



PRODUCT SPECIFICATION

- Tentative Specification
- Preliminary Specification
- Approval Specification

MODELNAME:M104XGH3001

Version:LA00

Customer: Common	
APPROVED BY	SIGNATURE
Name / Title _____	_____
Note	

Please return 1 copy for your confirmation with your signature and comments.	

Approved By	Checked By	Prepared By

REVISION STATUS

Version	Revise Date	Page	Content	Modified by
V1.0	2024.05.28	-	First Issued.	WS

TABLE OF CONTENTS

No.	CONTENTS	PAGE
	REVISION STATUS	2
	TABLE OF CONTENTS	3
1.	GENERAL DESCRIPTION	4
2.	MECHANICAL SPECIFICATION	4
3.	PIN DESCRIPTION	6
4.	ELECTRICAL CHARACTERISTICS	6
5.	INPUT SIGNAL TIMING	10
6.	OPTICAL CHARACTERISTICS	13
7.	RELIABILITY TEST ITEMS	16
8.	GENERAL PRECAUTION	17
9.	PACKAGE DRAWING	18

1. GENERAL DESCRIPTION

1.1 Introduction

YHW Display model M104XGH3001 is a color active matrix thin film Transistor(TFT) liquid crystal display (LCD) that uses amorphous silicom TFT as a Switching device. This model is composed of a TFT LCD panel,a driving circuit and a back light system.This TFT LCD has a 10.4 inch diagonall measured active display area with WSVGA (1024 horizontal by 768 vertical pixel) Resolution.

1.2 Features

- u 10.4 inch (16:9 diagonal) configuration
- u 16.2M color by 6 bit + Hi -FRC input
- u RoHS/Halogen Free Compliance

1.3 Applications

- Automotive

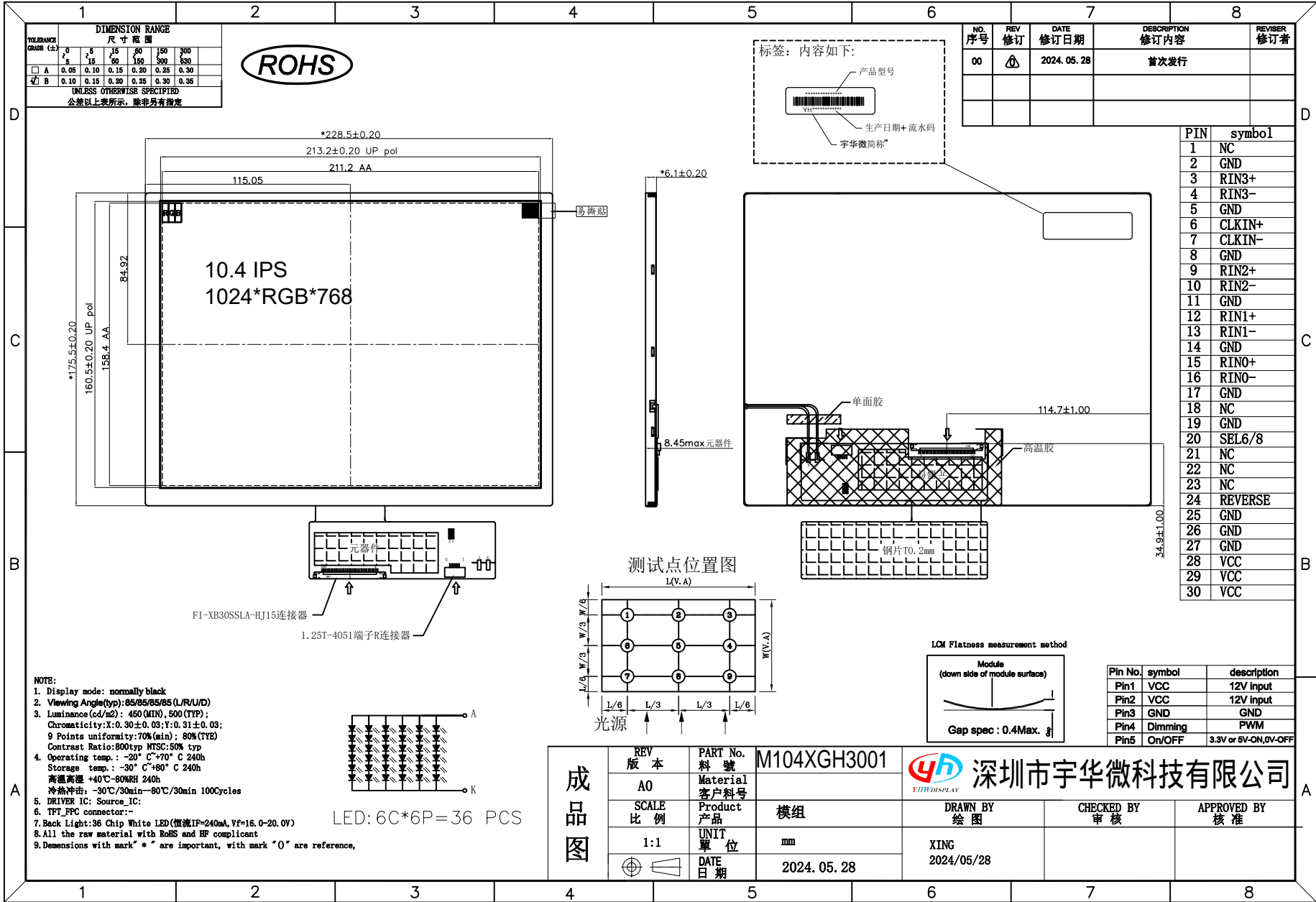
1.4 TFT LCD General information

Item		Specification	Unit
Outline Dimension		228.5x175.5x6.1 (typ)	mm
Display area		211.2(H) x158.4(V)	mm
Number of pixel		1024 RGB (H) x 768(V)	pixels
Pixel pitch		0.20625 (H) x 0.20625(V)	mm
Pixel arrangement		RGB Vertical stripe	
Display mode		Normally Black	
NTSC		70 (typ.)	%
Surface treatment		Antiglare with IPS Flim	
Weight		(TBD)g (Typ.)	g
Back-light		White LED	
Power Consumption	Logic	0.6(Max) @ Black pattern .Frame rate 60Hz	W
	BL System	3.0(typ) @ Black pattern w/o LED driver	W

1.5 Mechanical information

Item		Min.	Typ.	Max.	unit
Module size	Horizontal(H)	228.3	228.5	228.7	mm
	Vertical(V)	175.3	175.5	175.7	mm
	Depth(D)	5.9	6.1	6.3	mm
weight		----	(TBD)	---	g

2. MECHANICAL SPECIFICATION



3. PIN DESCRIPTION

Lvds Connector JAE Model Number :FI-XB30SSLA-HF15 (Adaptable Plug:FI-X30C2EL)

No.	Symbol	Function	Remark
1	NC	No connection	
2	GND	Ground	
3	RIN3+	LVDS Signal(+)-channel 3	
4	RIN3-	LVDS Signal(-)-channel 3	
5	GND	Ground	
6	RXCLK+	LVDS Clock Signal(+)	
7	RXCLK-	LVDS Clock Signal(-)	
8	GND	Ground	
9	RIN2+	LVDS Signal(+)-channel 2	
10	RIN2-	LVDS Signal(-)-channel 2	
11	GND	Ground	
12	RIN1+	LVDS Signal(+)-channel 1	
13	RIN1-	LVDS Signal(-)-channel 1	
14	GND	Ground	
15	RIN0+	LVDS Signal(+)-channel 0	
16	RIN0-	LVDS Signal(-)-channel 0	
17	GND	Ground	
18	NC	No connection	
19	GND	Ground	
20	SEL6/8	SELB="0" 8Bit SELB="1" 6Bit	
21	NC	No connection	
22	NC	No connection	
23	NC	No connection	
24	REVERSE	Reverse Panel function	
25	GND	Ground	
26	GND	Ground	
27	GND	Ground	
28	VCC	power Voltage for digital circuit 3.3V	
29	VCC	power Voltage for digital circuit 3.3V	
30	VCC	power Voltage for digital circuit 3.3V	

4. ELECTRICAL CHARACTERISTICS

4.1 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VCC	-0.3	3.6	V
Analog supply voltage	AVDD	-0.3	6.6	V
Analog supply voltage	AVEE	-0.3	-6.6	V
Gate on voltage	VGH	-0.3	22	V
Gate off voltage	VGL	-16	0.3	V

4.2 TFT LCD MODULE

4.2.1 OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Digital Supply Voltage	VCC	3.0	3.3	3.6	V
TFT Gate ON Voltage	VGH	16.5	18	19.5	V
TFT Gate OFF Voltage	VGL	-13.5	-13	-12.5	V
Analog Power Supply voltage	AVDD	3.0	5.7	6.0	V
Analog Power Supply voltage	AVEE	-6.0	-5.7	-3.0	V

NOTE

TYP VCOM is only reference value. It must be optimized according to each LCM. Be sure to use VR and OP buffer on VCOM output. Please adjust VCOM to make the flicker level be minimum for getting excellent image.

4.3 Current Consumption

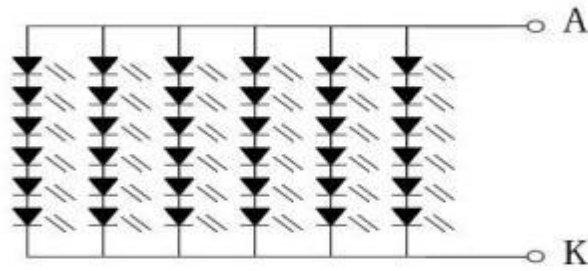
Symbol	Item	Min.	Typ.	Max.	Unit	Remark
IVCC	Digital Current	--	230	--	mA	VDD=3.3V

4.4 BACK LIGHT UNIT

Ta=25°C

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED current	I _{LED}	240			mA	Total LED
Forward voltage	V _F	16.0	20.4	24.5	V	I _F =240mA
Reverse current	I _R			50	μA	V _R =5V, 1LED
Power dissipation	P _d	2900			mW	Total LED
Peak forward current	I _{FP}	60			mA	1LED
Reverse Voltage	V _R	2.8			V	1LED

线路图



LED: 6C*6P=36 PCS

4.5 POWER ON/OFF SEQUENCE

5 POWER MODE POWER ON SEQUENCE – LVDS:

THE POWER ON SEQUENCE TIMING FOR DIFFERENT POWER INPUT MODES AND INTERFACES ARE SHOWN AS BELOW TABLE.

Symbol	Value			Unit	Remark
	Min	Typ	Max		
tPWON1	0	5	-	ms	
tPWON2	0	5	-	ms	
tPWON3	0	5		ms	
tPWON4	0	5		ms	
t _{ramp1}	0.2	-	20	ms	IOVCC, VCCH
t _{ramp2}	0.2	-	20	ms	VCI, VCIP, AVDD
t _{ramp3}	0.2	-	20	ms	AVEE
t _{ramp4}	0.2	-	-	ms	VGL
t _{ramp5}	0.2	-	-	ms	VGH
tRPWIRES1	10	-	-	ms	
tRPWIRES2	1	-	-	ms	
tMIPL_LP11	-	-	tRPWIRES1	ms	
tRESETL	20	-	-	μs	
t ₁	5	-	-	ms	
tSLPOUT	120	-	-	ms	
tPWSLPOUT	-	45	-	ms	
tBLON	2	-	-	VS	

5 POWER MODE POWER OFF SEQUENCE – LVDS,

THE POWER OFF SEQUENCE TIMING FOR DIFFERENT POWER INPUT MODES AND INTERFACES ARE SHOWN AS BELOW TABLE.

Symbol	Value			Unit	Remark
	Min	Typ	Max		
t _{PWOFF1}	0	5	-	ms	
t _{PWOFF2}	0	5	-	ms	
t _{PWOFF3}	0	5	-	ms	
t _{PWOFF4}	0	5	-	ms	
t _{ramp1}	0.2	-	20	ms	IOVCC, VCCH
t _{ramp2}	0.2	-	20	ms	VCI, VCIP, AVDD
t _{ramp3}	0.2	-	20	ms	AVEE
t _{ramp4}	0.2	-	-	ms	5Power: VGL
t _{ramp5}	0.2	-	-	ms	5Power: VGH
t _{PWOFF}	120	-	-	ms	
t _{MIPI_LP11}	0	-	t _{PWOFF}	ms	
t _{DISPOFF}	50	-	t _{PWOFF}	ms	
t _{RSTHtoL}	50	-	t _{PWOFF}	ms	
t _{Video_OFF}	0	-	t _{PWOFF}	ms	
t _{BLOFF}	0	-	-	ms	

5.INPUT SIGNAL TIMING.

5.1 LVDS Data format .

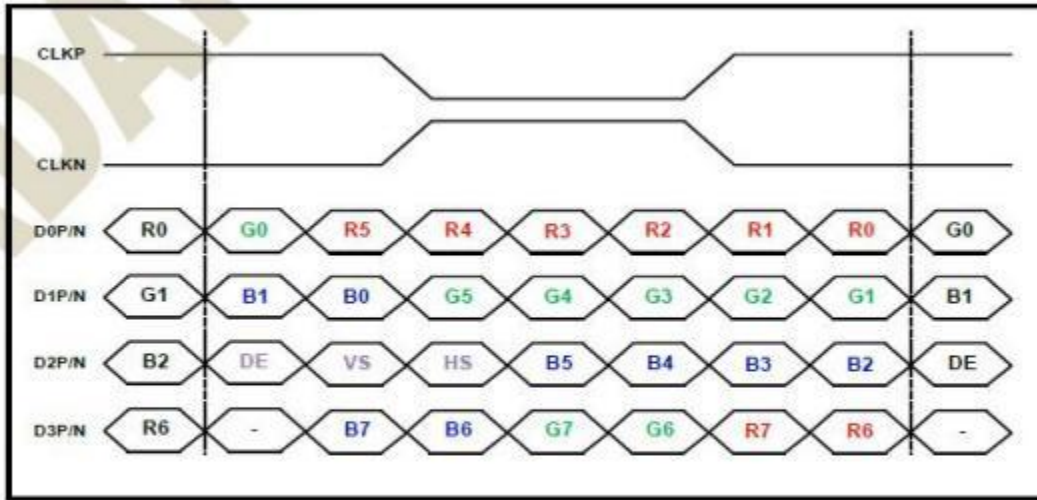


Figure 7.12: 8-bit LVDS input (IM[1:0]=01, LANSEL[1:0]=11, LVFMT=0(VESA))

5.4 INTERFACE TIMING

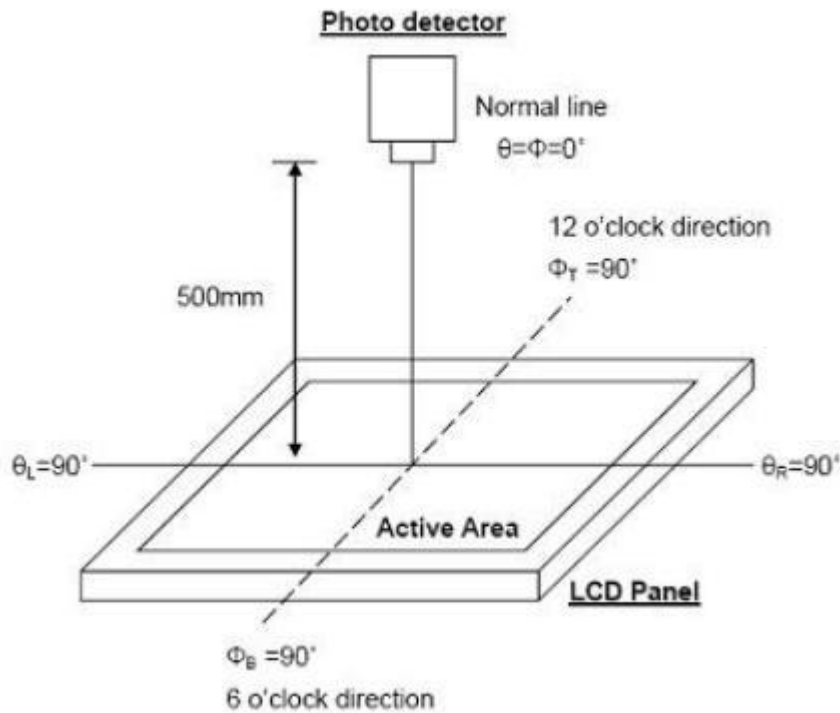
24-bit parallel RGB Input Timing	Symbol	1024RGBx768			Unit
		Min	Typ	Max	
DCLK Frequency	-	-	51	-	MHZ
Hsync Pulse width	ths	-	20	-	DCLK
Horizontal Back Porch	thb	-	20	-	DCLK
Horizontal Valid Data	thd	1024			DCLK
Horizontal Front Porch	thfp	-	20	-	DCLK
Vsync Pulse Width	tvS	-	4	-	THT
Vertical Back Porch	tvb	-	4	-	THT
Vertical Valid Data	tvd	768			THT
Vertical Front Porch	tvfp	-	10	-	THT

6. Optical Characteristics

Ta=25±2°C

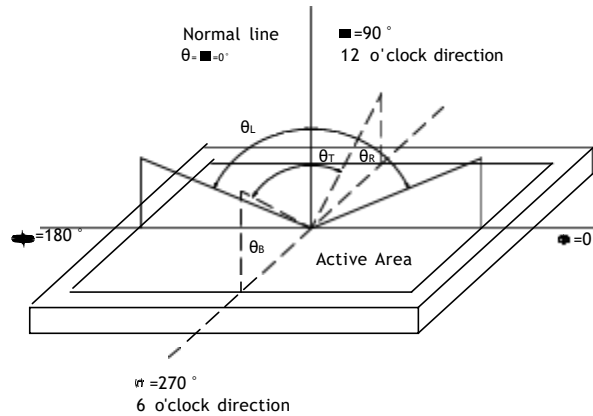
Item		Symbol	Min.	Typ.	Max.	Unit	Note
Contrast Ratio		CR	1000	1200	-		Note1 Note3
Luminance(center)		L	500	-	-	cd/m2	Note1 Note5 Note7
Luminous tolerance		LU	75	-	-	%	Note7
Response Time		Rising + Falling	-	25	35	ms	Note1 Note4
Viewing Angle K=Contrast Ratio>10	Horizontal	θ_{x^+}	80	85	-	degree	Note2
		θ_{x^-}	80	85	-		
	Vertical	θ_{y^+}	80	85	-		
		θ_{y^-}	80	85	-		
Color Chromaticity (CIE1931)	Red	x	Typ- 0.05	TBD	Typ+ 0.05		Note1 Note5 Note7
		y		TBD			
	Green	x		TBD			
		y		TBD			
	Blue	x		TBD			
		y		TBD			
	White	x		TBD			
		y		TBD			
Color gamut (NTSC ratio)			65	70		%	
Optima View Direction		Free					

Note1: Definition of optical measurement system (BM-7)



Note2: Definition of viewing angle range and measurement system

Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80).



Note3: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.

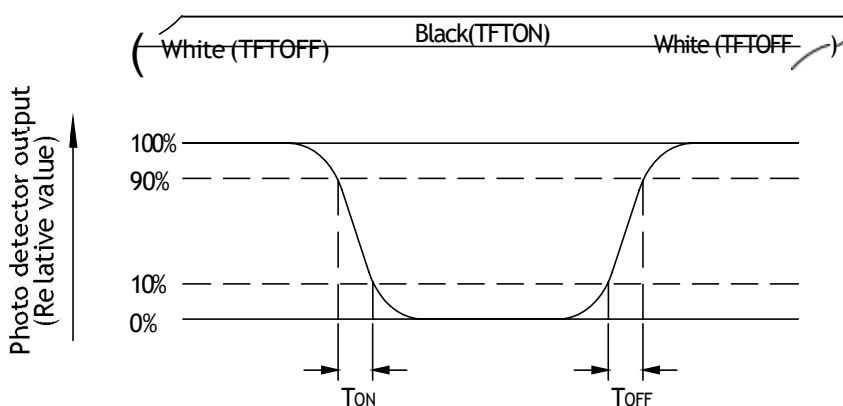


Fig. 6-3 Definition of response time

Note4: Definition of contrast ratio Contrast ratio(CR)=

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "White" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

“White state “: The state is that the LCD should drive by Vwhite.

“Black state”: The state is that the LCD should drive by Vblack.

Vwhite: To be determined Vblack: To be determined.

Note5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

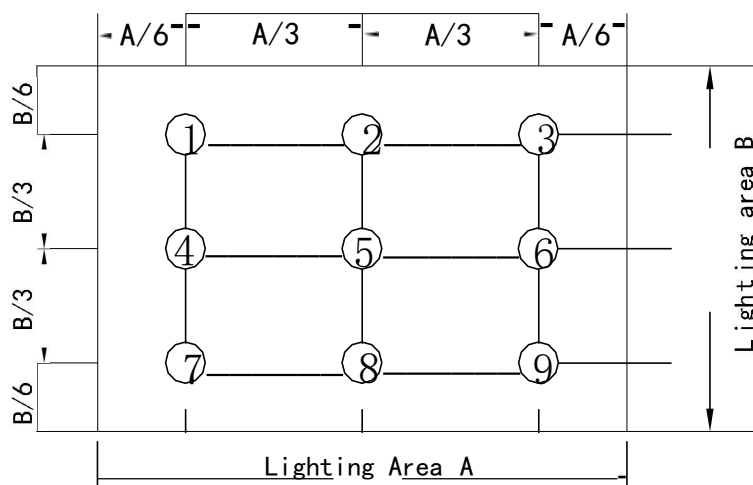
Note6: All input terminals LCD panel must be ground while measuring the center area of the panel. The LED driving condition is IL=150mA

Note7: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas. Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = \text{Lmin} / \text{Lmax}$$

L----Active area length, W---- Active area width



Bmax: The measured maximum luminance of all measurement position.

Bmin: The measured minimum luminance of all measurement position.

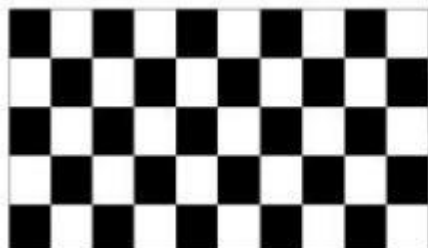
7. RELIABILITY TEST ITEMS

7.1 TEMPERATURE AND HUMIDITY

Test Item	Test Condition	Remark
High Temperature Storage	Ta=80°C; 240hrs	IEC60068-2-1: 2007 GB2423.2-2008
Low Temperature Storage	Ta=-30°C;240hrs	IEC60068-2-1: 2007 GB2423.1-2008
High Temperature Operation	Ta=70°C , 240Hrs	IEC60068-2-1: 2007 GB2423.2-2008
Low Temperature Operation	Ta=-20°C; 240hrs	IEC60068-2-1: 2007 GB2423.1-2008
High Temperature High Humidity Operation	Ta=60°C , 90%RH, 120Hrs(no condensation)	IEC60068-2-78: 2001 GB/T2423.3-2006
Thermal Shock	-20°C(0.5h) ~ 70°C(0.5h) / 120 cycles	Start with cold temperature , End with high temperature, IEC60068-2-14:1984,GB2423.22-2002
Image Sticking	25°C ; 1hrs	Note1

Note1:Condition of image sticking test :25°C±2°C

Operation with test pattern sustained for 1hrs,then change to gray pattern immediately.after 15 mins,the mura must be disappeared completely



(a) Test Pattern (chess board Pattern)



(b) Gray Pattern

7.2 VIBRATION &SHOCK

Test item	Conditions	Remark
Packing Shock (non-operation)	980m/s2,6ms, ±x,y,z 3times for direction	IEC60068-2-27: 1987 GB/T2423.5-1995
Packing Vibration (non-operation)	Frequency range:10 HZ~50HZ Stroke:1.0mm,sweep:10 HZ ~50HZ x,y,z 2 hours for each direction	IEC60068-2-32: 1990 GB/T2423.8-1995

7.3ESD

Test item	Conditions	Remark	
Electro Static Discharge Test (non-operation)	150pF, 330Ω, Contact:±3KV,Air:±6KV	1	Class C
	200pF, 0Ω, ±200V contact test	2	

Note: Measure point :

1. LCD glass and metal bezel
2. IF connector pins

3. ESD class C: To allow a temporary loss of function, the equipment to be measured may stop working but should be able to automatic or manual intervention reset back to normal after

operation.

8. GENERAL PRECAUTION

8.1 SAFETY

1. Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
2. If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
3. If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

8.2 STORAGE CONDITIONS

1. Store the panel or module in a dark place where the temperature is $23 \pm 5^{\circ} \text{C}$ and The humidity is below $50 \pm 20\% \text{RH}$.
2. Store in anti-static electricity container.
3. Store in clean environment, free from dust, active gas, and solvent.
4. Do not place the module near organics solvents or corrosive gases.
5. Do not crush, shake, or jolt the module.

8.3 HANDLING PRECAUTIONS

1. Avoid static electricity which can damage the CMOS LSI.
2. The polarizing plate of the display is very fragile. So, please handle it very carefully.
3. Do not give external shock.
4. Do not apply excessive force on the surface.
5. Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the Surface of plate.
6. Do not use ketonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
7. Do not operate it above the absolute maximum rating.
8. Do not remove the panel or frame from the module.
9. When the module is assembled, it should be attached to the system firmly, Be careful not to twist and bend the module.
10. Wipe off water droplets or oil immediately. If you leave the droplets for a long time, staining and discoloration may occur.
11. If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth in case of contact with hands, legs or clothes, it must be washed away thoroughly with soap.

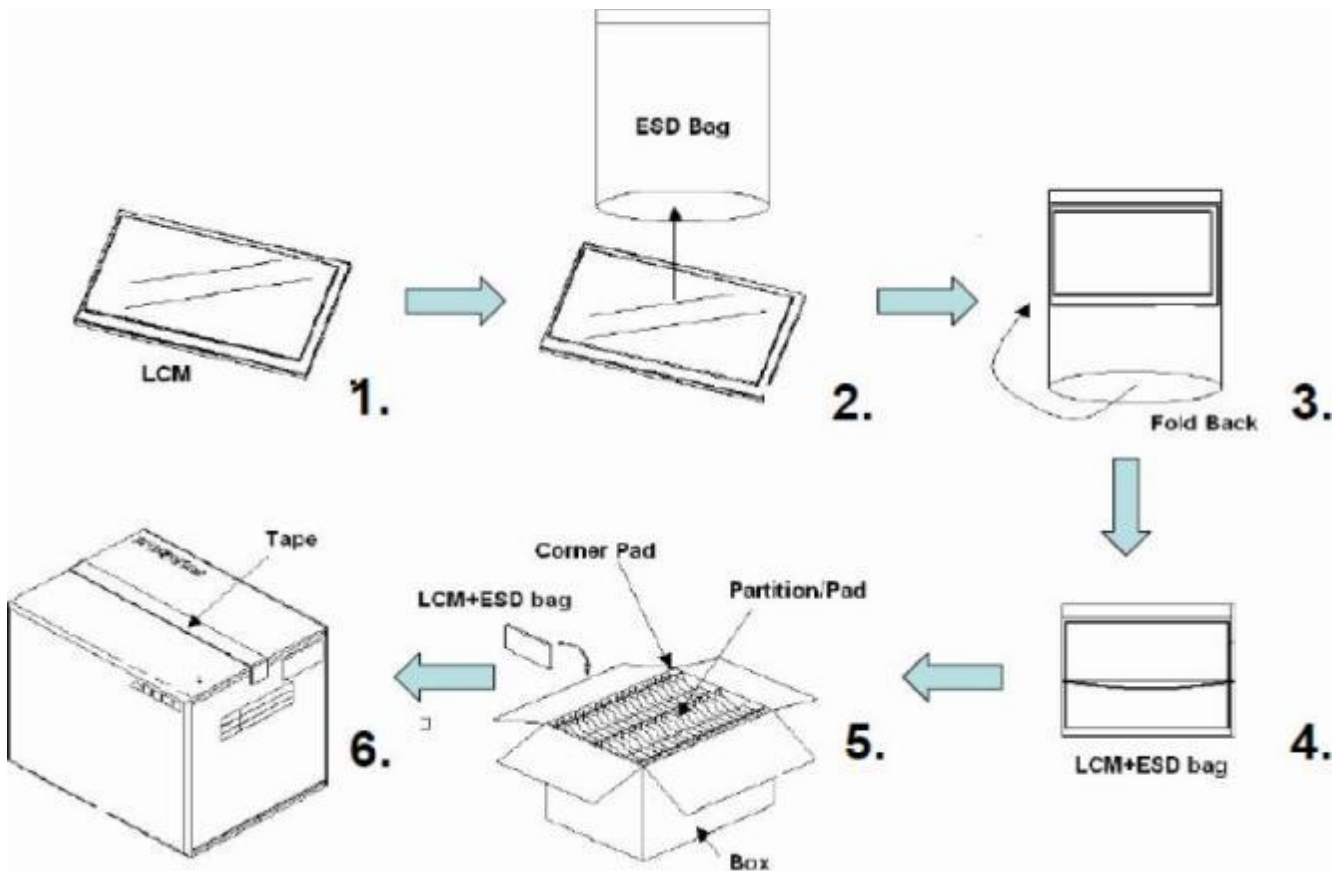
8.4 WARRANTY

1. The period is within twelve months since the date of shipping out under normal using and storage conditions.
2. Do not repaired or modified the LCM. It may cause function to lose efficacy, Starry does not warrant the LCM.
3. All process and material comply ROHS.

9. PACKAGE DRAWING

LCM Model	LCM Qty. in the box	Inner Box Size (mm)	Notice
M104XGH3001	30 pcs/box	455±5 x 305±5 x 205±5	

Packing form



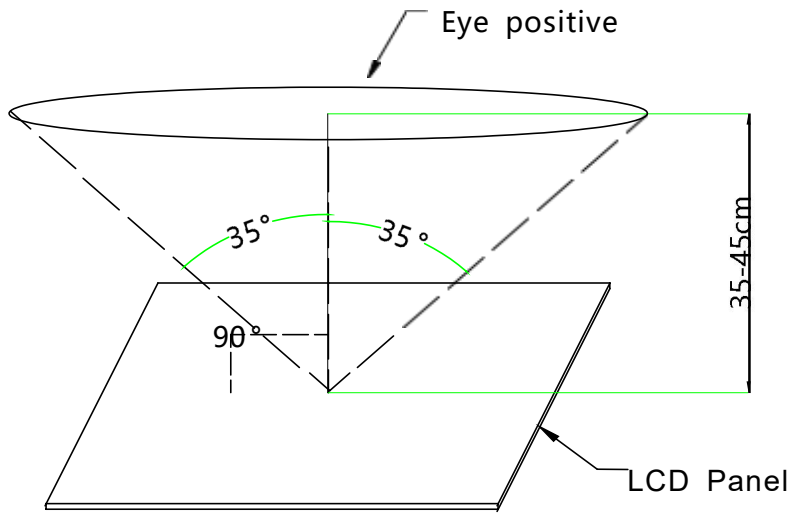
Items	Material	Notice
Box	Corrugated Paper Board	AB Flute
Partition/Pad	Corrugated Paper Board	B Flute
Corner Pad	Corrugated Paper Board	AB Flute
ESD bag	PE	

1. Incoming inspection right

(1) The Incoming Inspection Standard will be agreed and signed by both sides(Customer an starry)

2. Inspection condition is as follows

- (1) Viewing distance is approximately 35~40 cm
- (2) Viewing angle is normal to the LCD panel as Fig-1(35 °)
- (3) Ambient temperature is approximately $25 \pm 5^{\circ}\text{C}$
- (4) Ambient humidity is $60 \pm 5\% \text{RH}$
- (5) Ambient illuminance is from 300~500 Lux
- (6) Input signal timing should be typical value
- (7) Mura & Light leakage inspection an ND-Filter 5%



3. Special condtion

- (1) Viewing distance is close for inspection of adjacent dots and distance between defect Dots
- (2) Viewing condition of “ Shot block non-uniformity from oblique angle”is as Fig-2
- (3) Exceptional case:Veiw angle $\pm 40^{\circ}$. while inspected image-sticking

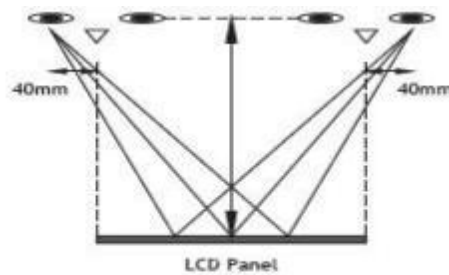
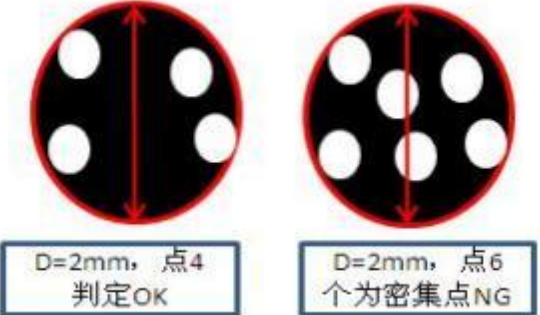


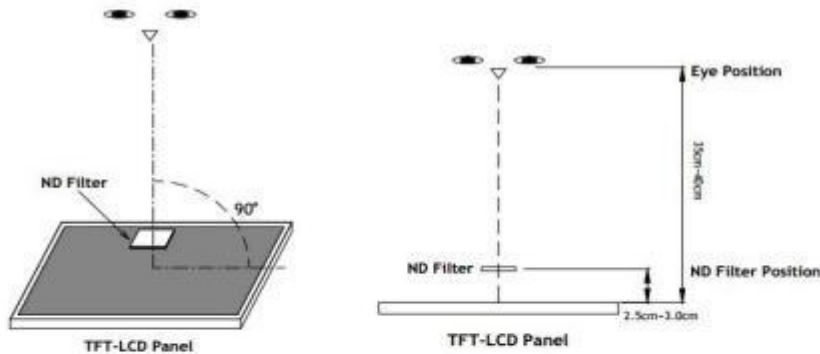
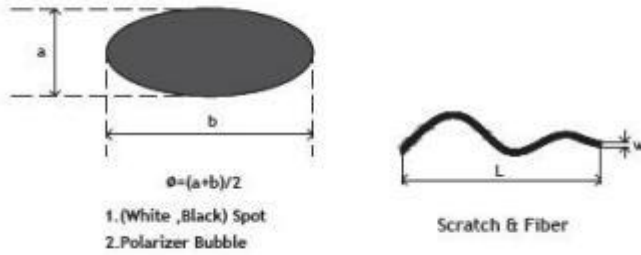
Fig-2

4. INSPECTION CRITERIA

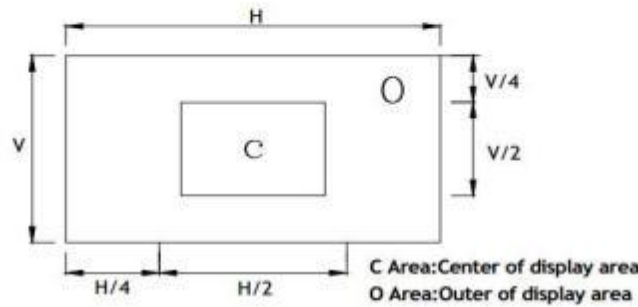
Defecttype		Limit			Note	
Visual defect	Scratch	$W \leq 0.05\text{mm}$		Ignore	Note1	
		$0.05\text{mm} \leq w \leq 0.1\text{m}$		$N \leq 3$		
		$L \leq 10\text{mm}$				
		$20\text{mm} < l, 0.1\text{mm} < w$		$N=0$		
	Internal	Spot	$\Phi < 0.2\text{mm}$		Ignore	Note 1
			$0.2\text{mm} \leq \varphi \leq 0.4\text{mm}$		$N \leq 3$	
			$0.4 \leq \varphi$		$N=0$	
		Fiber	$0.1\text{mm} \leq w \leq 0.2\text{m}$		$N \leq 4$	Note 1
			$L \leq 2.5\text{mm}$			
				$0.2\text{mm} < w, 2.5\text{mm} < l$	$N=0$	
		Polarizer bubble	$\Phi < 0.3\text{mm}$		Ignore	Note 1
			$0.25\text{mm} \leq \varphi \leq 0.5\text{mm}$		$N \leq 2$	
			$0.5 \leq \varphi$		$N=0$	
		Dent	$\Phi < 0.25\text{mm}$		Ignore	Note 1
$0.25\text{mm} \leq \varphi \leq 0.5\text{mm}$			$N \leq 4$			
$0.5 \leq \varphi$			$N=0$			
Electrical Defect	Bright dot	C area	O area	Total	Note 2 Note 3	
		$N \leq 1$	$N \leq 2$	$N \leq 3$		
	Dark dot	$N \leq 2$	$N \leq 4$	$N \leq 4$	use of ND5 % invisible OK	
	Total dot	$N \leq 3$	$N \leq 4$	$N \leq 4$		
	Dense point	Using ND5 % visible by intensive foreign standard judgement, ND5 % invisible OK			Note 4	
						

(1) One pixel consists of 3 sub-pixel, including r, g, and b dot. (sub-pixel=dot)
 (2) Panel is acceptable if distance between 2 dot defects are greater or equal to 5mm.

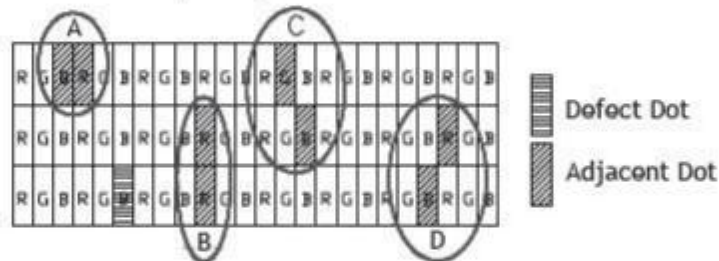
Note1 : W : Width[mm], L : Length[mm], N : Number, ϕ : Average Diameter



Note3 :



Note4 : Judge defect dot and adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dark adjacent dot. And they will be counted 2defect dots in total quantity.



Note5 : Other condition

- (1) The defects that are not defined above and considered to be problem shall be reviewed and discussed by both parties.
- (2) Defects on the Black Matrix, out of Display area, are not considered as a defect or counted.

5.HADLING PRECAUTION

- (1)Don't disassemble and reassemble the module by self
(禁止自行拆解)
- (2)Acid,alkali,alcohol or touched directly by hand will damage the display.
(酸性,碱性,酒精或手的直接接触将会损伤显示面)
- (3) Static electricity will damage the module .Please configure grounding device.
(静电会损伤模组, 请装配接地设备)
- (4)The strong vibration shock,twist or bend will cause material damage,even module Broken.
(强烈的撞击、震动、扭转或弯曲将会造成原材料损伤, 甚至面板破裂)
- (5) It is easy to cause igage stickong while displaying the same pattern for very long time.
(长期显示同一画会造成影像残留)
- (6) The response time,brightness and performance will vary from different temperature.
(响应时间、亮度与均匀性会因温度而有所改变)
- (7) The Period within 12 months since the date of shipping out under normal using And Storage conditions.
(从出货之日开始,在正常使用和存储条件下,产品保质期为12个月)