



**Winstar Display Co., LTD**

**華凌光電股份有限公司**

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## SPECIFICATION

**CUSTOMER :** \_\_\_\_\_

**MODULE NO.:** WF70PTIFGDBT0#

<p><b>APPROVED BY:</b> ( FOR CUSTOMER USE ONLY )</p>	<p><b>PCB VERSION:</b> _____ <b>DATA:</b> _____</p>
--	---

SALES BY	APPROVED BY	CHECKED BY	PREPARED BY
			葉虹蘭
<b>ISSUED DATE: 2015/03/03</b>			

TFT Display Inspection Specification: <http://www.winstar.com.tw/service.php>

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# 1.Module Classification Information

W F 70 P T I F G D B T 0 #  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬

①	Brand : WINSTAR DISPLAY CORPORATION						
②	Display Type : F→TFT Type, J→Custom TFT						
③	Display Size : 7.0" TFT						
④	Model serials no.						
⑤	Backlight Type :	F→CCFL, White S→LED, High Light White			T→LED, White		
⑥	LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction	C→Transmissive, N. T, 6:00 ; I→Transmissive, W. T, 6:00 F→Transmissive, N.T,12:00 ; L→Transmissive, W.T,12:00 Z→Transmissive, W.T, Wide Viewing Angle for O-FILM Y→Transmissive, W.T, Wide View					
⑦	A : TFT LCD B : TFT+FR+CONTROL BOARD C : TFT+FR+A/D BOARD D : TFT+FR+A/D BOARD+CONTROL BOARD E : TFT+FR+POWER BOARD F : TFT+CONTROL BOARD			G : TFT+FR H : TFT+D/V BOARD I : TFT+FR+D/V BOARD J : TFT+POWER BD			
⑧	Solution:						
	A: 128160	B:320234	C:320240	D:480234	E:480272	F: 640480	G: 800480
	H:1024600	I:320480	J:240320	K:800600	L:240400	M :1024768	P :1280800
⑨	D: Digital L : LVDS						
⑩	Interface : N : without control board A : 8Bit B : 16Bit						
⑪	TS : N : Without TS T : resistive touch panel C : capacitive touch panel						
⑫	Version						
⑬	Special Code	#:Fit in with ROHS directive regulations					

## **2.Summary**

This technical specification applies to 7.0' color TFT-LCD panel. The 7.0' color TFT-LCD panel is designed for camcorder, digital camera application and other electronic products which require high quality flat panel displays. This module follows RoHS.

### 3.General Specifications

Item	Dimension	Unit
Size	7.0	inch
Dot Matrix	800 x RGB x 480(TFT)	dots
Module dimension	165.0(W) x 100.0(H) x 13.0(D)	mm
Active area	154.08 x 85.92	mm
Dot pitch	0.0642 x 0.179	mm
LCD type	TFT, Negative, Transmissive	
View Direction	12 o'clock	
Gray Scale Inversion Direction	6 o'clock	
Backlight Type	LED,Normally White	
Controller IC	RA8875	
Interface	Digital 8080 family MPU 8bit/16bit	
With /Without TP	With RTP	
Surface	Anti-Glare	

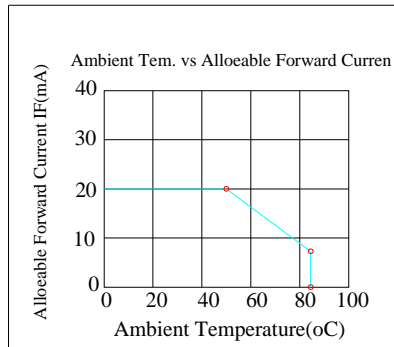
\*Color tone slight changed by temperature and driving voltage.

# 4. Absolute Maximum Ratings

Item	Symbol	Min	Typ	Max	Unit
Operating Temperature	TOP	-20	—	+70	°C
Storage Temperature	TST	-30	—	+80	°C

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

- Temp.  $\leq 60^{\circ}\text{C}$ , 90% RH MAX. Temp.  $> 60^{\circ}\text{C}$ , Absolute humidity shall be less than 90% RH at  $60^{\circ}\text{C}$



# 5. Electrical Characteristics

## 5.1. Operating conditions:

Item	Symbol	Condition	Min	Typ	Max	Unit	Remark
Supply Voltage For LCM	VDD	—	3.2	3.3	3.4	V	—
Supply Current For LCM	IDD	—	—	120	180	mA	Note1

Note 1 : This value is test for VDD=3.3V , Ta=25°C only

## 5.2 Backlight driving conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Operation Current For LED Driver	VLED=5V	400	—	600	mA	Note 1,2
Power Consumption	VLED=5V	2000	—	3000	mW	Note 1,2
Supply Voltage For LED Driver	VLED+	—	5	—	V	—
LED Life Time	—	—	50,000	—	Hr	Note 2,3,4

Note 1 : Base on VLED= 5V for the back light driver IC specification

Note 2 : Ta = 25 °C

Note 3 : Brightness to be decreased to 50% of the initial value

Note 4 : The single LED lamp case



## **6.DC CHARATERISTICS**

Parameter	Symbol	Rating			Unit	Condition
		Min	Typ	Max		
Low level input voltage	VIL	GND	-	0.2 VDD	V	
High level input voltage	VIH	0.8 VDD	-	VDD	V	

# 7.AC CHARATERISTICS

## 7.1. Parallel I/F Protocol

The following timing charts are used to describe the timing specification of the standard 8080 and 6800 interfaces.

6800 – 8/16-bit Interface

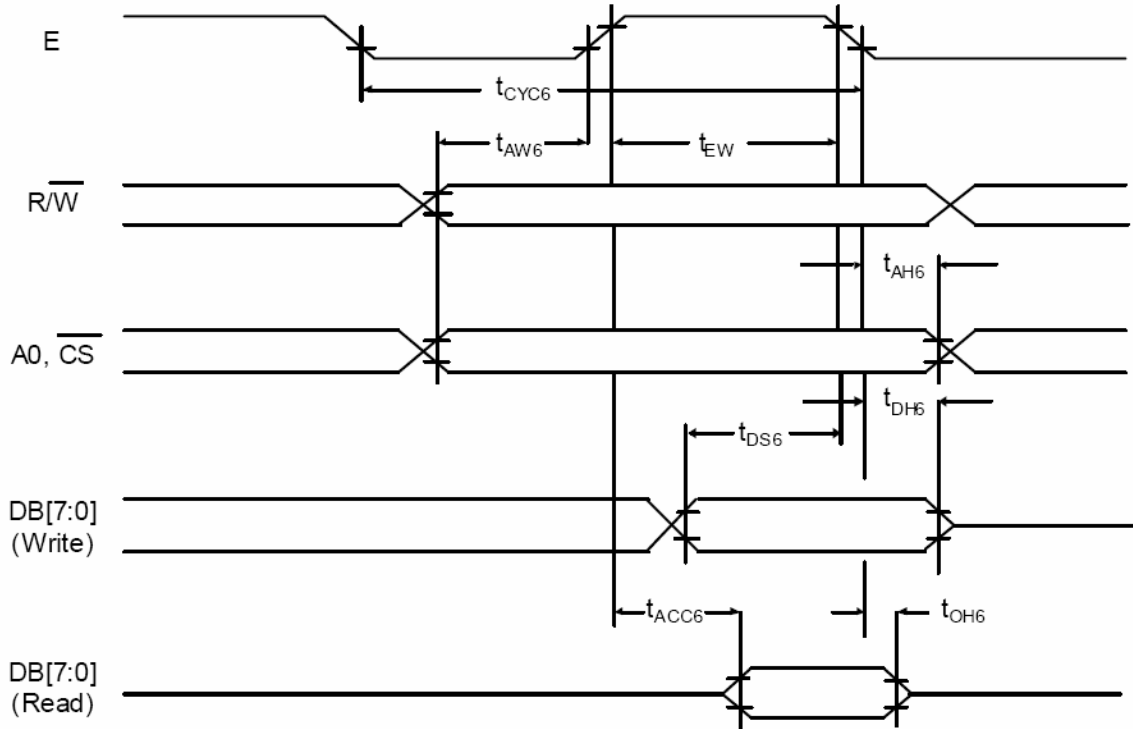


Figure 1: 6800 MCU Waveform

Table 1: 6800 MCU I/F Timing

Symbol	Parameter	Rating		Unit	Symbol
		Min.	Max		
$t_{CYC6}$	Cycle time	50	--	ns	tc is one system clock period: $tc = 1/SYS\_CLK$
$t_{EW}$	Strobe Pulse width	20	--	ns	
$t_{AW6}$	Address setup time	0	--	ns	
$t_{AH6}$	Address hold time	10	--	ns	
$t_{DS6}$	Data setup time	20	--	ns	
$t_{DH6}$	Data hold time	10	--	ns	
$t_{ACC6}$	Data output access time	0	20	ns	
$t_{OH6}$	Data output hold time	0	20	ns	

8080 – 8/16-bit Interface

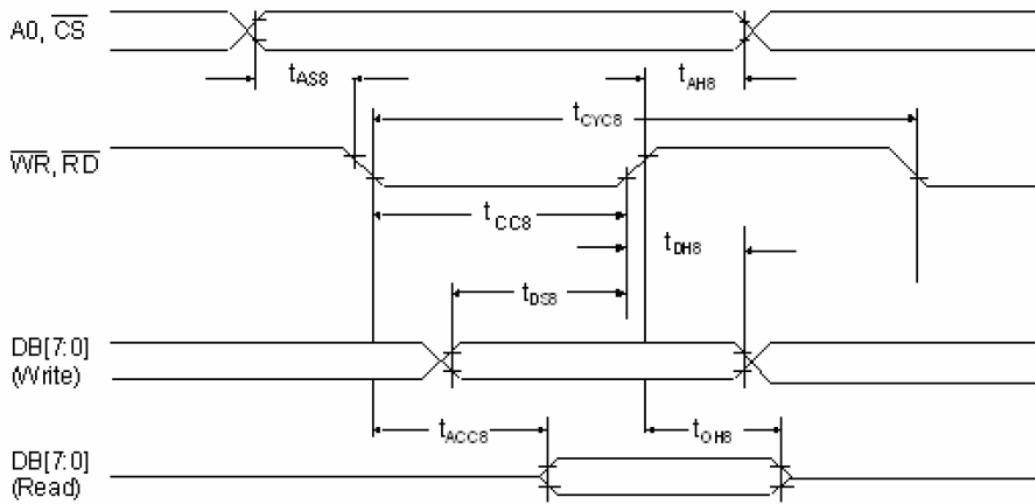


Figure 2: 8080 Waveform  
Table 2: 8080 MCU I/F Timing

Symbol	Parameter	Rating		Unit	Symbol
		Min.	Max.		
tCYC8	Cycle time	50	--	ns	tc is one system clock period: tc = 1/SYS_CLK
tCC8	Strobe Pulse width	20	--	ns	
tAS8	Address setup time	0	--	ns	
tAH8	Address hold time	10	--	ns	
tDS8	Data setup time	20	--	ns	
tDH8	Data hold time	10	--	ns	
tACC8	Data output access time	0	20	ns	
tOH8	Data output hold time	0	20	ns	

The data bus width of RA8875 can be selected to 8-bit/16-bit by setting the Bit [1:0] of SYSR. When Bit [1:0] of SYSR is cleared to “00”, then the data bus is 8-bit. If Bit [1:0] of SYSR is set to “11”, then the data transition is set as 16-bit. No matter what type of MCU I/F is selected (6800/8080), both of them can be changed the bus width when need. But if the 8-bit is used, it needs double transmission time than 16-bit bus and all of the registers must be accessed by 8-bit data. The continuous data write speed determines the display update speed. The cycle-to-cycle interval must be larger than 4 times of system clock period. Over the specification may cause the data lose or function fail. Please refer to Figure 6-5 and Figure 6-6 for waveform detail.

In order to reduce the transmission interference between MCU interface and RA8875, It is suggested that a small capacitor to the GND should be added at the signal of CS#, RD#, and WR#. If using cable to connect MCU and RA8875, please keep the cable length less than 20cm. Otherwise it's suggested to add 1~10Kohm pull-up resistors on pins CS#, RD#, WR# and RS.

MPU6800 Data Write Speed Limit

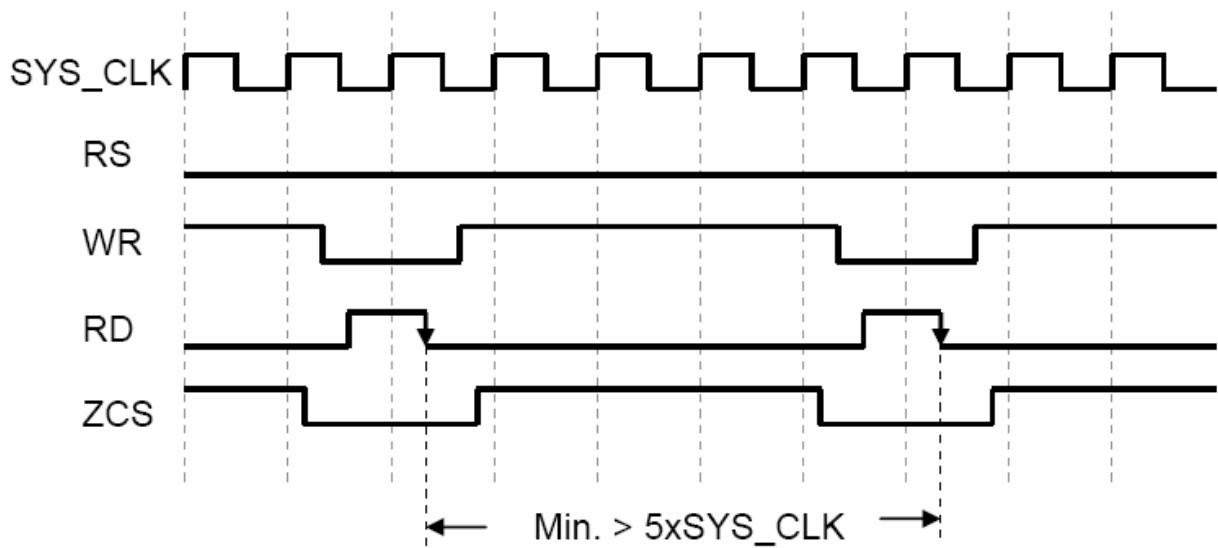


Figure 3: 6800 I/F Continuous Data Write Cycle Waveform

MPU8080 Data Write Speed Limit

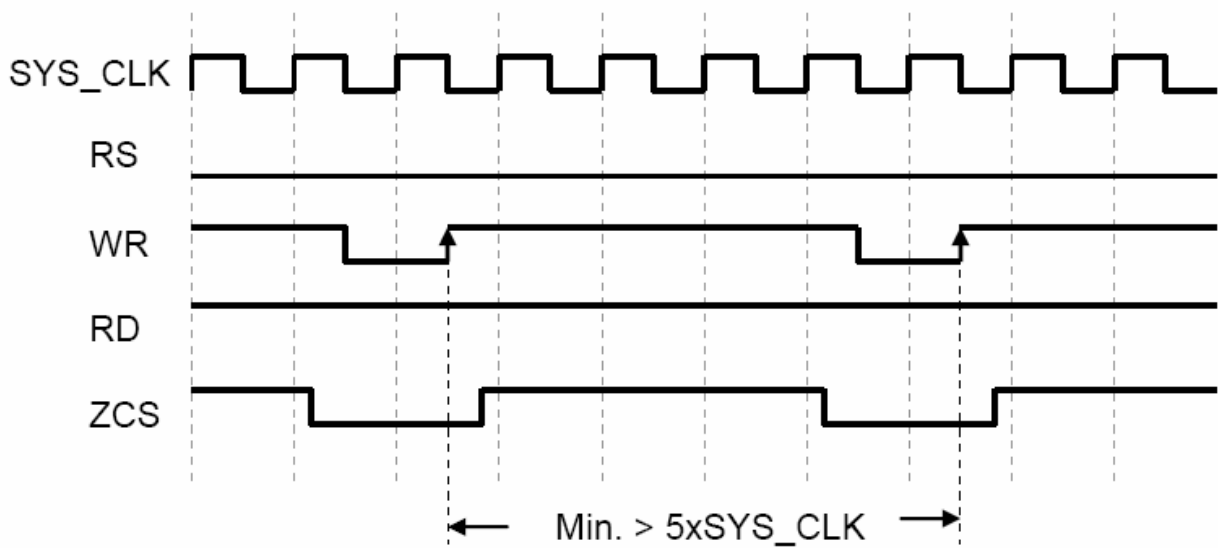


Figure4: 8080 I/F Continuous Data Write Cycle Waveform

### 7.2. Data transfer order Setting

MCU Data Bus 8-Bit

The following illustration is used for 16-bit MCU.

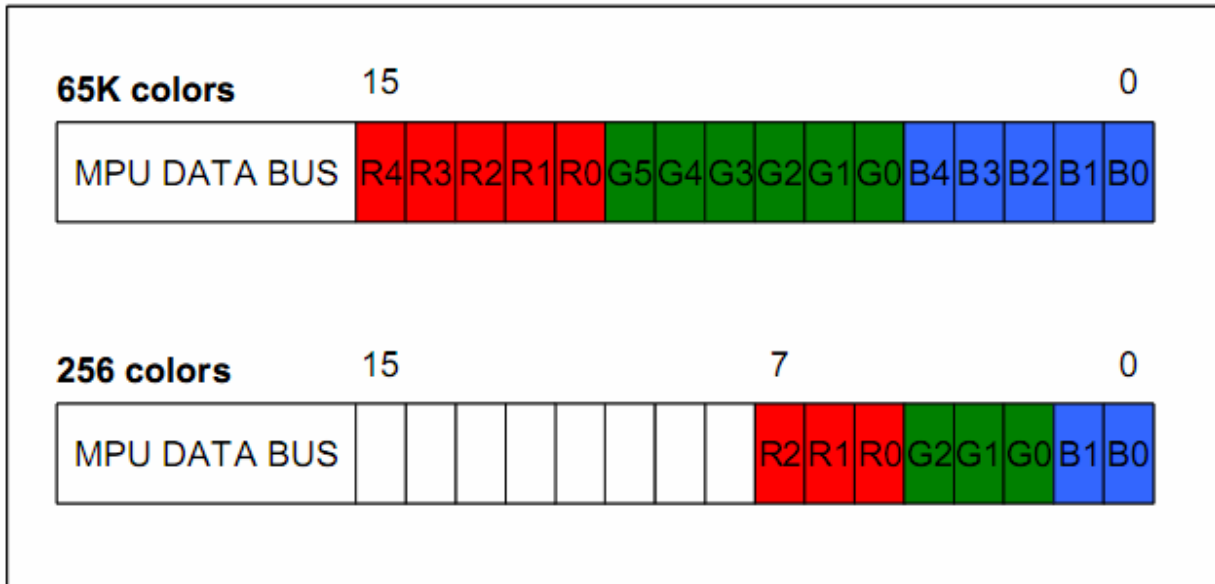


Figure 5: Color illustrations for 16-Bit Data Bus MCU

### 7.3. Register Depiction

Please consult the spec of RA8875

# 8. Optical Characteristics

Item	Symbol	Condition.	Min	Typ.	Max.	Unit	Remark	
Response time	Tr	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$	-	10	20	.ms	Note 3	
	Tf		-	15	30	.ms		
Contrast ratio	CR	At optimized viewing angle	400	500	-	-	Note 4	
Color Chromaticity	White	$\theta = 0^\circ$ 、 $\Phi = 0^\circ$	Wx	0.26	0.31	0.36		Note 2,5,6
			Wy	0.28	0.33	0.38		
Viewing angle (Gray Scale Inversion Direction)	Hor.	CR $\geq 10$	$\Theta_R$	60	70	-	Deg.	Note 1
			$\Theta_L$	60	70	-		
	Ver.		$\Phi_T$	40	50	-		
			$\Phi_B$	60	70	-		
Brightness	-	-	240	320	-	cd/m <sup>2</sup>	Center of display	

Ta=25±2°C, VLED / ILED= 5V / 400mA

Note 1: Definition of viewing angle range

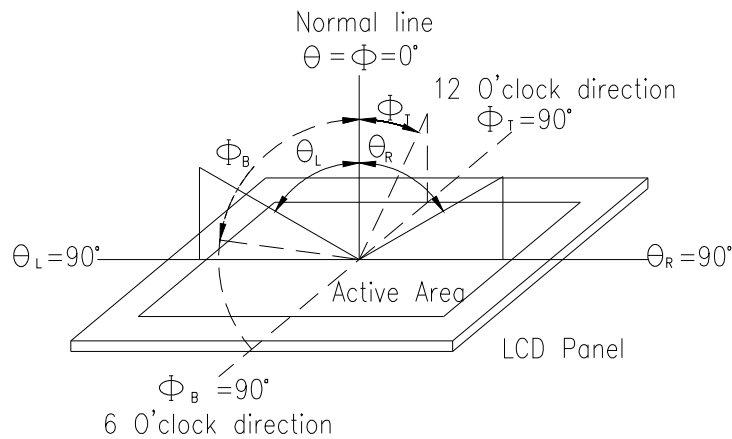


Fig. 8.1. Definition of viewing angle

Note 2: Test equipment setup:

After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

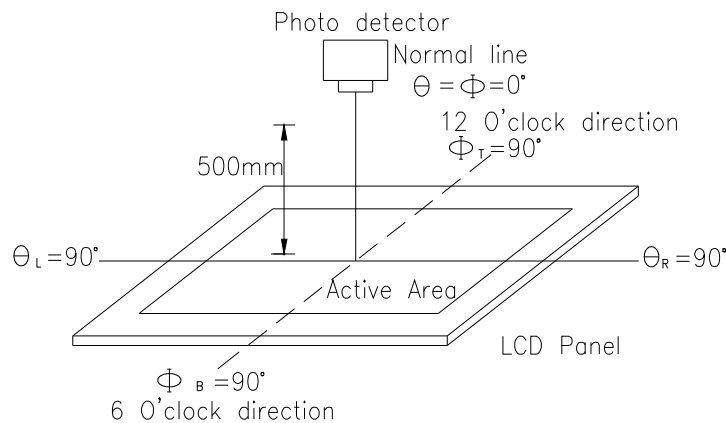
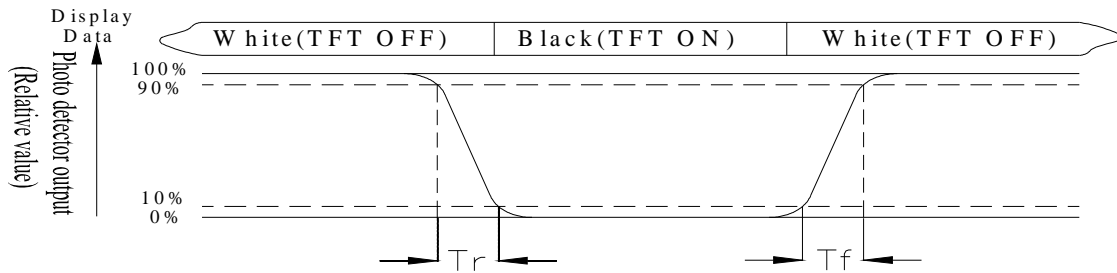


Fig. 8.2. Optical measurement system setup

Note 3: Definition of Response time:

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



Note 4: Definition of contrast ratio:

The contrast ratio is defined as the following expression.

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

Note 5: White  $V_i = V_{i50} \pm 1.5V$

Black  $V_i = V_{i50} \pm 2.0V$

“±” means that the analog input signal swings in phase with VCOM signal.

“±” means that the analog input signal swings out of phase with VCOM signal.

The 100% transmission is defined as the transmission of LCD panel when all the input terminals of module are electrically opened.

Note 6: Definition of color chromaticity (CIE 1931)

Color coordinates measured at the center point of LCD

Note 7: Measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

# 9.Interface

## 9.1. LCM PIN Definition

Pin	Symbol	Function	Remark
1	GND	System ground pin of the IC . Connect to system ground.	
2	VDD	Power Supply : +3.3V	
3	BLE	Backlight control signal , H: On \ L: Off	
4	RS	Data/Command select	
5	WR	Write strobe signal	
6	RD	Read strobe signal	
7	DB0	Data bus	
8	DB1	Data bus	
9	DB2	Data bus	
10	DB3	Data bus	
11	DB4	Data bus	
12	DB5	Data bus	
13	DB6	Data bus	
14	DB7	Data bus	
15	DB8	Data bus (When select 8bits Mode, this pin is NC)	Note1
16	DB9	Data bus (When select 8bits Mode, this pin is NC)	Note1
17	DB10	Data bus (When select 8bits Mode, this pin is NC)	Note1
18	DB11	Data bus (When select 8bits Mode, this pin is NC)	Note1
19	DB12	Data bus (When select 8bits Mode, this pin is NC)	Note1
20	DB13	Data bus (When select 8bits Mode, this pin is NC)	Note1
21	DB14	Data bus (When select 8bits Mode, this pin is NC)	Note1
22	DB15	Data bus (When select 8bits Mode, this pin is NC)	Note1
23	WAIT	Wait Signal Output(H:active)	
24	NC	No connect	
25	CS	Chip select	
26	RST	Hardware reset	
27	L/R	Left / right selection; Default L/R=H	Note 2,3
28	U/D	Up/down selection; ; Default U/D=L	Note 2,3
29	NC	No connect	
30	NC	No connect	
31	NC	No connect	
32	NC	No connect	
33	VLED-	Power for LED Driver IC(GND)	
34	VLED-	Power for LED Driver IC(GND)	
35	VLED+	Power for LED Driver IC(+5V)	
36	VLED+	Power for LED Driver IC(+5V)	

Note1: When select 8bit mode, DB0~DB7 be used, DB8~DB15 no connect  
When select 16bit mode, DB0~DB15 be used



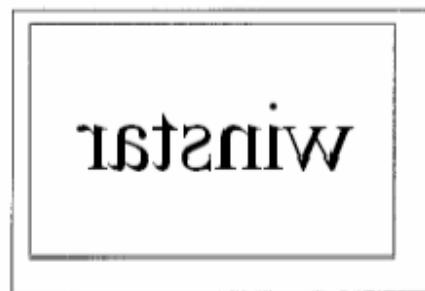
Note 2: Selection of scanning mode

Setting of scan control input		Scanning direction
U/D	L/R	
GND	VDD	Up to down, left to right
VDD	GND	Down to up, right to left
GND	GND	Up to down, right to left
VDD	VDD	Down to up, left to right

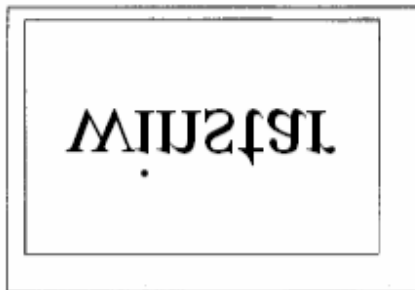
Note 3: Definition of scanning direction. Refer to the figure as below:



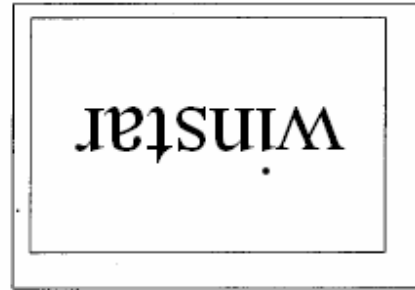
U/D=L, L/R=H



U/D=L, L/R=L

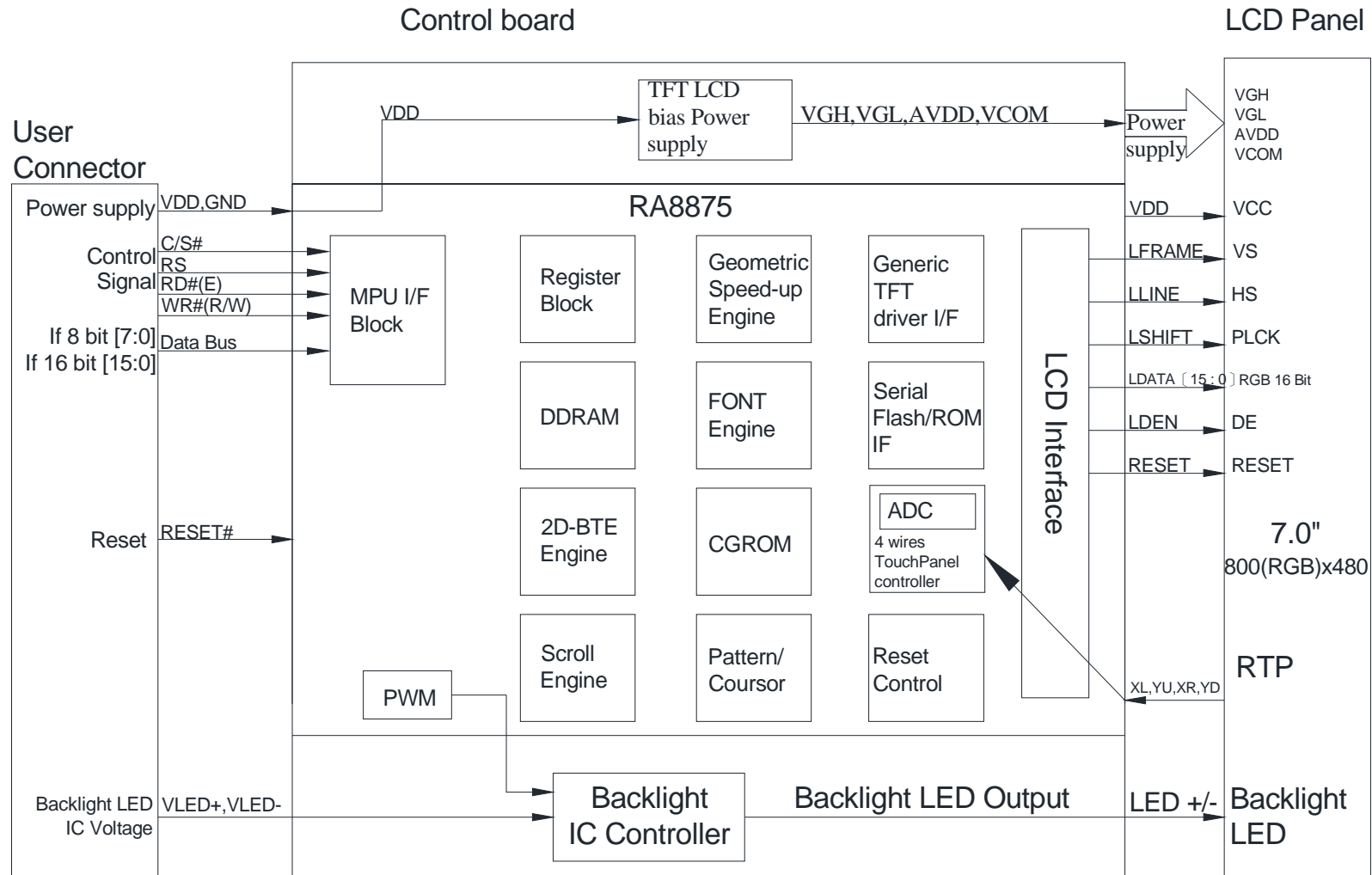


U/D=H, L/R=H



U/D=H, L/R=L

# 10. Block Diagram



# 11. Reliability

Content of Reliability Test (Wide temperature, -20°C~70°C)

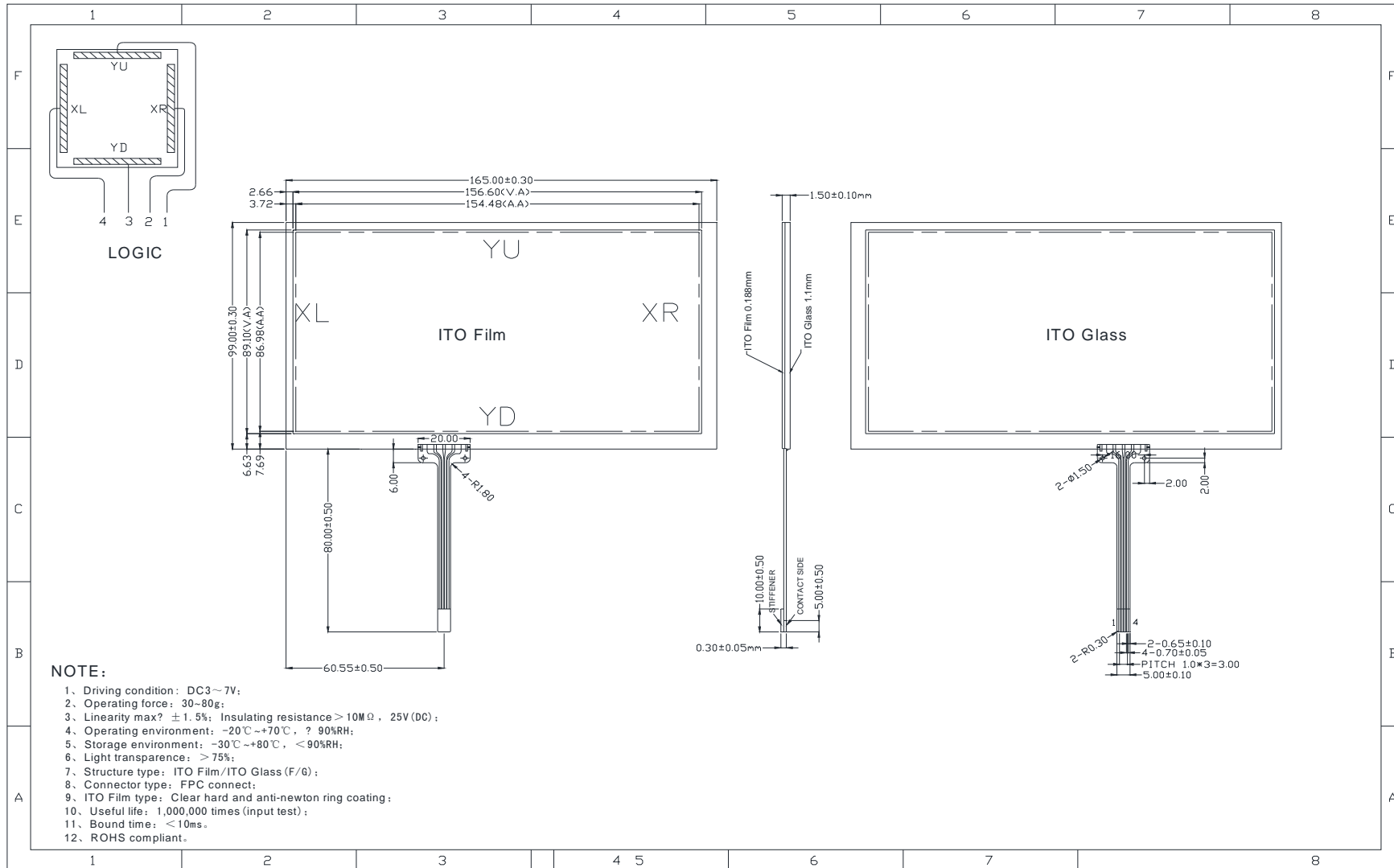
Environmental Test			
Test Item	Content of Test	Test Condition	Note
High Temperature storage	Endurance test applying the high storage temperature for a long time.	80°C 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (Voltage & Current) and the thermal stress to the element for a long time.	70°C 200hrs	—
Low Temperature Operation	Endurance test applying the electric stress under low temperature for a long time.	-20°C 200hrs	1
High Temperature/ Humidity Operation	The module should be allowed to stand at 60 °C,90%RH max For 96hrs under no-load condition excluding the polarizer, Then taking it out and drying it at normal temperature.	60°C,90%RH 96hrs	1,2
Thermal shock resistance	The sample should be allowed stand the following 10 cycles of operation  <div style="text-align: center;"> <p style="margin: 0;">-20°C    25°C    70°C</p> <p style="margin: 0;"> <span style="display: inline-block; border-bottom: 1px solid black; width: 150px; text-align: center;">←</span> <span style="display: inline-block; border-bottom: 1px solid black; width: 50px; text-align: center;">→</span> <span style="display: inline-block; border-bottom: 1px solid black; width: 100px; text-align: center;">→</span> </p> <p style="margin: 0; text-align: center;">30min    5min    30min</p> <p style="margin: 0; text-align: center;">1 cycle</p> </div>	-20°C/70°C 10 cycles	—
Vibration test	Endurance test applying the vibration during transportation and using.	Total fixed amplitude : 15mm Vibration Frequency : 10~55Hz One cycle 60 seconds to 3 directions of X,Y,Z for Each 15 minutes	3
Static electricity test	Endurance test applying the electric stress to the terminal.	VS=800V, RS=1.5kΩ CS=100pF 1 time	—

Note1: No dew condensation to be observed.

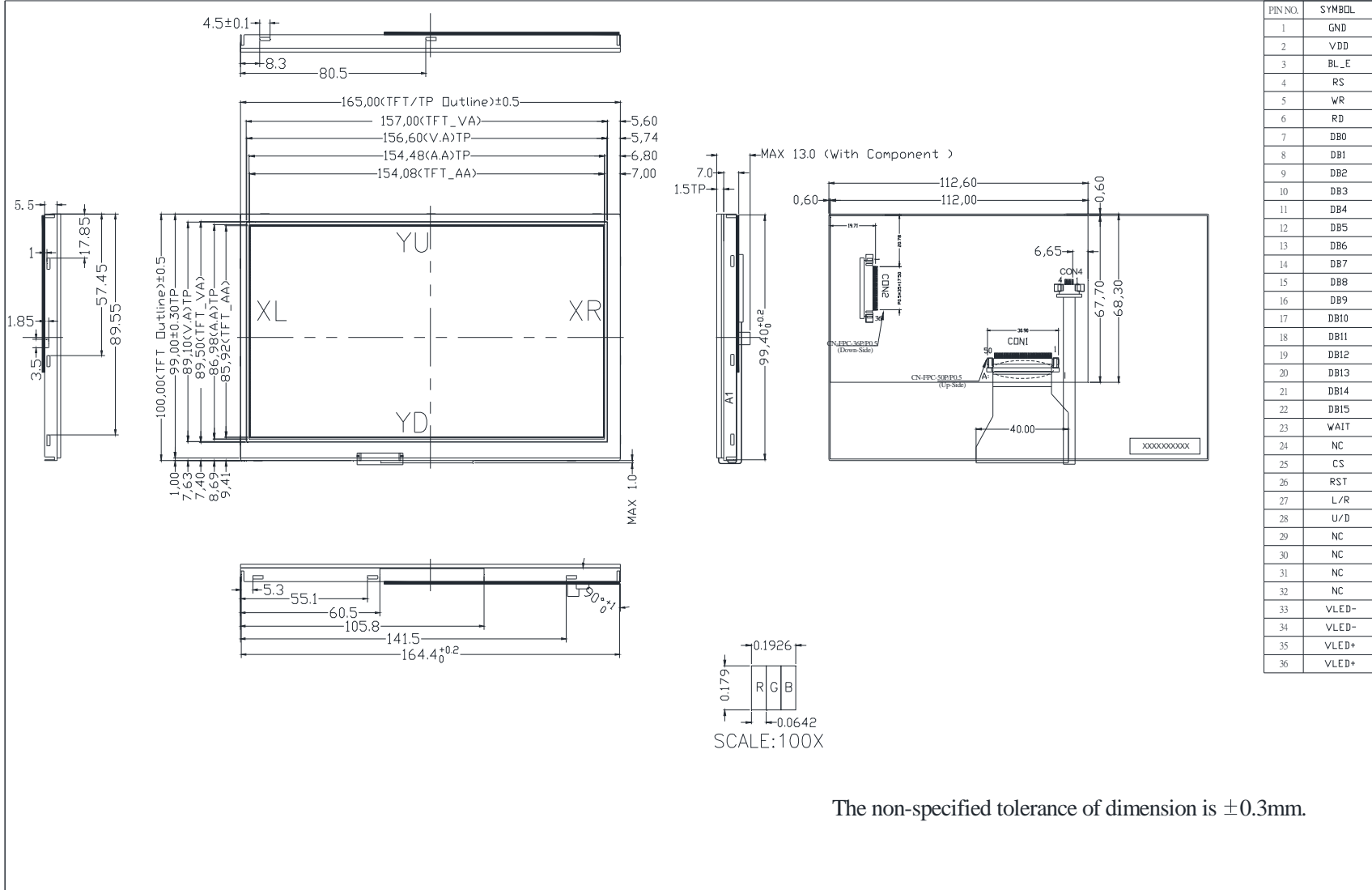
Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

Note3: The packing have to including into the vibration testing.

# 12.Touch Panel Information



# 13. Contour Drawing



The non-specified tolerance of dimension is ±0.3mm.

# 14.Initial Code For Reference

```
void Initial_RA8875()
{
    RES = 1;
    Delay1ms (10);
    RES = 0;      //Active low
    Delay1ms (50);
    RES = 1;
    Delay1ms (100);

    LCD_CmdWrite(0x88);
    LCD_DataWrite(0x0b);
    LCD_DataRead();
    Delay1ms(1);
    LCD_CmdWrite(0x89);
    LCD_DataWrite(0x02);
    LCD_DataRead();
    Delay1ms(1);

    LCD_CmdWrite(0x10);
    LCD_DataWrite(0x0F);

    LCD_CmdWrite(0x04); LCD_DataWrite(0x81);
    Delay1ms(1);

    LCD_CmdWrite(0x14);
    LCD_DataWrite(0x63);
    LCD_CmdWrite(0x15);
    LCD_DataWrite(0x03);
    LCD_CmdWrite(0x16);
    LCD_DataWrite(0x03);
    LCD_CmdWrite(0x17);
    LCD_DataWrite(0x02);
    LCD_CmdWrite(0x18);
    LCD_DataWrite(0x00);

    LCD_CmdWrite(0x19);
    LCD_DataWrite(0xdf);
    LCD_CmdWrite(0x1a);
    LCD_DataWrite(0x01);
    LCD_CmdWrite(0x1b);
    LCD_DataWrite(0x14);
    LCD_CmdWrite(0x1c);
    LCD_DataWrite(0x00);
    LCD_CmdWrite(0x1d);
    LCD_DataWrite(0x06);
    LCD_CmdWrite(0x1e);
    LCD_DataWrite(0x00);
    LCD_CmdWrite(0x1f);
```

LCD\_DataWrite(0x01);

LCD\_CmdWrite(0x30);  
LCD\_DataWrite(0x00);  
LCD\_CmdWrite(0x31);  
LCD\_DataWrite(0x00);  
LCD\_CmdWrite(0x34);  
LCD\_DataWrite(0x1F);  
LCD\_CmdWrite(0x35);  
LCD\_DataWrite(0x03);

LCD\_CmdWrite(0x32);  
LCD\_DataWrite(0x00);  
LCD\_CmdWrite(0x33);  
LCD\_DataWrite(0x00);  
LCD\_CmdWrite(0x36);  
LCD\_DataWrite(0xdf);  
LCD\_CmdWrite(0x37);  
LCD\_DataWrite(0x01);

}



winstar **LCM Sample Estimate Feedback Sheet**

Module Number : \_\_\_\_\_

Page: 1

**1、Panel Specification :**

- 1. Panel Type :  Pass  NG , \_\_\_\_\_
- 2. View Direction :  Pass  NG , \_\_\_\_\_
- 3. Numbers of Dots :  Pass  NG , \_\_\_\_\_
- 4. View Area :  Pass  NG , \_\_\_\_\_
- 5. Active Area :  Pass  NG , \_\_\_\_\_
- 6. Operating Temperature :  Pass  NG , \_\_\_\_\_
- 7. Storage Temperature :  Pass  NG , \_\_\_\_\_
- 8. Others : \_\_\_\_\_

**2、Mechanical Specification :**

- 1. PCB Size :  Pass  NG , \_\_\_\_\_
- 2. Frame Size :  Pass  NG , \_\_\_\_\_
- 3. Material of Frame :  Pass  NG , \_\_\_\_\_
- 4. Connector Position :  Pass  NG , \_\_\_\_\_
- 5. Fix Hole Position :  Pass  NG , \_\_\_\_\_
- 6. Backlight Position :  Pass  NG , \_\_\_\_\_
- 7. Thickness of PCB :  Pass  NG , \_\_\_\_\_
- 8. Height of Frame to PCB :  Pass  NG , \_\_\_\_\_
- 9. Height of Module :  Pass  NG , \_\_\_\_\_
- 10. Others :  Pass  NG , \_\_\_\_\_

**3、Relative Hole Size :**

- 1. Pitch of Connector :  Pass  NG , \_\_\_\_\_
- 2. Hole size of Connector :  Pass  NG , \_\_\_\_\_
- 3. Mounting Hole size :  Pass  NG , \_\_\_\_\_
- 4. Mounting Hole Type :  Pass  NG , \_\_\_\_\_
- 5. Others :  Pass  NG , \_\_\_\_\_

**4、Backlight Specification :**

- 1. B/L Type :  Pass  NG , \_\_\_\_\_
- 2. B/L Color :  Pass  NG , \_\_\_\_\_
- 3. B/L Driving Voltage (Reference for LED Type) :  Pass  NG , \_\_\_\_\_
- 4. B/L Driving Current :  Pass  NG , \_\_\_\_\_
- 5. Brightness of B/L :  Pass  NG , \_\_\_\_\_
- 6. B/L Solder Method :  Pass  NG , \_\_\_\_\_
- 7. Others :  Pass  NG , \_\_\_\_\_

>> **Go to page 2** <<





**Winstar**

**Module Number :** \_\_\_\_\_

**Page: 2**

**5、Electronic Characteristics of Module :**

- |                              |                               |                                     |
|------------------------------|-------------------------------|-------------------------------------|
| 1. Input Voltage :           | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Supply Current :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Driving Voltage for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Contrast for LCD :        | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. B/L Driving Method :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Negative Voltage Output : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Interface Function :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. LCD Uniformity :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. ESD test :                | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others :                 | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**6、Summary :**

**Sales signature :** \_\_\_\_\_

**Customer Signature :** \_\_\_\_\_

**Date :**     /     /     \_\_\_\_\_



**1、Panel Specification :**

- 1. Panel Type :  Pass  NG , \_\_\_\_\_
- 2. View Direction :  Pass  NG , \_\_\_\_\_
- 3. Numbers of Dots :  Pass  NG , \_\_\_\_\_
- 4. View Area :  Pass  NG , \_\_\_\_\_
- 5. Active Area :  Pass  NG , \_\_\_\_\_
- 6. Operating Temperature :  Pass  NG , \_\_\_\_\_
- 7. Storage Temperature :  Pass  NG , \_\_\_\_\_
- 8. Others : \_\_\_\_\_

**2、Mechanical Specification :**

- 1. PCB Size :  Pass  NG , \_\_\_\_\_
- 2. Frame Size :  Pass  NG , \_\_\_\_\_
- 3. Material of Frame :  Pass  NG , \_\_\_\_\_
- 4. Connector Position :  Pass  NG , \_\_\_\_\_
- 5. Fix Hole Position :  Pass  NG , \_\_\_\_\_
- 6. Backlight Position :  Pass  NG , \_\_\_\_\_
- 7. Thickness of PCB :  Pass  NG , \_\_\_\_\_
- 8. Height of Frame to PCB :  Pass  NG , \_\_\_\_\_
- 9. Height of Module :  Pass  NG , \_\_\_\_\_
- 10. Others :  Pass  NG , \_\_\_\_\_

**3、Relative Hole Size :**

- 1. Pitch of Connector :  Pass  NG , \_\_\_\_\_
- 2. Hole size of Connector :  Pass  NG , \_\_\_\_\_
- 3. Mounting Hole size :  Pass  NG , \_\_\_\_\_
- 4. Mounting Hole Type :  Pass  NG , \_\_\_\_\_
- 5. Others :  Pass  NG , \_\_\_\_\_

**4、Backlight Specification :**

- 1. B/L Type :  Pass  NG , \_\_\_\_\_
- 2. B/L Color :  Pass  NG , \_\_\_\_\_
- 3. B/L Driving Voltage (Reference for LED Type) :  Pass  NG , \_\_\_\_\_
- 4. B/L Driving Current :  Pass  NG , \_\_\_\_\_
- 5. Brightness of B/L :  Pass  NG , \_\_\_\_\_
- 6. B/L Solder Method :  Pass  NG , \_\_\_\_\_
- 7. Others :  Pass  NG , \_\_\_\_\_

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Winstar      Module Number : \_\_\_\_\_

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**5、Electronic Characteristics of Module :**

- |                              |                               |                               |       |
|------------------------------|-------------------------------|-------------------------------|-------|
| 1. Input Voltage :           | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 2. Supply Current :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 3. Driving Voltage for LCD : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 4. Contrast for LCD :        | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 5. B/L Driving Method :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 6. Negative Voltage Output : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 7. Interface Function :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 8. LCD Uniformity :          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 9. ESD test :                | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |
| 10. Others :                 | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , | _____ |

**6、Summary :**

Sales signature : \_\_\_\_\_

Customer Signature : \_\_\_\_\_

Date :      /      /      \_\_\_\_\_