<div style="border:1px solid">

TECHNICAL   SPECIFICATION

MODEL   NO. : PM070WU1

</div>

The content of this information is subject to be changed without notice.
Please contact PVI or its agent for further information

☐ Customer's Confirmation

Customer _____

Date _____

By _____

☐ PVI's Confirmation

Confirmed By _____

Prepared By _____

Revision History

Rev.	Issued Date	Revised Contents
0.1	Jan 15, 2009	Preliminary
0.2	Jan 20, 2009	Modify Page 6 4. Mechanical Drawing of TFT-LCD Module: Pin direction
0.3	Mar 24, 2009	Modify Page 5 4. Mechanical Drawing of TFT-LCD Module Modify Page 9 7-2) Recommended Driving Condition for Back Light Modify Page 15 13. Optical Characteristics: Contrast Ratio &Viewing Angle data Add Page 15 13. Optical Characteristics: Brightness data &White Chromaticity Add Page 20 16. Packing Diagram
1.0	Apr 09, 2009	Add Page 9 7-2) Recommended Driving Condition for Back Light: Supply voltage of LED backlight Add Page 11 10. Block Diagram Modify Page 12 11. Interface Timing
2.0	Sep 18, 2009	Modify Page5~6 4. Mechanical Drawing of TFT-LCD Module

TECHNICAL SPECIFICATION

CONTENTS

PRIME VIEW

1. Application

  This data sheet applies to a color TFT LCD module, PM070WU1.The application of panel are OA product, which requires high quality flat panel display.

  Prime View assumes no responsibility for any damage resulting from the use of the device which does not complies with the instructions and the precautions in these specification sheets.
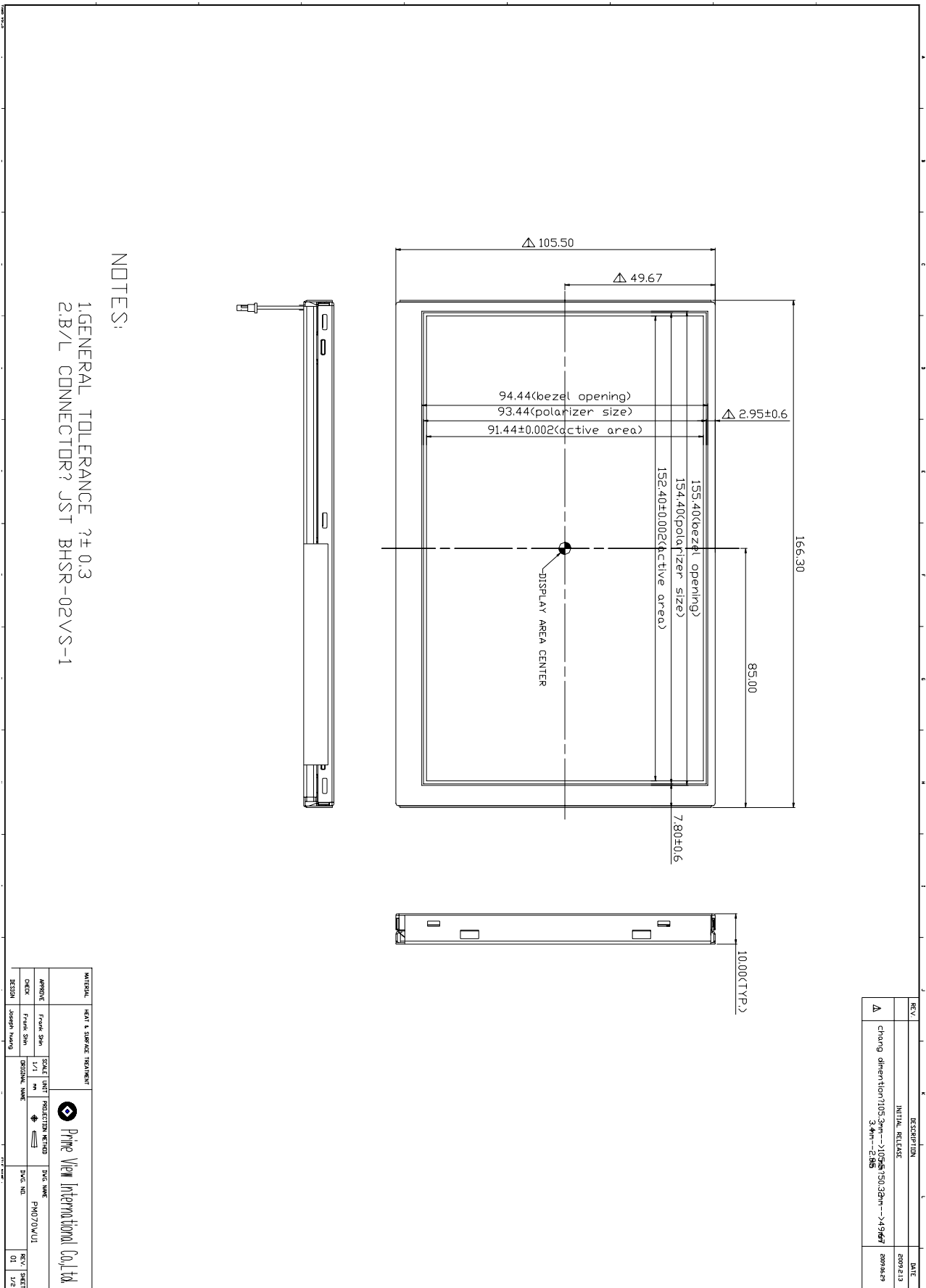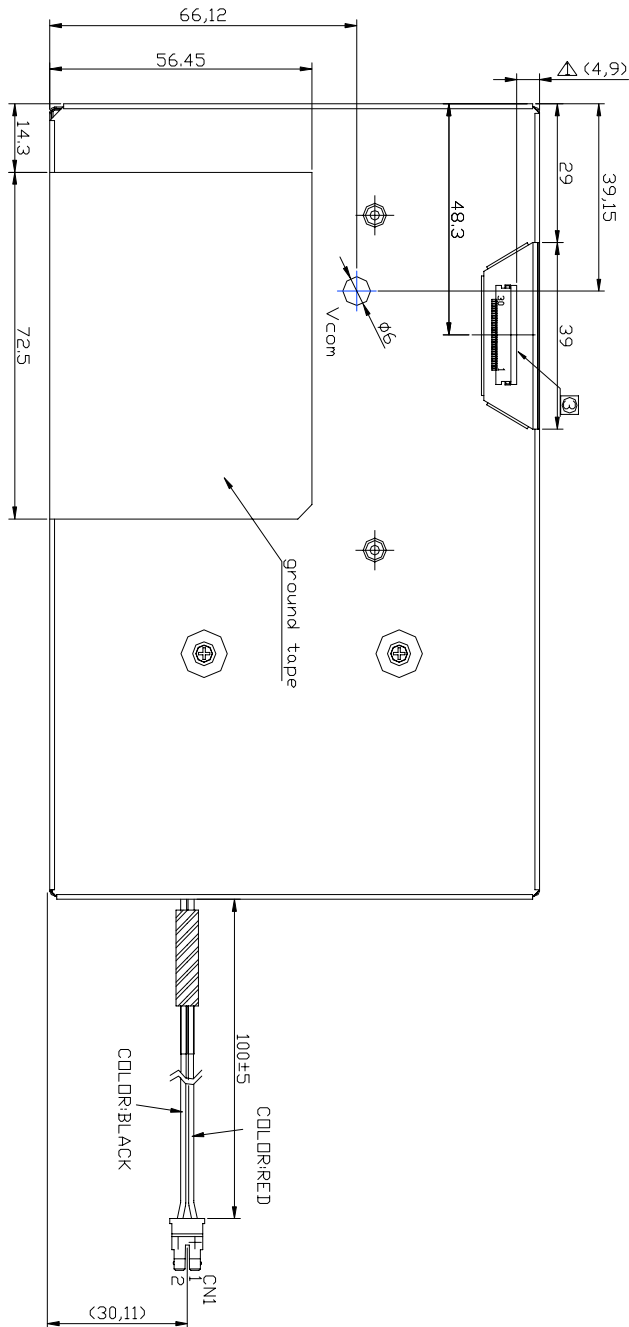
2. Features

  . Wide VGA (800*480 pixels) resolution
  . Amorphous silicon TFT LCD panel with LED back-light unit
  . Pixel in stripe configuration
  . Thin and light weight
  . Display Colors：262,144 colors
  . +3.3V DC supply voltage for TFT LCD panel driving
  . Wide viewing angle
  . TTL transmission interface

3. Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	7.0(diagonal)	inch
Display Format	800×(R, G, B)×480	dot
Display Colors	262,144	
Active Area	152.4(H)×91.44(V)	mm
Pixel Pitch	0.1905(H)×0.1905(V)	mm
Pixel Configuration	Stripe	
Outline Dimension	166.3(W)×105.5 (H)×10.0(D) (typ.)	mm
Weight	244±15	g
Back-light	33-LED	
Surface treatment	Anti-glare and EWV Film	
Display mode	Normally white	
Gray scale inversion direction	6 o'clock	Note 13-1

4. Mechanical Drawing of TFT-LCD Module

NOTES:
1.GENERAL TOLERANCE ?±0.3
2.B/L CONNECTOR? JST BHSR-02VS-1

105.50

49.67

94.44(bezel opening)
93.44(polarizer size)
91.44±0.002(active area)

2.95±0.6

155.40(bezel opening)
154.40(polarizer size)
152.40±0.002(active area)

166.30

85.00

DISPLAY AREA CENTER

7.80±0.6

10.00(TYP.)

MATERIAL	HEAT & SURFACE TREATMENT			SCALE 1/1	UNIT mm	
APPROVE	Frank Shih			PROJECTION METHOD	Prime View International Co.,Ltd	
CHECK				ORIGINAL NAME		
DESIGN	Joseph huang			DWG. NO. PM070WU1		REV. 01	SHEET 1/2

REV.	DESCRIPTION	DATE
	INITIAL RELEASE	2009.2.13
A	chang dimention?105.3mm-->105.5?50.3mm-->49.67 3.4mm-->2.95	2009.6.29

NOTES:
1.GENERAL TOLERANCE:
②B/L CONNECTOR: JST BHSR-02VS-1
③TTL CONNECTOR:ELCO 6210-30P

66,12
56.45
△ (4,9)
14.3
29
39,15
48.3
72.5
Vcom
φ6
30
39
1
ground tape

100±5
COLOR:BLACK
COLOR:RED
CN1
1 2
(30,11)

				REV.	
			△	DESCRIPTION	DATE
				INITIAL RELEASE	2009.2.13
				change dimention? 5.55mm->4.9mm	2009.6.29

MATERIAL
HEAT & SURFACE TREATMENT
SCALE 1/1 UNIT mm PROJECTION METHOD ◈ ⊟
ORIGINAL NAME
DWG NAME PM070WU1
DWG. NO.
REV. 01 SHEET 2/2
Prime View International Co.,Ltd.

DESIGN Joseph Huang
CHECK Patrick Lin
APPROVE Patrick Lin

5. Input Terminals

5-1) TFT-LCD Panel Driving

Connector type: ELCO 6210-30P

Pin No.	Symbol	Function	Remark
1	CLK	Clock Signal for Sampling Image Digital Data	
2	Hsync	Horizontal Synchronous Signal	
3	Vsync	Vertical Synchronous Signal	
4	GND	Ground (0V)	
5	R0	Red Image Data Signal (LSB)	
6	R1	Red Image Data Signal	
7	R2	Red Image Data Signal	
8	R3	Red Image Data Signal	
9	R4	Red Image Data Signal	
10	R5	Red Image Data Signal (MSB)	
11	GND	Ground (0V)	
12	G0	Green Image Data Signal (LSB)	
13	G1	Green Image Data Signal	
14	G2	Green Image Data Signal	
15	G3	Green Image Data Signal	
16	G4	Green Image Data Signal	
17	G5	Green Image Data Signal (MSB)	
18	GND	Ground (0V)	
19	B0	Blue Image Data Signal (LSB)	
20	B1	Blue Image Data Signal	
21	B2	Blue Image Data Signal	
22	B3	Blue Image Data Signal	
23	B4	Blue Image Data Signal	
24	B5	Blue Image Data Signal (MSB)	
25	GND	Ground (0V)	
26	DENB	Compound Synchronization signal	Note5-1
27	VCC	DC +3.3V Power Supply	
28	VCC	DC +3.3V Power Supply	
29	R/L	Left / Right control for source driver	Note5-2
30	U/D	Up / Down control for gate driver	Note5-2

Note5-1: DENB input signal.
　　　If customer wanted to off the DENB mode, you must keep the DENB always High or Low.
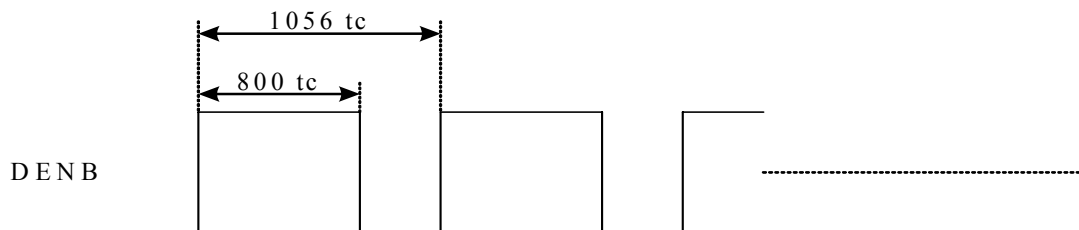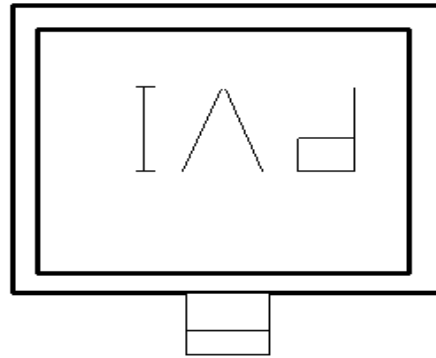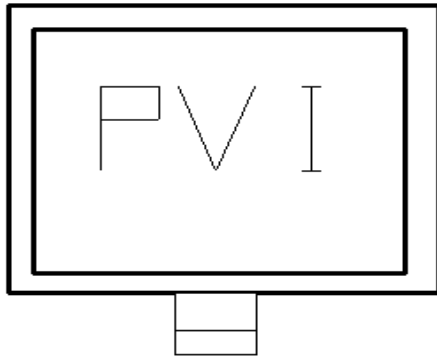

(tc: the period of sampling clock)

Note 5-2: The definitions of U/D & R/L

U/D(PIN 30)=Low R/L(PIN 29)=High   U/D(PIN 30)=High R/L(PIN 29)=Low

6. Absolute Maximum Ratings:

GND=0V, Ta=25

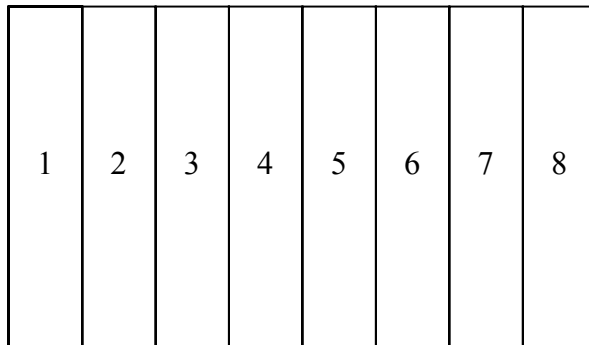| Parameters	Symbol	MIN.	MAX.	Unit	Remark
Supply Voltage	V_{CC}	-0.3	+4.0	V	
Input Signals Voltage	V_{IN}	-0.3	V_{CC} +0.3	V	
Storage Temperature	Tst	-40	+85		
Operation Temperature	Top	-30	+80		

7. Electrical Characteristics

7-1) Recommended Operating Conditions: GND = 0V，Ta = 25

Item		Symbol	Min.	Typ.	Max.	Unit	Remark
Supply Voltage		V_{CC}	3.0	3.3	3.6	V	
Current Dissipation		I_{CC}	-	110	165	mA	Note7-1
Total power consumption		Pcc	-	363	544.5	mW	Vcc=3.3V
Digital input voltage	High Level	VIN	0.7 V_{CC}	-	V_{CC}	mV	
	Low Level	VIL	-0.1	-	$0.2V_{CC}$		

Note 7-1: To test the current dissipation of VCC using the "color bars" testing pattern shown as below

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

1. White
2. Yellow
3. Cyan
4. Green
5. Magenta
6. Red
7. Blue
8. Black

I_{CC} current dissipation testing pattern

**7-2) Recommended Driving Condition for Back Light**

Ta = 25

Parameter	Symbol	Min	TYP	MAX	Unit	Remark
Supply voltage of LED backlight	$V_{LED1\sim11}$	-	-	(11)	V	Note 7-2
Supply current of LED backlight	$I_{LED1\sim11}$	-	16	-	mA	Note 7-3
Backlight Power Consumption	P_{LED}	-	-	1.94	W	Note 7-2 /Note 7-4

Note 7-2: I_{LED}= 16mA, constant current
Note 7-3: The LED driving condition is defined for each LED module. (3 LED Serial)
        Input current = 16mA * 11 = 176mA
Note 7-4: $P_{LED} = V_{LED1} * I_{LED1} + V_{LED2} * I_{LED2}.... + V_{LED10} * I_{LED10} + V_{LED11} * I_{LED11}$
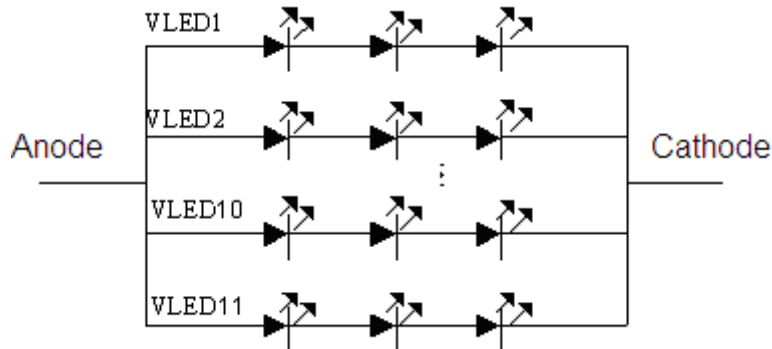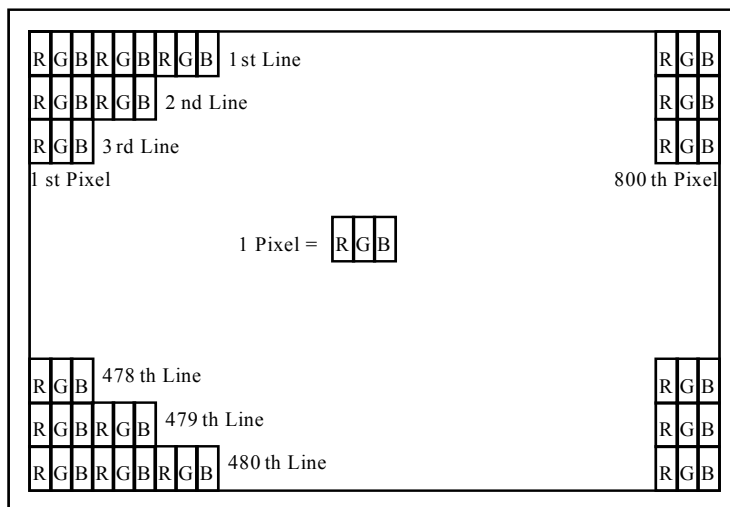

7-3) Backlight driving

Connector type: JST BHSR-02VS-1N, PIN No 2 pin

Pin No	Symbol	Description	Remark
1	+	Input terminal (Anode)	Wire color : Red
2	-	Input terminal (Cathode)	Wire Color : Black

8. Pixel Arrangement

9. Display Color and Gray Scale Reference

Color		Input Color Data																	
		Red						Green						Blue					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Red	Red (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (01)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red (02)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker ↓ Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Red (61)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red (62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Green	Green (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (01)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green (02)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Darker ↓ Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Green (61)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green (62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Blue	Blue (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue (01)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue (02)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Darker ↓ Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Blue (61)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue (62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

10. Block Diagram
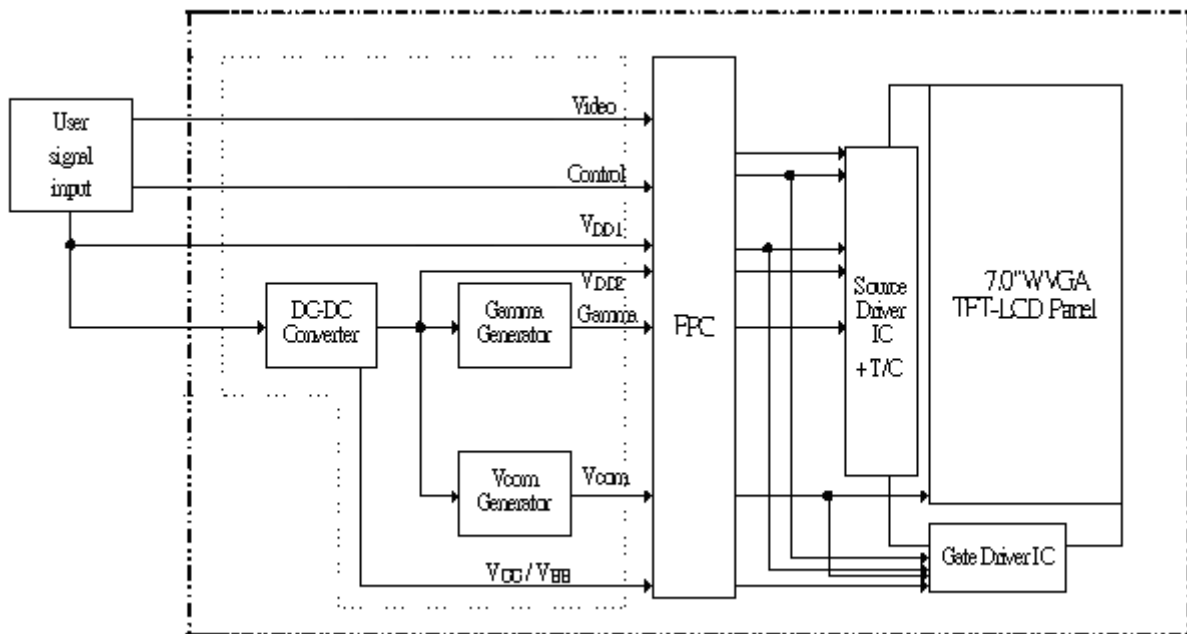
11. Interface Timing

11-1) Timing Parameters

		Symbol	Min.	Typ.	Max.	Unit	Remark
Power supply		VCC	3.0	3.3	3.6	V	
CLK	Frequency	1/tc	-	32	-	MHz	
		tc	-	31.25	-	ns	
HSYNC	Period	Hp	-	33	-	us	
			-	1056	-	tc	
	Display period	Hdp	-	800	-	tc	
	Pulse width	Hpw	-	128	-	tc	
	Back-porch	Hbp	-	88	-	tc	
	Front-porch	Hfp	-	40	-	tc	
	Hpw+Hbp		-	216	-	tc	
	Hsync-CLK	Hhc	10	-	Tc-10	ns	
	Vsync-Hsync	Hvh	0	0	200	tc	
VSYNC	Period	Vp	-	17.325	-	ms	
			-	525	-	Hp	
	Display period	Vdp	-	480	-	Hp	
	Pulse width	Vpw	-	2	-	Hp	
	Back-porch	Vbp	-	33	-	Hp	
	Front-porch	Vfp	-	10	-	Hp	
	Vpw+Vbp		-	35	-	Hp	
DENB	Horizontal scanning period	T1	860	1056	1064	tc	
	Horizontal display period	T2	-	800	-	tc	
	Vertical display period	T3	-	480	-	T1	
	Frame cycling period	T4	490	525	590	T1	
R,G,B	CLK-DATA	Dcd	10	-	-	ns	
	DATA-CLK	Ddc	8	-	-	ns	

PRIME VIEW

11-2) The Timing Diagram

A. The timing chart for DENB mode

a) CLK data, relationship

tc

R05-R00
G05-G00
B05-B00

Blanking data

DENB

b) DENB Timing

T3

DENB

T2

T1

T4
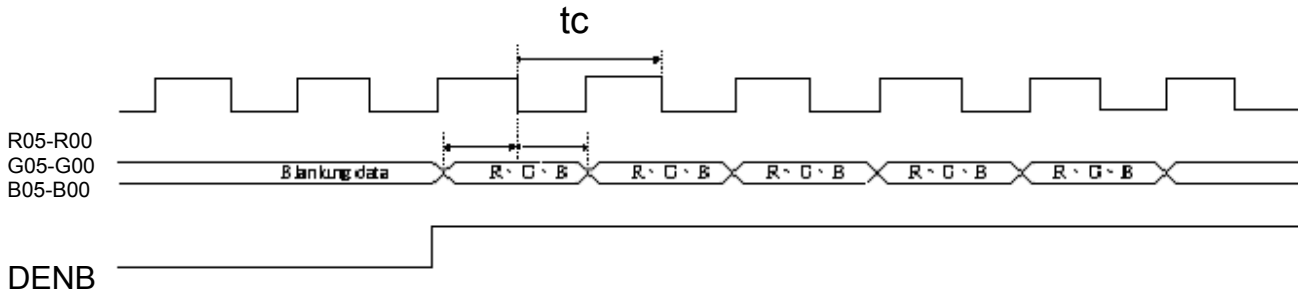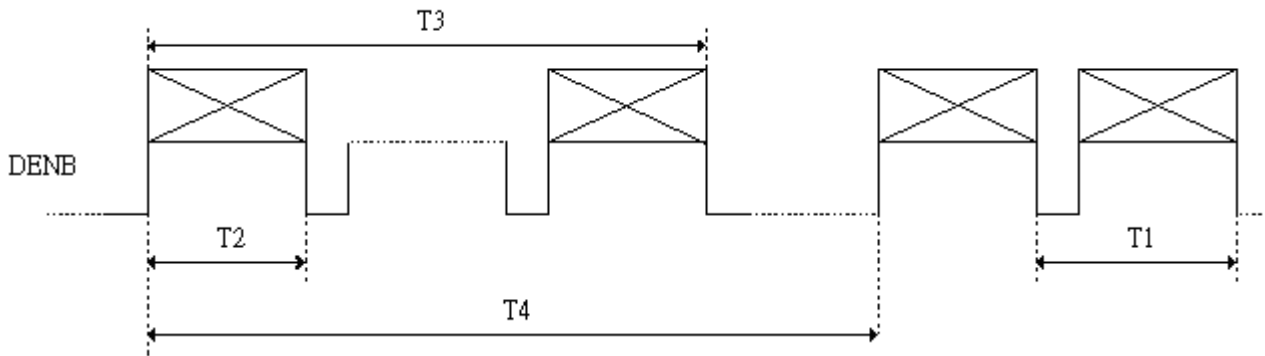
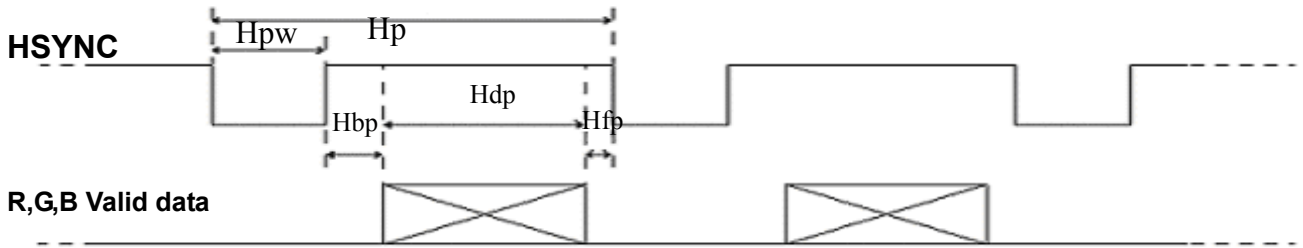B. The timing chart for sync mode

a) CLK Hsync relation ship

CLK

Hhc

HSYNC

PRIME VIEW

b) Hsync timing

HSYNC

Hpw Hp

Hbp Hdp Hfp

R,G,B Valid data

c) Hsync,Vsync relation ship

HSYNC

Hvh

VSYNC

d) Vsync Timing

Vp

Vpw

VSYNC

Vbp Vdp Vfp

Valid line
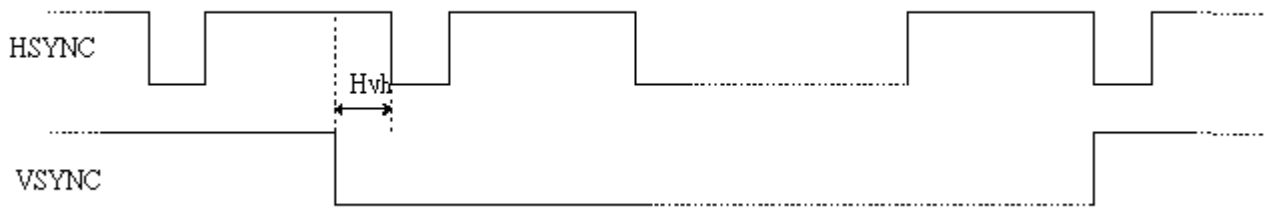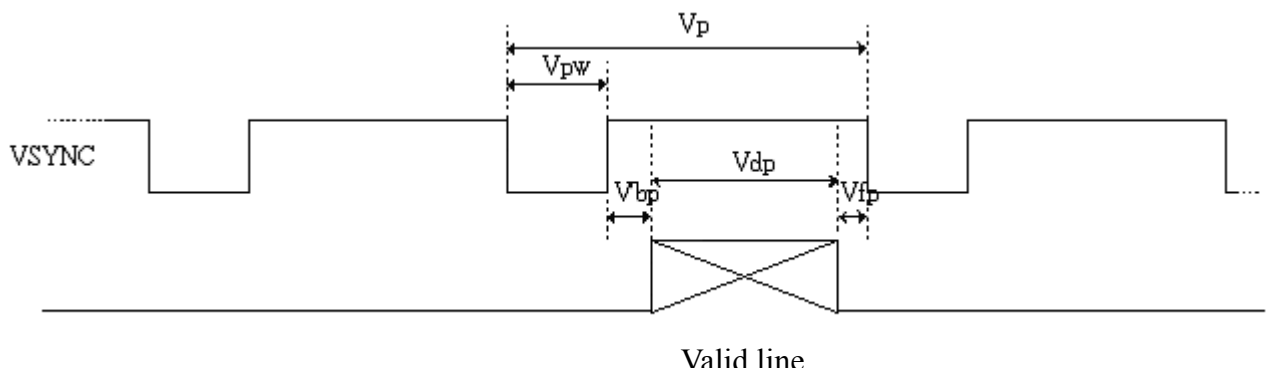
12. Power on Sequence
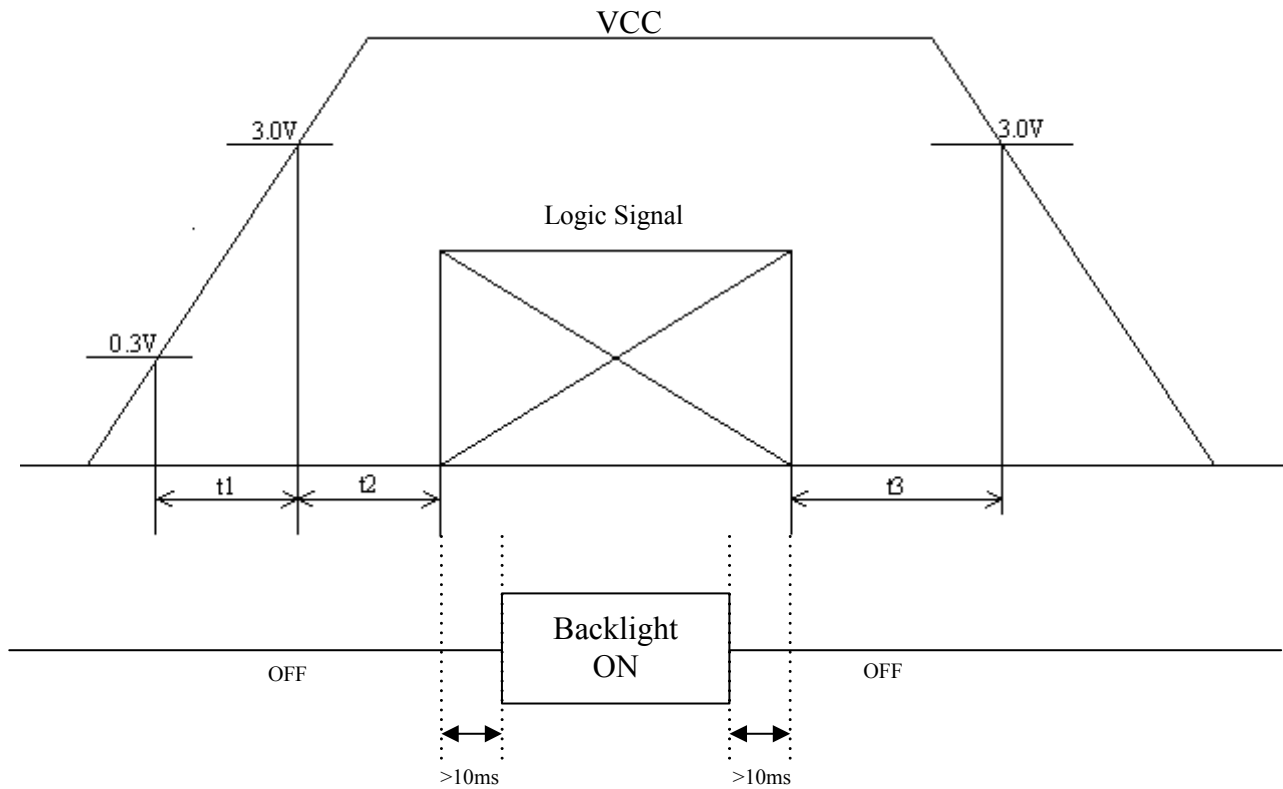
1. 0＜t1　20ms
2. 0＜t2　50ms
3. 0＜t3　1s

13. Optical Characteristics

13-1) Specification:

Ta=25

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	θ22.21	CR　10	±75	±80	-	deg	Note 13-1
	Vertical	θ12		55	60	-	deg	
		θ11		65	70	-	deg	
Contrast Ratio		CR	θ=0°	600	800	-	-	Note 13-2
Response time	Rise	Tr	θ=0°	-	5	10	ms	Note 13-3
	Fall	Tf		-	15	20	ms	
Brightness		L	θ=0°/φ=0	350	400	-	cd/㎡	
LED Life Time			+25℃	20000	30000	-	hrs	Note 13-4
Luminance Uniformity		U	-	70	75	-	%	Note 13-5
White Chromaticity		x	-	0.27	0.31	0.35	-	
		y	-	0.30	0.34	0.38	-	
Cross Talk		CTK	θ=0°	-	-	3.5	%	Note 13-6

Note 13-1: The definitions of viewing angles are as follow.
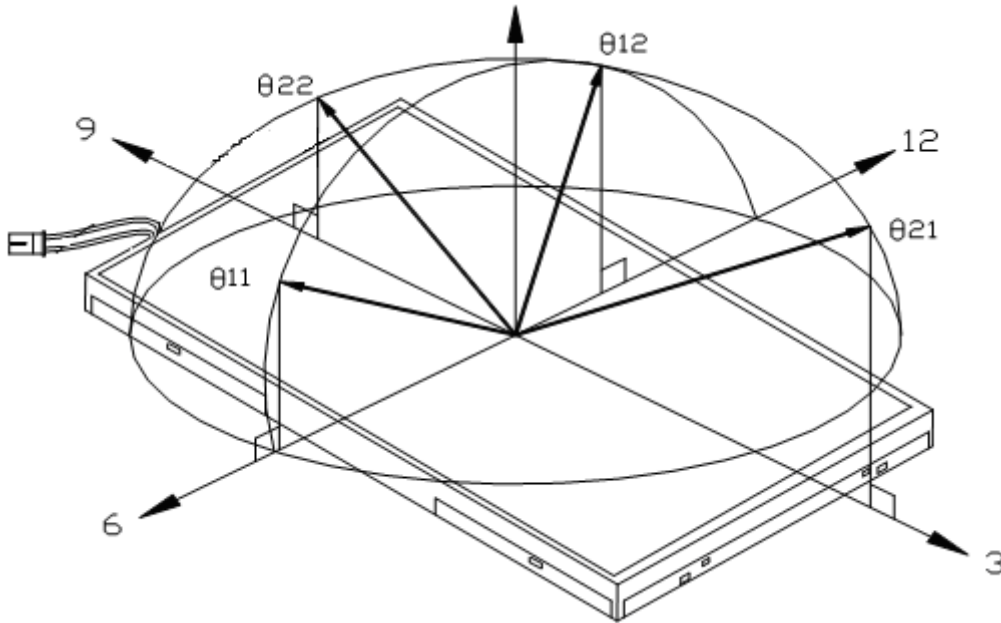
Note 13-2: The definition of contrast ratio $CR = \dfrac{\text{Luminance when Testing point is White}}{\text{Luminance when Testing point is Black}}$

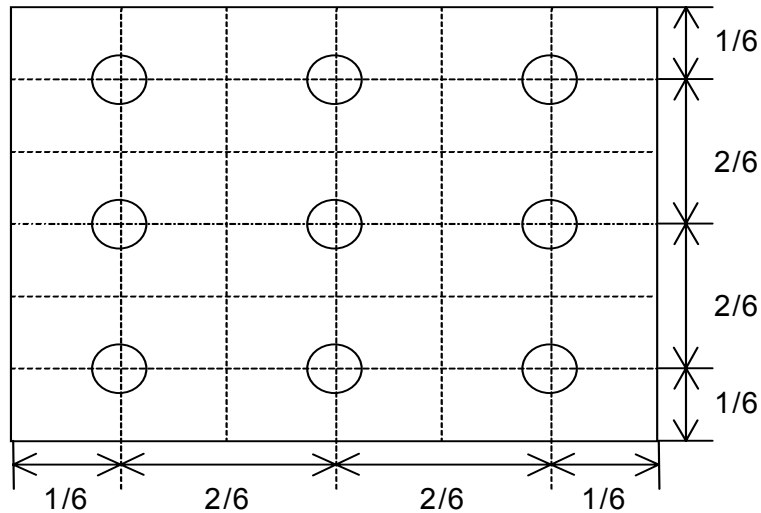Note 13-3: Definition of Response Time T_r and T_f:
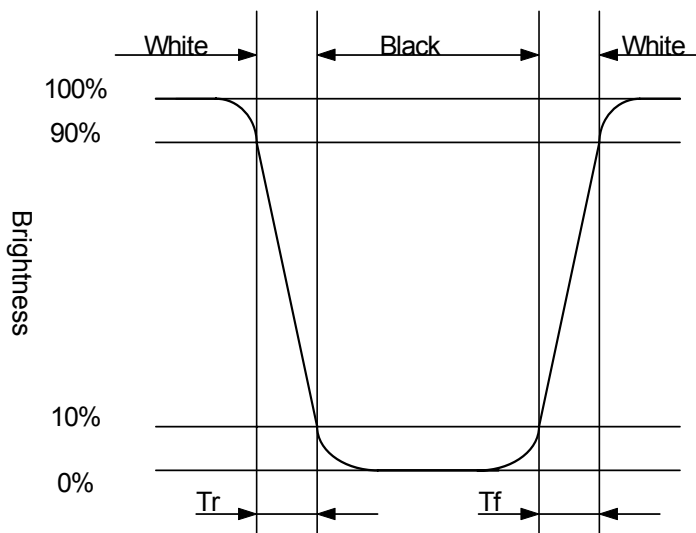
Note 13-4: The "LED Life time " is defined as the module brightness decrease to 50% original
Brightness that the ambient temperature is 25   and I_{LED} =176mA
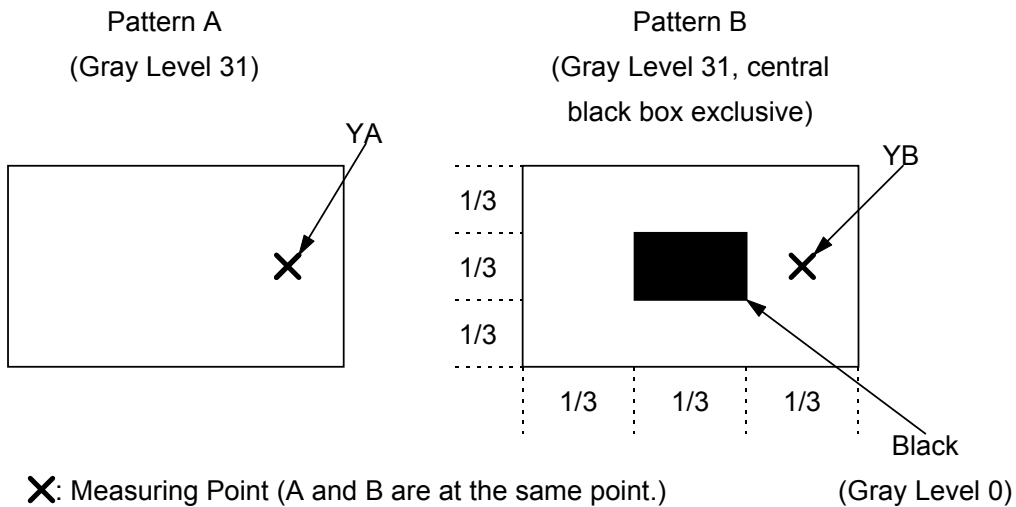
Note 13-5: The uniformity of LCD is defined as

$$U = \frac{\text{The Minimum Brightness of the 9 testing Points}}{\text{The Maximum Brightness of the 9 testing Points}}$$

Luminance meter: BM-5A or BM-7 fast (TOPCON)
Measurement distance: 500 mm +/- 50 mm
Ambient illumination: < 1 Lux
Measuring direction: Perpendicular to the surface of module
The test pattern is white (Gray Level 63).

```
            ┌─────────────────────────────┐  ↑
            │    ○       ○       ○         │  1/6
            │                             │  ─
            │                             │  2/6
            │    ○       ○       ○         │  ─
            │                             │  2/6
            │    ○       ○       ○         │  ─
            └─────────────────────────────┘  1/6
              1/6    2/6      2/6    1/6
```

Note 13-6: Cross Talk (CTK) = $\dfrac{|YA-YB|}{YA} \times 100\%$

YA: Brightness of Pattern A
YB: Brightness of Pattern B
Luminance meter: BM 5A or BM-7 fast (TOPCON)
Measurement distance: 500 mm +/- 50 mm
Ambient illumination: < 1 Lux
Measuring direction: Perpendicular to the surface of module

Pattern A
(Gray Level 31)

Pattern B
(Gray Level 31, central
black box exclusive)

✕: Measuring Point (A and B are at the same point.)

Black
(Gray Level 0)

14. Handling Cautions

14-1) Mounting of module
  a) Please power off the module when you connect the input/output connector.
  b) Polarizer which is made of soft material and susceptible to flaw must be handled carefully.
  c) Protective film (Laminator) is applied on surface to protect it against scratches and dirt.
  d) Please following the tear off direction as figure14-1 to remove the protective film as slowly as possible, so that electrostatic charge can be minimized.

14-2) Precautions in mounting
  a) When metal part of the TFT-LCD module (shielding lid and rear case) is soiled, wipe it with soft dry cloth.
  b) Wipe off water drops or finger grease immediately. Long contact with water may cause discoloration or spots.
  c) TFT-LCD module uses glass which breaks or cracks easily if dropped or bumped on hard surface. Please handle with care.
  d) Since CMOS LSI is used in the module. So take care of static electricity and earth yourself when handling.

14-3) Adjusting module
  a) Adjusting volumes on the rear face of the module have been set optimally before shipment.
  b) Therefore, do not change any adjusted values. If adjusted values are changed, the specifications described may not be satisfied.

14-4) Others
  a) Do not expose the module to direct sunlight or intensive ultraviolet rays for many hours.
  b) Store the module at a room temperature place.
  c) The voltage of beginning electric discharge may over the normal voltage because of leakage current from approach conductor by to draw lump read lead line around.
  d) If LCD panel breaks, it is possibly that the liquid crystal escapes from the panel.
     Avoid putting it into eyes or mouth. When liquid crystal sticks on hands, clothes or feet. Wash it out immediately with soap.
  e) Observe all other precautionary requirements in handling general electronic components.
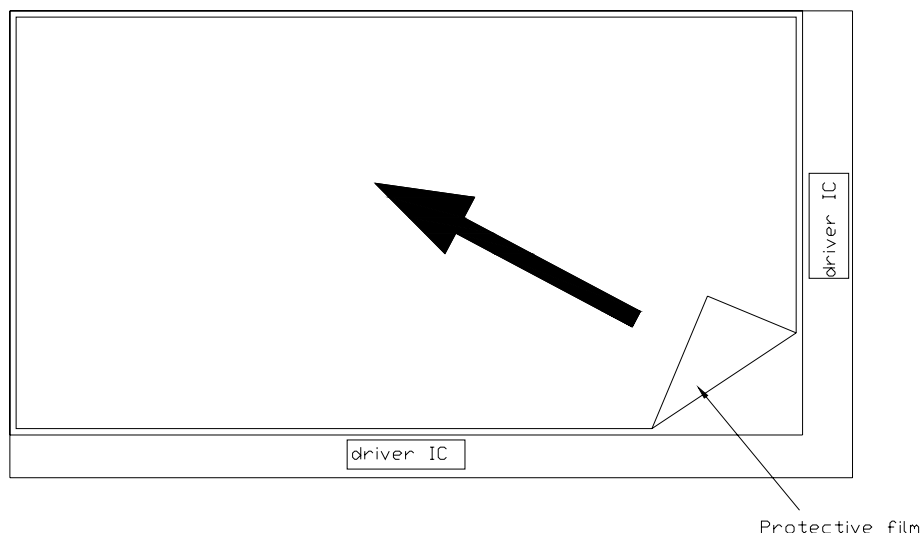 f) Please adjust the voltage of common electrode as material of attachment by 1 module.

Figure 14-1 the way to peel off protective film

15. Reliability Test

No	Test Item	Test Condition
1	High Temperature Storage Test	Ta = +85 , 240 hrs
2	Low Temperature Storage Test	Ta = -40 , 240 hrs
3	High Temperature Operation Test	Ta = +80 , 240 hrs
4	Low Temperature Operation Test	Ta = -30 , 240 hrs
5	High Temperature & High Humidity Operation Test	Ta = +60 , 90%RH, 240 hrs (No Condensation)
6	Thermal Cycling Test (non-operating)	-30 →+80 , 100 Cycles 30min 30min
7	Vibration Test (non-operating)	Frequency：10 ~ 55 H$_Z$, Amplitude：1 mm Sweep time: 11 min Test Period: 6 Cycles for each direction of X, Y, Z
8	Shock Test (non-operating)	100G, 6ms Direction: ±X, ±Y, ±Z Cycle: 3 times
9	Electrostatic Discharge Test (Operating)	C=150pF. R=330Ω. Contact=±8KV ; Air=±15KV 10times/point, 5 points/panel face

Ta: ambient temperature
Note: The protective film must be removed before temperature test.

[Criteria]
      In the standard conditions, there is not display function NG issue occurred. (Including: line defect ,no image), All the cosmetic specification is judged before the reliability stress.

16. Packing Diagram

ZONE	REV.	DOCUUMENT NO.	DESCRIPTION	DATE	REV.BY

NOTE:
1.Q'TY: 30 pcs moudule /carton.
2.Dimension: 530*295*230mm
3.Weight:　11.5 Kg

ITEM	PART NO.	DESCRIPTION	QTY	REMARK
4	50-0100111	CARTON	1	
3	50-0500071	靜電袋	30	抗靜電
2	PM070WU1		30	
1	50-0302411	瓦楞隔板緩衝材	1	上蓋+底座

MTL.SPEC.	UNSPECIFIED TOL'S	REMARK	元太科技工業股份有限公司
	ANGLE		Prime View International Co., Ltd.
	ROUGHNESS		

APPROVE	Frank shin	09.03.25	SCALE	UNIT	SHEET	DWG.TITLE
CHECK	Frank shin	09.03.25			1 OF 1	PM070WU1 Module Packing Draw
DRAWN	Joseph H	09.03.25	MTL.NO.		DWG FILE:	REV. 01　A4 SIZE