



**RAYSTAR**

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## RFC57AQ-EIW-DBG

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### SPECIFICATION

CUSTOMER:

|                    |  |
|--------------------|--|
| <b>APPROVED BY</b> |  |
| <b>PCB VERSION</b> |  |
| <b>DATE</b>        |  |

FOR CUSTOMER USE ONLY

| <b>SALES BY</b> | <b>APPROVED BY</b> | <b>CHECKED BY</b> | <b>PREPARED BY</b> |
|-----------------|--------------------|-------------------|--------------------|
|                 |                    |                   |                    |

Release DATE:

TFT Display Inspection Specification: <https://www.raystar-optronics.com/download/products.htm>

Precaution in use of TFT module: <https://www.raystar-optronics.com/download/declaration.htm>

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## Revision History

| VERSION | DATE       | REVISED PAGE NO. | Note                     |
|---------|------------|------------------|--------------------------|
| 0       | 2018/08/31 |                  | First issue              |
| A       | 2019/04/16 |                  | Modify CTP FW<br>Version |

RAYSTAR OPTRONICS

# Contents

1. Module Classification Information
2. Summary
3. General Specification
4. Interface
5. Contour Drawing
6. Block Diagram
7. Absolute Maximum Ratings
8. Electrical Characteristics
9. DC Characteristics
10. Interface Timing Characteristics
11. Optical Characteristics
12. Reliability
13. Touch Panel Information
14. Initial Code For Reference
15. Other

# 1.Module Classification Information

|          |          |          |           |           |          |          |          |          |          |          |          |          |
|----------|----------|----------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| <b>R</b> | <b>F</b> | <b>C</b> | <b>57</b> | <b>AQ</b> | <b>-</b> | <b>E</b> | <b>I</b> | <b>W</b> | <b>-</b> | <b>D</b> | <b>B</b> | <b>G</b> |
| 1        | 2        | 3        | 4         | 5         | -        | 6        | 7        | 8        | -        | 9        | 10       | 11       |

| Item | Description   |  |
|------|---|--|
| 1    | R : Raystar Optronics Inc.  |  |
| 2    | Display Type : F→TFT Type, J→ Custom TFT  |  |
| 3    | Solution: A: 128x160    B:320x234    C:320x240    D:480x234    E:480x272<br>F:800x480    G:640x480    H:1024x600    I:320x480    J:240x320<br>K:1280x800    L:240x400    M:1024x768    N:128x128    O:480x800<br>P:640x320    Q:800x600    S:480x128    T:800x320 |  |
| 4    | Display Size : 5.7" TFT   |  |
| 5    | Version Code.   |  |
| 6    | Model Type:<br>A : TFT LCD<br>E : TFT+FR+CONTROL BOARD<br>J : TFT+FR+A/D BOARD<br>N : TFT+FR+A/D BOARD+CONTROL BOARD<br>S : TFT+FR+POWER BOARD (DC TO DC)<br>1 : TFT+CONTROL BOARD  | 6 : TFT+FR<br>H : TFT+D/V BOARD<br>I : TFT+FR+D/V BOARD<br>B : TFT+POWER BD  |
| 7    | Polarizer Type,<br>Temperature range,<br>View direction   | I→Transmissive, W. T, 6:00 ; C→Transmissive, N. T, 6:00<br>L→Transmissive, W.T,12:00 ; F→Transmissive, N.T,12:00<br>Y→Transmissive,W.T, IPS TFT ;<br>A→Transmissive, N.T, IPS TFT<br>Z→Transmissive, W.T, O-TFT<br>R→Transmissive, Super W.T, O-TFT<br>N→Transmissive, Super W.T, 6:00;<br>Q→Transmissive, Super W.T, 12:00<br>V→Transmissive, Super W.T, VA TFT |
| 8    | Backlight   | W : LED, White                      H : LED, High Light White<br>F : CCFL, White   |
| 9    | Driver Method   | D: Digital    A: Analog    L : LVDS    M:MIPI  |
| 10   | Interface   | N : without control board    A : 8Bit    B : 16Bit<br>S:SPI Interface    R: RS232    U:USB    I: I2C   |
| 11   | TS  | N : Without TS    S : resistive touch panel<br>C : capacitive touch panel capacitive touch panel (G-F-F)<br>G : capacitive touch panel(G-G)  |

## 2.Summary

TFT 5.7" is a TN transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is a composed of a TFT\_LCD module, It is usually designed for industrial application and this module follows RoHs,

RAYSTAR OPTRONICS

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### 3.General Specifications

- Size: 5.7 inch
- Dot Matrix: 320 x RGBx240(TFT) dots
- Module dimension: 141.12x 101.55 x 15.24 mm
- Active area: 115.2 x 86.4 mm
- Dot pitch: 0.12 x 0.36 mm
- LCD type: TFT, Normally White, Transmissive
- View Direction: 12 o'clock
- Gray Scale Inversion Direction: 6 o'clock
- Aspect Ratio: 4:3
- Backlight Type: LED ,Normally White
- Controller IC: SSD1963 or Equivalent
- TFT Interface: Digital 8080 family MPU 8bit/16bit
- CTP IC: FT5426 or Equivalent
- CTP Interface: I2C
- CTP FW Version: FN058A001\_FT5426\_\_V03\_20180910\_all.bin
- With /Without TP: With CTP
- Surface: Glare

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

## 4.Interface

### 4.1. LCM PIN Definition (CON3)

| 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   | D/C         | 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  | NC          | No connect  |          |
| 24  | CTP_INT     | CTP_ External interrupt to the host                           |          |
| 25  | CS          | Chip select   |          |
| 26  | RESET       | 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  | CTP_SC<br>L | CTP_SPI Slave mode, chip select, active low / I2C clock input |          |

|    |             |   |  |
|----|-------------|---|--|
| 30 | CTP_SD<br>A | CTP_ SPI Slave mode, data input / I2C data input and output |  |
| 31 | CTP_RS<br>T | CTP_ External Reset, Low is active                          |  |
| 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

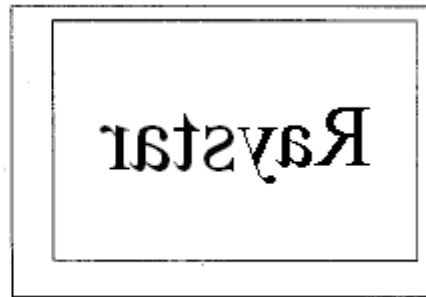
Note 2: Selection of scanning mode

| 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 |

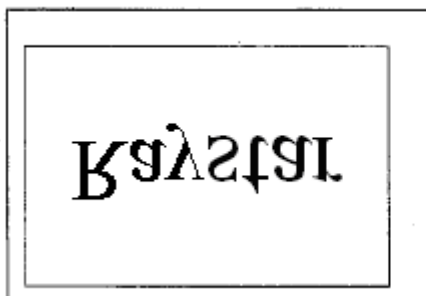
Note 3: Definition of scanning direction.Refer to the figure as below:



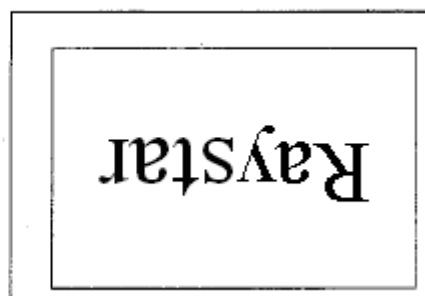
U/D=L, L/R=H



U/D=L, L/R=L



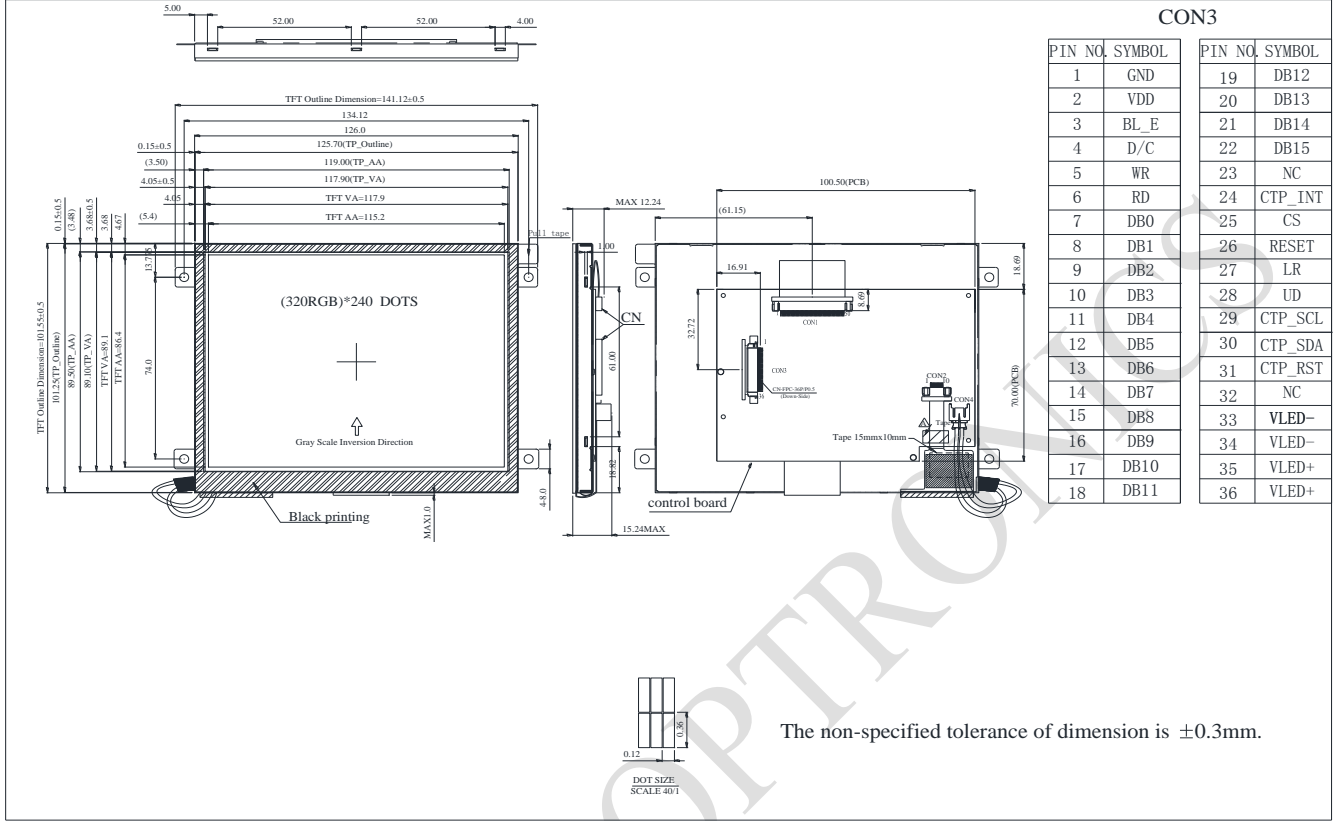
U/D=H, L/R=H



U/D=H, L/R=L

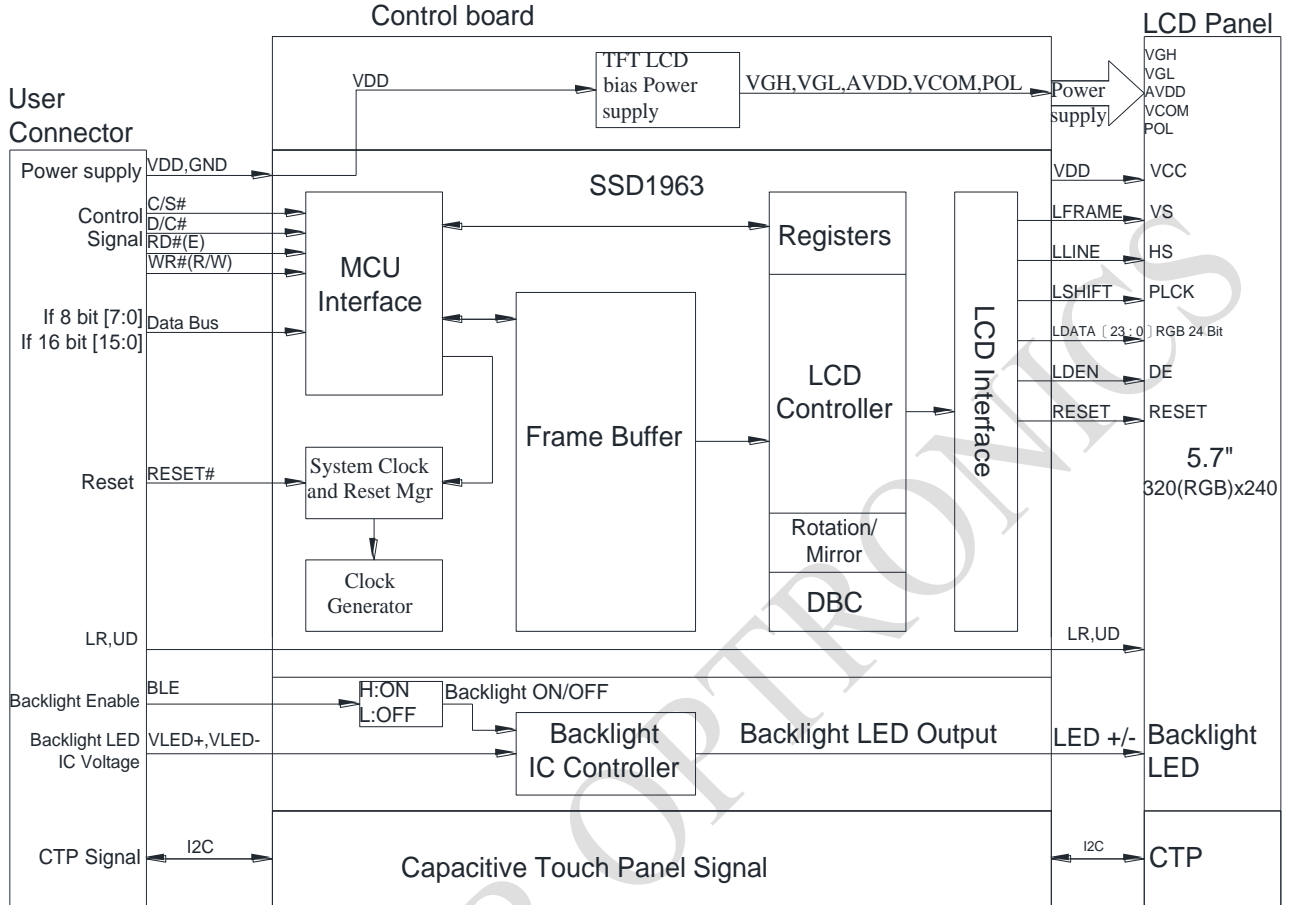


# 5. Contour Drawing



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## 6. Block Diagram



## 7. 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  $60^{\circ}\text{C}$

RAYSTAR OPTRONICS

## 8. Electrical Characteristics

### 8.1. Operating conditions: (CON3.Pin1=GND, Pin2=VDD)

| Item                   | Symbol | Condition | Min | Typ | Max | Unit | Remark |
|------------------------|--------|-----------|-----|-----|-----|------|--------|
| Supply Voltage For LCM | VDD    | —         | 3.0 | 3.1 | 3.3 | V    | —      |
| Supply Current For LCM | IDD    | —         | —   | 360 | 560 | mA   | Note1  |

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

### 8.2. Backlight driving conditions (CON3.Pin33,34=VLED-, Pin35,36=VLED+)

| Parameter                        | Symbol  | Min. | Typ.   | Max. | Unit | Remark     |
|----------------------------------|---------|------|--------|------|------|------------|
| Operation Current For LED Driver | VLED=5V | 250  | —      | 375  | mA   | Note 1,2   |
| Power Consumption                | VLED=5V | 1250 | —      | 1875 | 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

## 9.DC CHARATERISTICS

| Parameter                | Symbol   | Rating |     |        | Unit | Condition |
|--------------------------|----------|--------|-----|--------|------|-----------|
|                          |          | Min    | Typ | Max    |      |           |
| Low level input voltage  | $V_{IL}$ | 0      | -   | 0.3VDD | V    |           |
| High level input voltage | $V_{IH}$ | 0.7VDD | -   | VDD    | V    |           |

RAYSTAR OPTRONICS

## 10. Interface timing

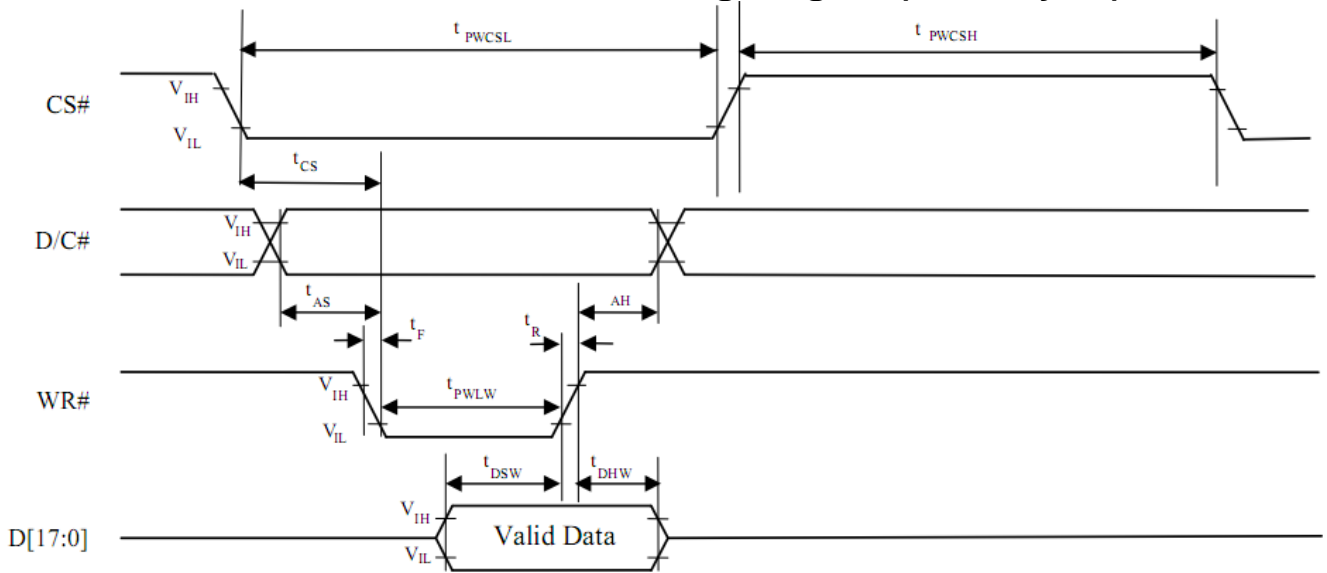
### 10.1. 8080 Mode

The 8080 mode MCU interface consist of CS#, D/C#, RD#, WR#, Data Bus. This interface use WR# to define a write cycle and RD# for read cycle. If the WR# goes low when the CS# signal is low, the data or command will be latched into the system at the rising edge of WR#. Similarly, the read cycle will start when RD# goes low and end at the rising edge of RD#.

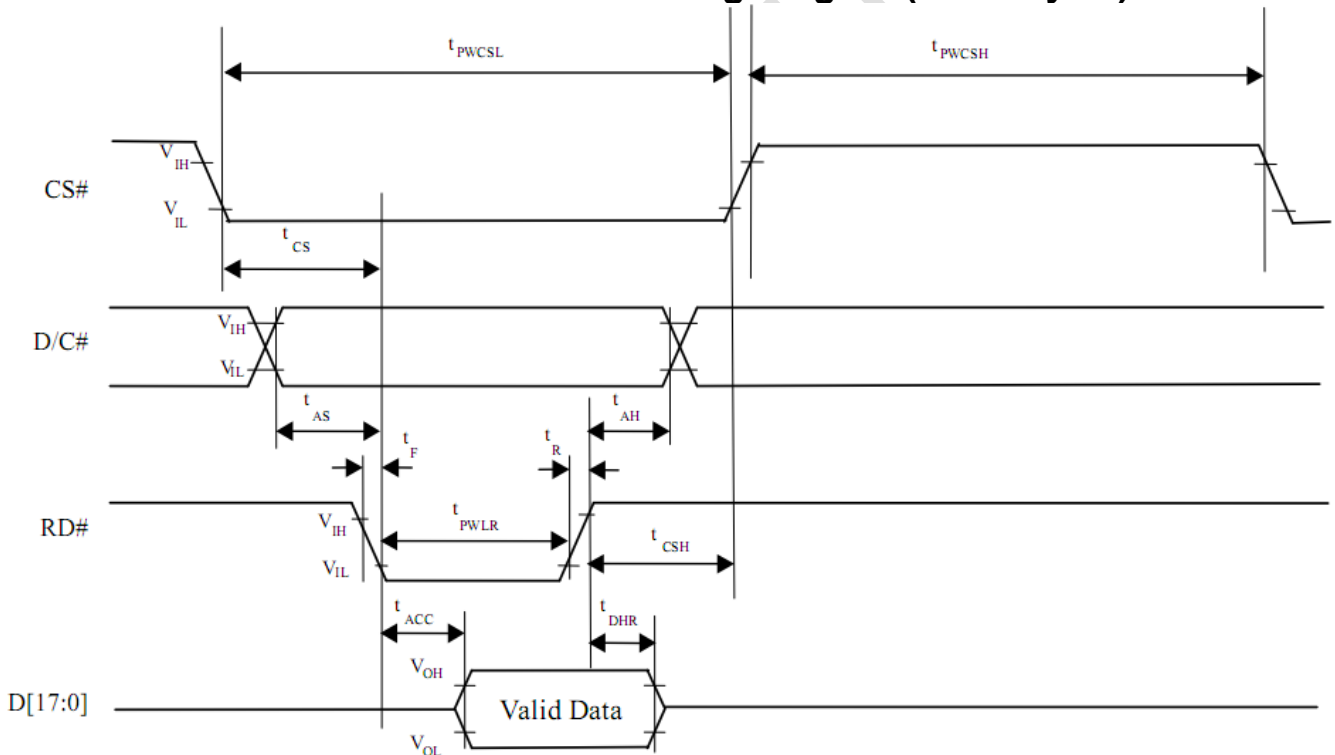
### 10.2. 8080 Mode Write Cycle

| Symbol | Parameter   | Min            | Typ                                | Max | Unit |
|--------|---|----------------|------------------------------------|-----|------|
| fMCLK  | System Clock Frequency  | 1              | -                                  | 110 | MHz  |
| tMCLK  | System Clock Period   | 1/ fMCLK       | -                                  | -   | ns   |
| tPWCSH | Control Pulse High Width Write<br>Read  | 13<br>30       | 1.5* tMCLK<br>3.5* tMCLK           | -   | ns   |
| tPWCSL | Control Pulse Low Width Write (next write cycle)<br>Write (next read cycle)<br>Read | 13<br>80<br>80 | 1.5* tMCLK<br>9* tMCLK<br>9* tMCLK | -   | ns   |
| tAS    | Address Setup Time  | 1              | -                                  | -   | ns   |
| tAH    | Address Hold Time   | 2              | -                                  | -   | ns   |
| tDSW   | Write Data Setup Time   | 4              | -                                  | -   | ns   |
| tDHW   | Write Data Hold Time  | 1              | -                                  | -   | ns   |
| tPWLW  | Write Low Time  | 12             | -                                  | -   | ns   |
| tDHR   | Read Data Hold Time   | 1              | -                                  | -   | ns   |
| tACC   | Access Time   | 32             | -                                  | -   | ns   |
| tPWLR  | Read Low Time   | 36             | -                                  | -   | ns   |
| tR     | Rise Time   | -              | -                                  | 0.5 | ns   |
| tF     | Fall Time   | -              | -                                  | 0.5 | ns   |
| tCS    | Chip select setup time  | 2              | -                                  | -   | ns   |
| tCSH   | Chip select hold time to read signal  | 3              | -                                  | -   | ns   |

### 10.3. Parallel 8080-series Interface Timing Diagram(Write Cycle)



### 10.4. Parallel 8080-series Interface Timing Diagram(Read Cycle)



**10.5. Pixel Data Format**

| Interface            | Cycle           | D[15] | D[14] | D[13] | D[12] | D[11] | D[10] | D[9] | D[8] | D[7] | D[6] | D[5] | D[4] | D[3] | D[2] | D[1] | D[0] |
|----------------------|-----------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|
| 16 bits (565 format) | 1 <sup>st</sup> | R5    | R4    | R3    | R2    | R1    | G5    | G4   | G3   | G2   | G1   | G0   | B5   | B4   | B3   | B2   | B1   |
| 16 bits              | 1 <sup>st</sup> | R7    | R6    | R5    | R4    | R3    | R2    | R1   | R0   | G7   | G6   | G5   | G4   | G3   | G2   | G1   | G0   |
|                      | 2 <sup>nd</sup> | B7    | B6    | B5    | B4    | B3    | B2    | B1   | B0   | R7   | R6   | R5   | R4   | R3   | R2   | R1   | R0   |
|                      | 3 <sup>rd</sup> | G7    | G6    | G5    | G4    | G3    | G2    | G1   | G0   | B7   | B6   | B5   | B4   | B3   | B2   | B1   | B0   |
| 8 bits               | 1 <sup>st</sup> |       |       |       |       |       |       |      |      | R7   | R6   | R5   | R4   | R3   | R2   | R1   | R0   |
|                      | 2 <sup>nd</sup> |       |       |       |       |       |       |      |      | G7   | G6   | G5   | G4   | G3   | G2   | G1   | G0   |
|                      | 3 <sup>rd</sup> |       |       |       |       |       |       |      |      | B7   | B6   | B5   | B4   | B3   | B2   | B1   | B0   |

RAYSTAR OPTRONICS



## 11. Optical Characteristics

| Item   | Symbol | Condition.                        | Min                               | Typ.  | Max.  | Unit              | Remark            |            |
|--|--------|-----------------------------------|-----------------------------------|-------|-------|-------------------|-------------------|------------|
| Response time                                  | Tr     | $\theta=0^\circ$ 、 $\phi=0^\circ$ | -                                 | 15    | 30    | ms                | Note 3            |            |
|  | Tf     |                                   | -                                 | 35    | 50    | ms                |                   |            |
| Contrast ratio                                 | CR     | At optimized viewing angle        | 150                               | 250   | -     | -                 | Note 4            |            |
| Color Chromaticity                             | White  | Wx                                | $\theta=0^\circ$ 、 $\phi=0^\circ$ | 0.282 | 0.312 | 0.342             | -                 | Note 2,6,7 |
|  |        | Wy                                |                                   | 0.319 | 0.349 | 0.379             | -                 |            |
| Viewing angle (Gray Scale Inversion Direction) | Hor.   | $\theta_R$                        | CR $\geq 10$                      | 60    | 70    |                   | Deg.              | Note 1     |
|  |        | $\theta_L$                        |                                   | 60    | 70    |                   |                   |            |
|  | Ver.   | $\phi_T$                          |                                   | 40    | 50    |                   |                   |            |
|  |        | $\phi_B$                          |                                   | 60    | 70    |                   |                   |            |
| Brightness                                     | -      | -                                 | 600                               | 700   | -     | cd/m <sup>2</sup> | Center of display |            |
| Uniformity                                     | (U)    | -                                 | 75                                | -     | -     | %                 | Note5             |            |

Ta=25±2℃, VLED / ILED= 5V / 250mA

Note 1: Definition of viewing angle range

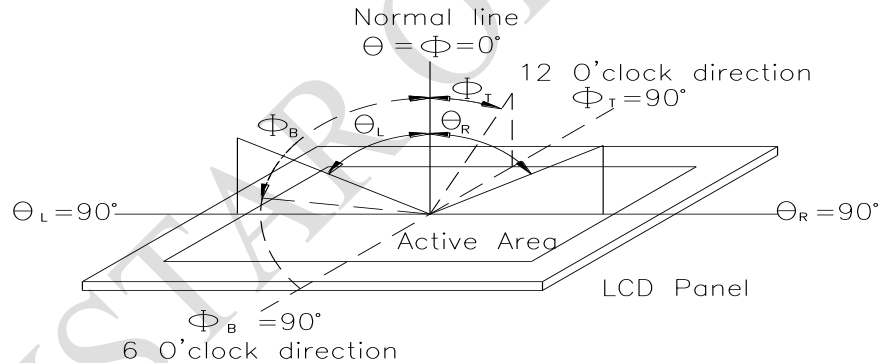


Fig. 11.1. Definition of viewing angle

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.

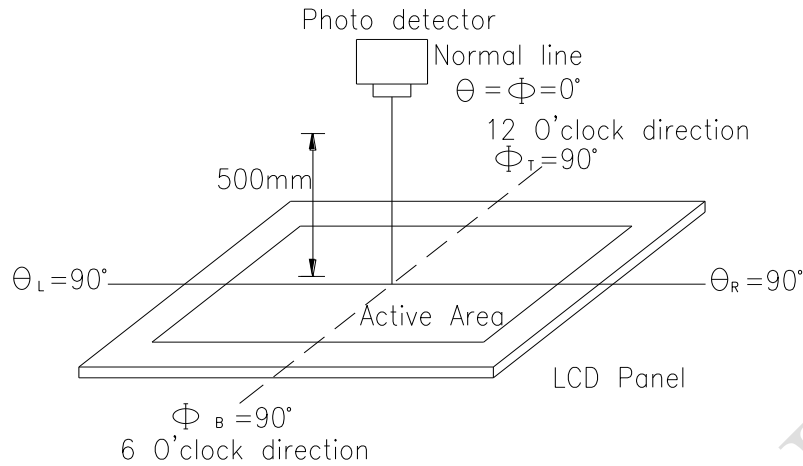
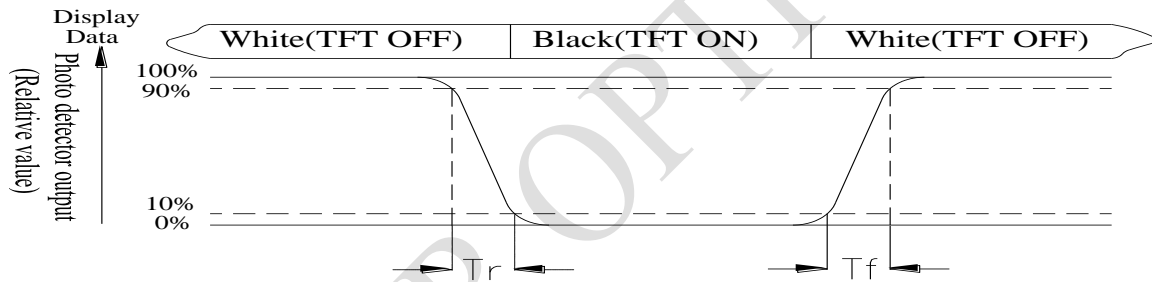


Fig. 11.2. Optical measurement system setup

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: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (reference the picture in below). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity (U)} = L_{\min}/L_{\max} \times 100\%$$

L = Active area length

W = Active area width

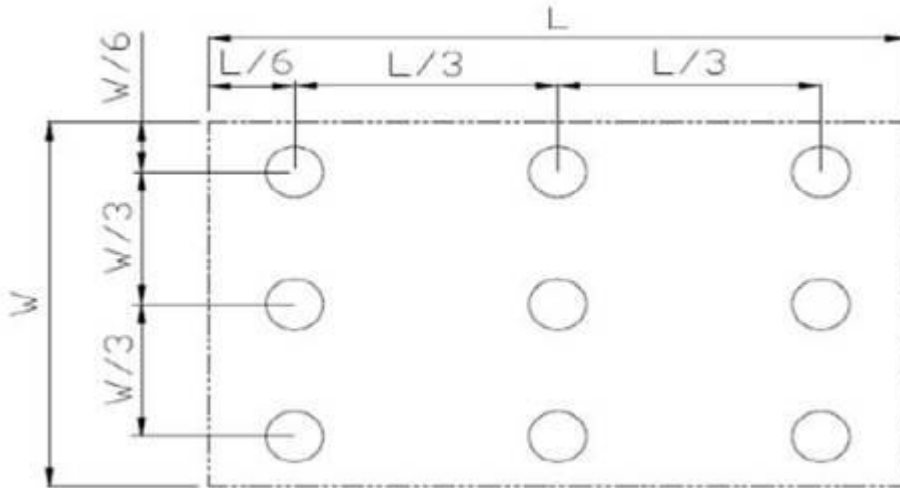


Fig11.3. . Definition of uniformity

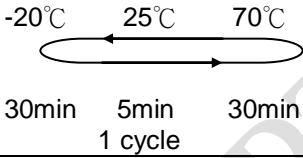
Note 6: Definition of color chromaticity (CIE 1931)

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.

## 12. Reliability

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

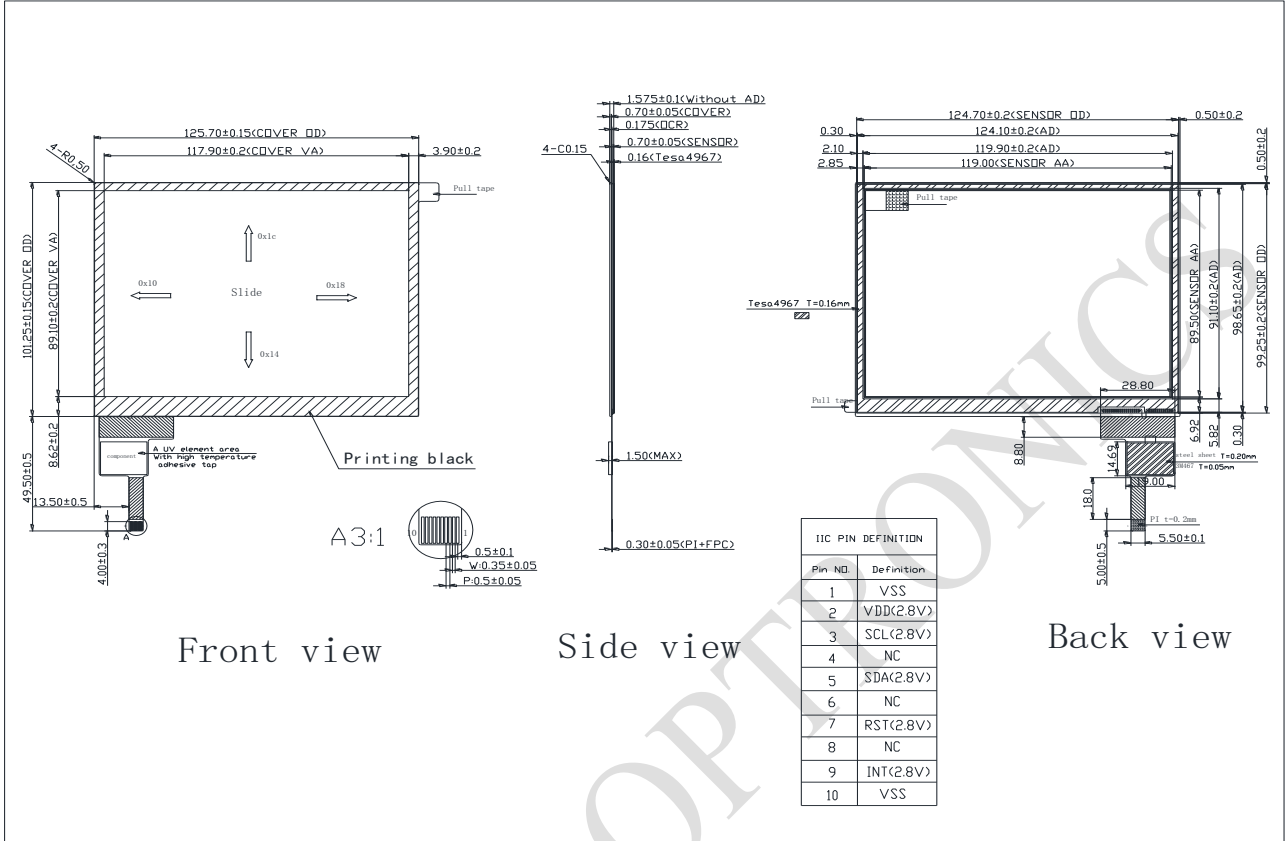
| Environmental Test                   |  |   |      |
|--------------------------------------|--|---|------|
| Test Item                            | Content of Test  | Test Condition  | Note |
| High Temperature storage             | Endurance test applying the high storage temperature for a long time.  | 80°C<br>200hrs  | 2    |
| Low Temperature storage              | Endurance test applying the low storage temperature for a long time.   | -30°C<br>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<br>200hrs  | —    |
| Low Temperature Operation            | Endurance test applying the electric stress under low temperature for a long time.   | -20°C<br>200hrs   | 1    |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 60°C, 90%RH max   | 60°C, 90%RH<br>96hrs  | 1,2  |
| Thermal shock resistance             | The sample should be allowed stand the following 10 cycles of operation<br><br><div style="text-align: center;">  <p>-20°C    25°C    70°C</p> <p>30min    5min    30min</p> <p>1 cycle</p> </div> | -20°C/70°C<br>10 cycles   | —    |
| Vibration test                       | Endurance test applying the vibration during transportation and using.   | Total fixed amplitude : 1.5mm<br>Vibration Frequency : 10~55Hz<br>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=±600V(contact)<br>,±800v(air),<br>RS=330Ω<br>CS=150pF<br>10 times  | —    |

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.

# 13.Touch Panel Information



## 14. Initial Code For Reference

```
void Initial_SSD1963()  
{
```

```
    Write_Command(0x01);  
    Delay_ms(10);  
    Write_Command(0xe0); //START PLL  
    Write_Parameter(0x01);  
    Delay_ms(50);  
    Write_Command(0xe0); //LOCK PLL  
    Write_Parameter(0x03);  
    Delay_ms(5);
```

```
    Write_Command(0xb0);  
    Write_Parameter(0x24);  
    Write_Parameter(0x20);  
    Write_Parameter(0x01);  
    Write_Parameter(0x3f);  
    Write_Parameter(0x00);  
    Write_Parameter(0xef);  
    Write_Parameter(0x00);
```

```
    Write_Command(0xf0);  
    Write_Parameter(0x03); //0x03 is 16bit(565 format);0x00 is for 8-bit,pixel data
```

format

```
    Write_Command(0xe2);  
    Write_Parameter(0x1d);  
    Write_Parameter(0x02);  
    Write_Parameter(0x54);
```

```
    Write_Command(0xe6);  
    Write_Parameter(0x01);  
    Write_Parameter(0x40);  
    Write_Parameter(0xff);
```

```
    Write_Command(0xb4);  
    Write_Parameter(0x01);  
    Write_Parameter(0xb8);  
    Write_Parameter(0x00);  
    Write_Parameter(0x44);  
    Write_Parameter(0x07);  
    Write_Parameter(0x00);  
    Write_Parameter(0x00);  
    Write_Parameter(0x00);
```

```
    Write_Command(0xb6);  
    Write_Parameter(0x01);
```



```
Write_Parameter(0x08);  
Write_Parameter(0x00);  
Write_Parameter(0x13);  
Write_Parameter(0x07);  
Write_Parameter(0x00);  
Write_Parameter(0x00);
```

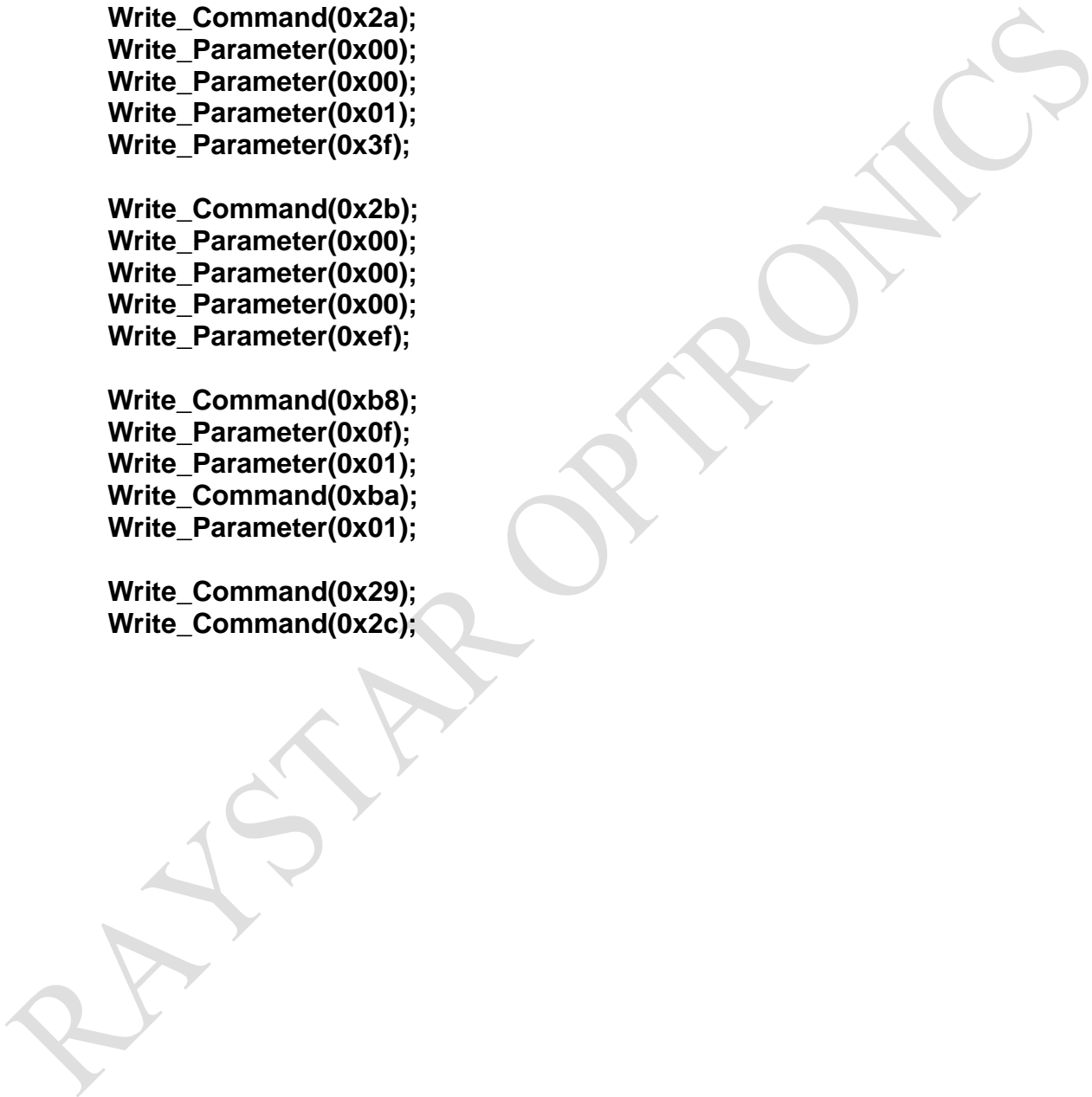
```
Write_Command(0x2a);  
Write_Parameter(0x00);  
Write_Parameter(0x00);  
Write_Parameter(0x01);  
Write_Parameter(0x3f);
```

```
Write_Command(0x2b);  
Write_Parameter(0x00);  
Write_Parameter(0x00);  
Write_Parameter(0x00);  
Write_Parameter(0xef);
```

```
Write_Command(0xb8);  
Write_Parameter(0x0f);  
Write_Parameter(0x01);  
Write_Command(0xba);  
Write_Parameter(0x01);
```

```
Write_Command(0x29);  
Write_Command(0x2c);
```

}



**LCM Sample Estimate Feedback Sheet**

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

**1 、 Panel Specification :**

|                            |                               |                                     |
|----------------------------|-------------------------------|-------------------------------------|
| 1. Panel Type :            | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. View Direction :        | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Numbers of Dots :       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. View Area :             | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Active Area :           | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Operating Temperature : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Storage Temperature :   | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. Others :                | _____                         |                                     |

**2 、 Mechanical Specification :**

|                             |                               |                                     |
|-----------------------------|-------------------------------|-------------------------------------|
| 1. PCB Size :               | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Frame Size :             | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Material of Frame :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Connector Position :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Fix Hole Position :      | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. Backlight Position :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Thickness of PCB :       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 8. Height of Frame to PCB : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 9. Height of Module :       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 10. Others :                | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**3 、 Relative Hole Size :**

|                             |                               |                                     |
|-----------------------------|-------------------------------|-------------------------------------|
| 1. Pitch of Connector :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. Hole size of Connector : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. Mounting Hole size :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. Mounting Hole Type :     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Others :                 | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

**4 、 Backlight Specification :**

|   |                               |                                     |
|---|-------------------------------|-------------------------------------|
| 1. B/L Type :                                     | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 2. B/L Color :                                    | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 3. B/L Driving Voltage (Reference for LED Type) : | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 4. B/L Driving Current :                          | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 5. Brightness of B/L :                            | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 6. B/L Solder Method :                            | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |
| 7. Others :                                       | <input type="checkbox"/> Pass | <input type="checkbox"/> NG , _____ |

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



|  |                               |                                     |
|--|-------------------------------|-------------------------------------|
| <b>Module Number :</b> _____   |                               |                                     |
| <b>5 · <u>Electronic Characteristics of Module</u> :</b>   |                               |                                     |
| 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 , _____ |
| <b>6 · <u>Summary</u> :</b>  |                               |                                     |
| <p style="text-align: right;"> <b>Sales signature :</b> _____<br/> <b>Customer Signature :</b> _____      <b>Date :</b>   /   / _____         </p> |                               |                                     |

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