024x768 in VGA-mode

## 5. Wiring Diagram

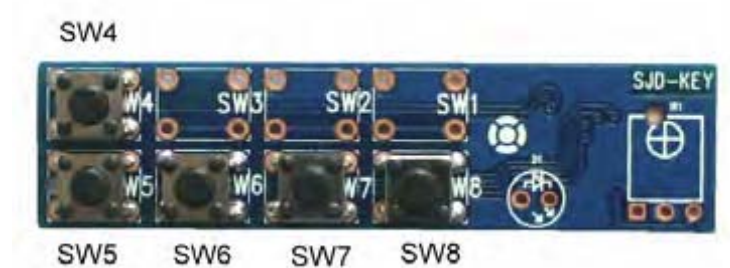


## 6. Connection Definition of Driver Board:

### 6.1 J201 (Control)

Pin No.	Symbol	Input/Output	Description	Remark
1	+5V	O	+5V output	
2	IR	I	Remote control receiver signal	
3	GND	-	Ground	
4	SAR0	I	Key-press input	
5	SAR1	I	Key-press input	
6	NC	-	Empty	

### OSD-Keyboard connected to J201



Pin No.	Symbol	Input/Output	Definition	Remark
SW4	Source	I	AV-Switch	
SW5	Power	I		
SW6	Menu	I		
SW7	+	I	Up	
SW8	-	I	Down	

### 6.2 J102 (Video input, power supply)

Pin No.	Symbol	Input/Output	Description	Remark
1	+12V	I	+12V power input	
2	+12V	I	+12V power input	
3	GND	I	Ground	
4	GND	-	Ground	
5	Video	I	Video signal input	
6	C	I	Y signal input	
7	Y		C signal input	
8	GND		Ground	

### 6.3 CN104 (VGA input)

Pin No.	Symbol	Input/Output	Description	Remark
1	RED	I	RED input	
2	GREEN	I	GREEN input	
3	BLUE	I	BLUE input	
4	nc	-	not connected	
5	GND	I	Ground	
6	GND	I	Ground	
7	GND	-	Ground	
8	GND	-	Ground	
9	NC	-	not connected	
10	NC	-	not connected	
11	NC	-	not connected	
12	NC	-	not connected	
13	HSYNC	I	Horizontal sync signal	
14	VSYNC	I	Vertical sync signal	
15	NC	-	not connected	

### 6.4 Jinv cable connection to CCFL inverter

Cable color	Symbol	Input/Output	Description
yellow	+12V	O	+12V output
black	GND	O	GND
red	Dim	O	Dim signal

#### input connect of CCFL-inverter

Pin No.	Symbol	Input/Output	Description
1	+12V	O	+12V output
2	GND	O	GND
3	Dim	O	Dim signal
4	nc	-	not connected



## 6.5 CON401 (display module)

Pin	Symbol	I/O	Function	Remark
1	POL	I	Polarity selection	
2	STVD	I/O	Vertical start pulse input if U/D = H	
3	OEV	I	Gate output enable	
4	CKV	I	Vertical clock	
5	STVU	I/O	Vertical start pulse input if U/D = L	
6	GND	P	Power ground	
7	EDGSL	I	Clock edge selection	
8	VCC	P	Power supply for digital circuit	
9	V9	P	Gamma voltage level 9	
10	VGL	P	Gate OFF voltage	
11	V2	I	Gamma voltage level 9	
12	VGH	P	Gate ON voltage	
13	V6	I	Gamma voltage level 6	
14	U/D	I	Up/down selection	
15	VCOM	P	Common voltage	
16	GND	P	Power ground	
17	AVDD	P	Power supply for analog circuit	
18	V14	P	Gamma voltage level 9	
19	V11	P	Gamma voltage level 9	
20	V8	P	Gamma voltage level 9	
21	V5	P	Gamma voltage level 9	
22	V3	P	Gamma voltage level 9	
23	GND	P	Power ground	
24	R5	I	Red data (MSB)	
25	R4	I	Red data	
26	R3	I	Red data	
27	R2	I	Red data	
28	R1	I	Red data	
29	R0	I	Red data	
30	GND	P	Power ground	

## CON402 (display module)

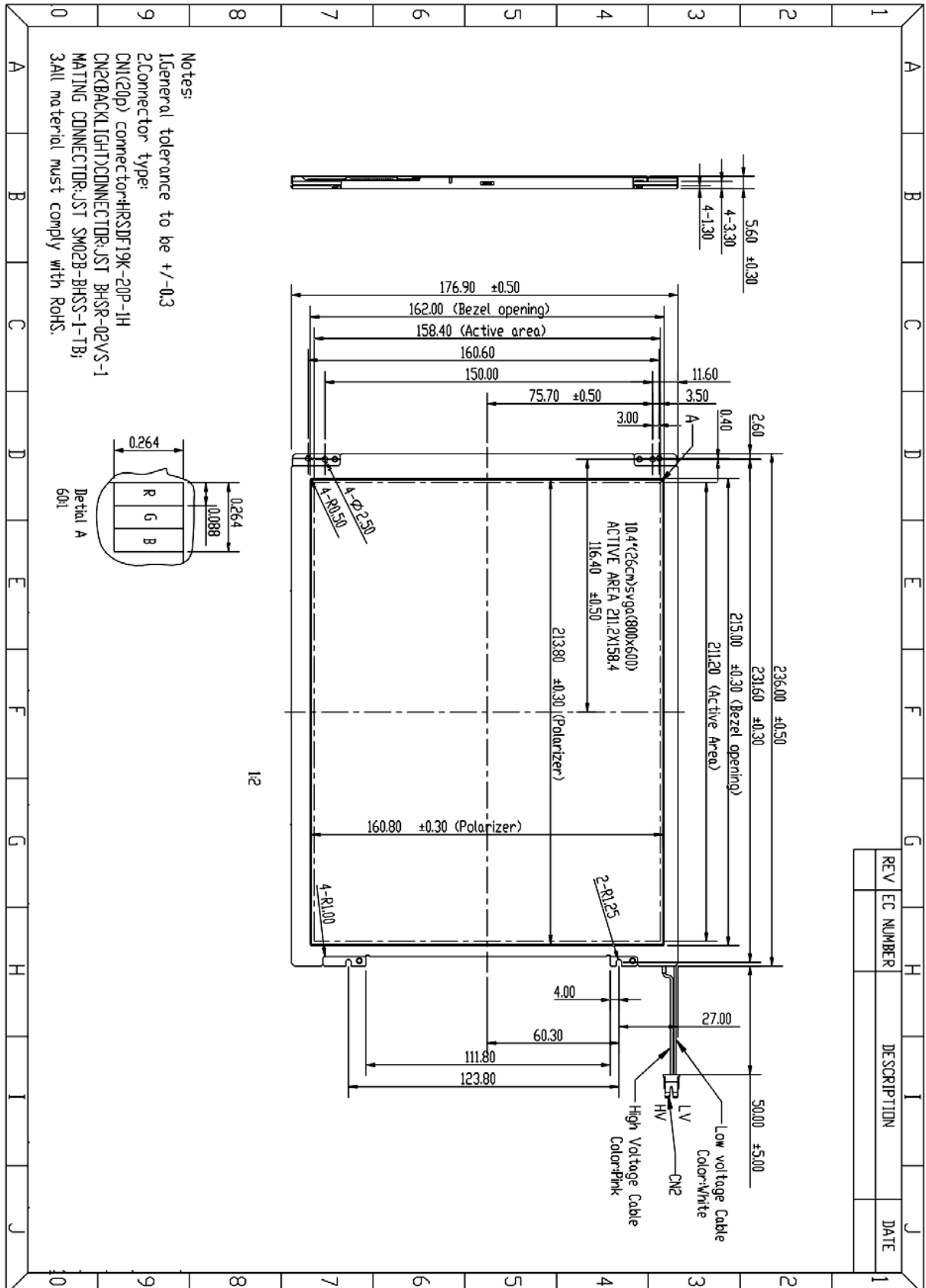
31	GND	P	Power ground	
32	G5	I	Green Data (MSB)	
33	G4	I	Green Data	
34	G3	I	Green Data	
35	G2	I	Green Data	
36	G1	I	Green Data	
37	G0	I	Green Data (LSB)	
38	STHL	I/O	Horizontal start pulse input if R/L = H	
39	REV	I	Control display data are inverted or not. If "REV" = H, data will be inverted.	
40	GND	P	Power ground	
41	DCLK	I	Dot clock input. Display data are latched at the rising or falling edge of DCLK, determined by EDGSL signal	
42	VCC	P	Power supply for digital circuit	
43	STHR	I/O	Horizontal start pulse input . if R/L = L	
44	LD	I	Latches the polarity of outputs and switches the new data to outputs	
45	B5	I	Blue Data (MSB)	
46	B4	I	Blue Data	
47	B3	I	Blue Data	
48	B2	I	Blue Data	
49	B1	I	Blue Data	
50	B0	I	Blue Data (LSB)	
51	R/L	I	Right/left selection	
52	V1	P	Gamma voltage level 1	
53	V4	P	Gamma voltage level 4	
54	V7	P	Gamma voltage level 7	
55	V10	P	Gamma voltage level 10	
56	V12	P	Gamma voltage level 12	
57	V13	P	Gamma voltage level 13	
58	AVDD	P	Power supply for analog circuit	
59	GND	P	Power ground	
60	VCOM	I	Common voltage	

Note: I/O definition

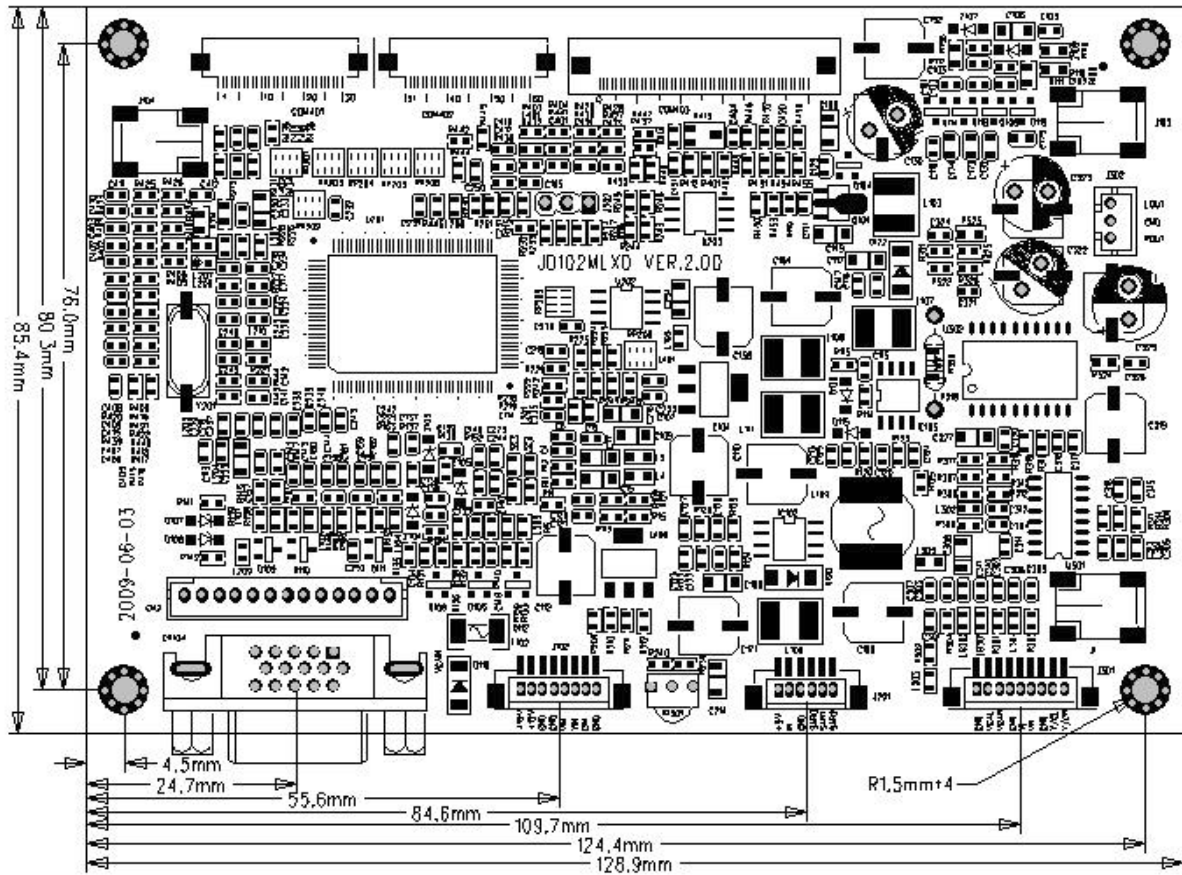
I = input    O = output    P = Power/Ground

## 7. Structural Diagram:

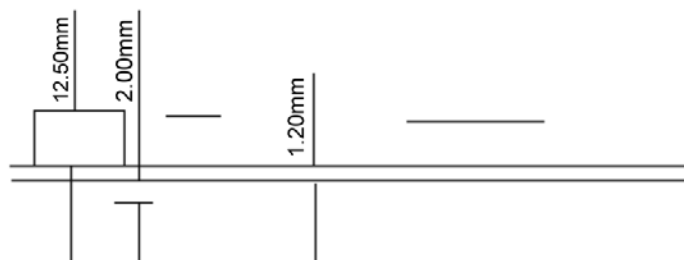
### 7.1 LCD Panel:



## 7.2 Structural Diagram of PCB:



### component and solder pin height



12,5mm related to VGA connector  
 max height of other components 6,2mm

## 8. TFT LCD Panel determinant standard:

Aim: Establishing the standard of PANLE for inspecting material & progress and for clients' inspection.

Content:

### 8.1 Determinant standard and method:

#### 8.1.1 The method and determinant of panel of LCD:

8.1.1.1. Inspect vertically (or at 45° angle from left/right) under the Light tube (the power is 20 W) in the distance of 30cm to the Panel. If there is no nick, it determines "OK", otherwise "NG".

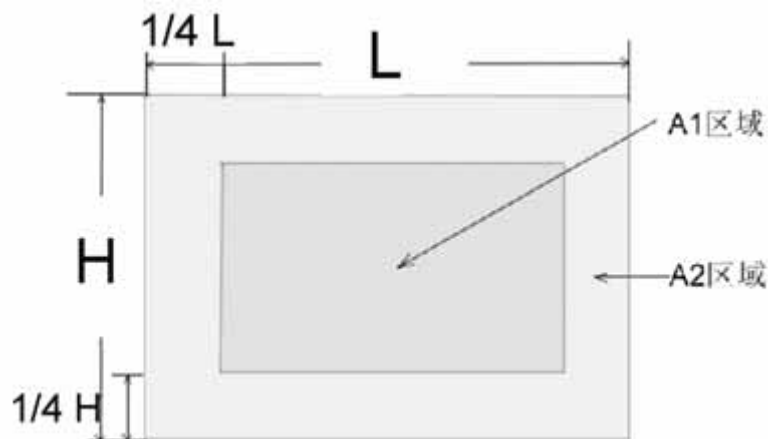
#### 8.1.2 The method and determinative for black & white & color spots for the Panel of LCD:

##### 8.1.2.1 Inspecting methods

8.1.2.1.1. Black spots: under the situation of "turn on the light", set the MASK of black spot inspection near the black spot Then compare the big and small by eyes.

8.1.2.1.2 White & Color spots: under situation of "turn on the light", Set the Mask of black spot inspection on the white spot (or color spot) then observe them by eyes if it can hide.

##### 8.1.2.2. Division of LCD Panel



Remark: Area of A1: The center of the available area for the picture  
Area of A2: The edge of the available area for the picture  
(8 mm around the central area)

### 8.1.3 Determinate Choise

Spot Diameter (mm)		Allowed Area	
		A1	A2
Black Spot	$d \leq 0,15$	Irrespective	Irrespective
	$0,15 < d \leq 0,3$	4	4
	$0,3 < d \leq 0,5$	2	3
	$0,5 < d \leq 0,8$	0	2
White or color spot	$d \leq 0,15$	Irrespective	Irrespective
	$0,15 < d \leq 0,3$	3	3
	$0,3 < d \leq 0,5$	1	2
	$0,5 < d \leq 0,8$	0	1

Remark:

1. Size: Average Diameter = (Max Diameter + Min. Diameter) / 2
2. Using information above as a standard in order to judge while the spot is are dense.
3. Black & White spot: To judge the obvisous spots through the change of voltage by comprassion”
4. Total quantity of Black & white & color spot:  $A1 + A2 \leq 4$

## 9. Packing

TBD

## 10. Attention:

1. Voltage may not exceed upper limit.
2. The connector should not be connect board in reverse, or the board will be burnt or the product can't function well.
3. Please don't touch the board in order to keep your skin non-burn when you electrify the board (high voltage on the board).
4. TFT LCD Panel, it is an electric product, so you need to take anti-static measure when you operate it.
5. TFT LCD Panel is a glasswork, place carefully, it can easely brake.
6. The connection is "FPC", which connect TFT LCD Panel to PCB. Please operate it carefully, not to break the conductive paths.
7. Don't touch key-press's pin when you adjust brightness or color. Soft key-press, due to Person's body resistance, can have impact on images.

## 11. Revision:

V1.0 30/06/2008  
V1.1 02/01/2010