



**Winstar Display Co., LTD**

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## SPECIFICATION

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

**MODULE NO.:** WF43QTIBEDBNO#

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

| SALES BY                       | APPROVED BY | CHECKED BY | PREPARED BY |
|--------------------------------|-------------|------------|-------------|
|                                |             |            | 葉虹蘭         |
| <b>ISSUED DATE: 2015/04/27</b> |             |            |             |

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

**RECORDS OF REVISION**

DOC. FIRST ISSUE

| VERSION | DATE       | REVISED PAGE NO. | SUMMARY   |
|---------|------------|------------------|---|
| 0       | 2013/02/19 |                  | First issue   |
| A       | 2013/08/29 |                  | A version modify<br>5.Electrical Characteristics<br>7.1.1 8080 Mode<br>7.1.2 8080 Mode Write Cycle<br>13. PACKAGE SPECIFICATION<br>14. Initial Code For Reference |
| B       | 2013/11/27 |                  | Modify the brightness specifications.   |
| C       | 2013/12/11 |                  | Correct VDD.  |
| D       | 2014/03/05 |                  | Modify Package Specification.   |
| E       | 2014/08/07 |                  | Correct AA.   |
| F       | 2014/09/09 |                  | Modify Pixel Data Format & Block Diagram& Static electricity test.  |
| G       | 2015/04/27 |                  | Modify Reliability.   |

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# 1.Module Classification Information

W F 43 Q T I B E D B N 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 : 4.3" TFT  |   |          |   |              |            |            |
| ④ | Model serials no.  |   |          |   |              |            |            |
| ⑤ | Backlight Type :   | F→CCFL, White<br>S→LED, High Light White  |          |   | T→LED, White |            |            |
| ⑥ | LCD Polarize<br>Type/ Temperature<br>range/ Gray Scale<br>Inversion Direction  | C→Transmissive, N. T, 6:00 ; I→Transmissive, W. T, 6:00<br>F→Transmissive, N.T,12:00 ; L→Transmissive, W.T,12:00<br>N→Transmissive, Super W.T, 6:00<br>Q→Transmissive, Super W.T, 12:00<br>X→Transmissive, W.T, VA TFT<br>V→Transmissive, Super W.T, VA TFT<br>R→Transmissive, Super W.T, O-TFT<br>Z→Transmissive, W.T, O-TFT<br>A→Transmissive, N.T, IPS TFT<br>Y→Transmissive, W.T, IPS TFT |          |   |              |            |            |
| ⑦ | A : TFT LCD<br>B : TFT+FR+CONTROL BOARD<br>C : TFT+FR+A/D BOARD<br>D : TFT+FR+A/D BOARD+CONTROL BOARD<br>E : TFT+FR+POWER BOARD<br>F : TFT+CONTROL BOARD |   |          | G : TFT+FR<br>H : TFT+D/V BOARD<br>I : TFT+FR+D/V BOARD<br>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 (G-F-F)<br>G : capacitive touch panel(G-G)                                      |   |          |   |              |            |            |
| ⑫ | Version  |   |          |   |              |            |            |
| ⑬ | Special Code   | #:Fit in with ROHS directive regulations  |          |   |              |            |            |

## **2.Summary**

This technical specification applies to 4.3' color TFT-LCD panel. The 4.3' 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**

| <b>Item</b>                    | <b>Dimension</b>                   | <b>Unit</b> |
|--------------------------------|------------------------------------|-------------|
| Size                           | 4.3                                | inch        |
| Dot Matrix                     | 480 x RGBx272(TFT)                 | dots        |
| Module dimension               | 106.7 x 83.98 x 7.1                | mm          |
| Active area                    | 95.04 x 53.856                     | mm          |
| Dot pitch                      | 0.066 x 0.198                      | mm          |
| LCD type                       | TFT, Normally White, Transmissive  |             |
| View Direction                 | 12 o'clock                         |             |
| Gray Scale Inversion Direction | 6 o'clock                          |             |
| Backlight Type                 | LED, Normally White                |             |
| Controller IC                  | SSD1963                            |             |
| Interface                      | Digital 8080 family MPU 8bit/16bit |             |
| With /Without TP               | Without TP                         |             |
| Surface                        | Anti-Glare                         |             |

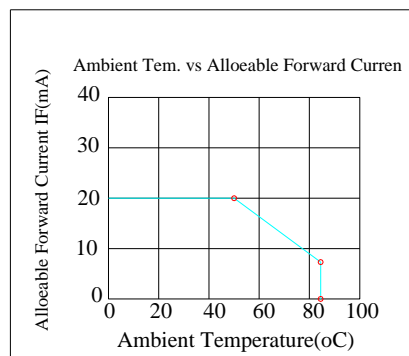
\*Color tone slight changed by temperature and driving voltage.

# 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

1. 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: (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    | —         | —   | 200 | 300 | mA   | Note1  |

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

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

| Parameter                        | Symbol     | Min. | Typ.   | Max. | Unit | Remark     |
|----------------------------------|------------|------|--------|------|------|------------|
| Operation Current For LED Driver | VLED+=3.3V | 270  | -      | 405  | mA   | Note 1,2   |
| Power Consumption                | VLED+=3.3V | 891  | -      | 1337 | mW   | Note 1,2   |
| Supply Voltage For LED Driver    | VLED+      | 3.3  | -      | 5    | V    | Note 1,2   |
| LED Life Time                    |            | -    | 50,000 | -    | Hr   | Note 2,3,4 |

Note 1 : Base on VLED= 3.3V 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  | $V_{IL}$ | 0      | -   | 0.3VDD | V    |           |
| High level input voltage | $V_{IH}$ | 0.7VDD | -   | VDD    | V    |           |

# 7. Interface timing

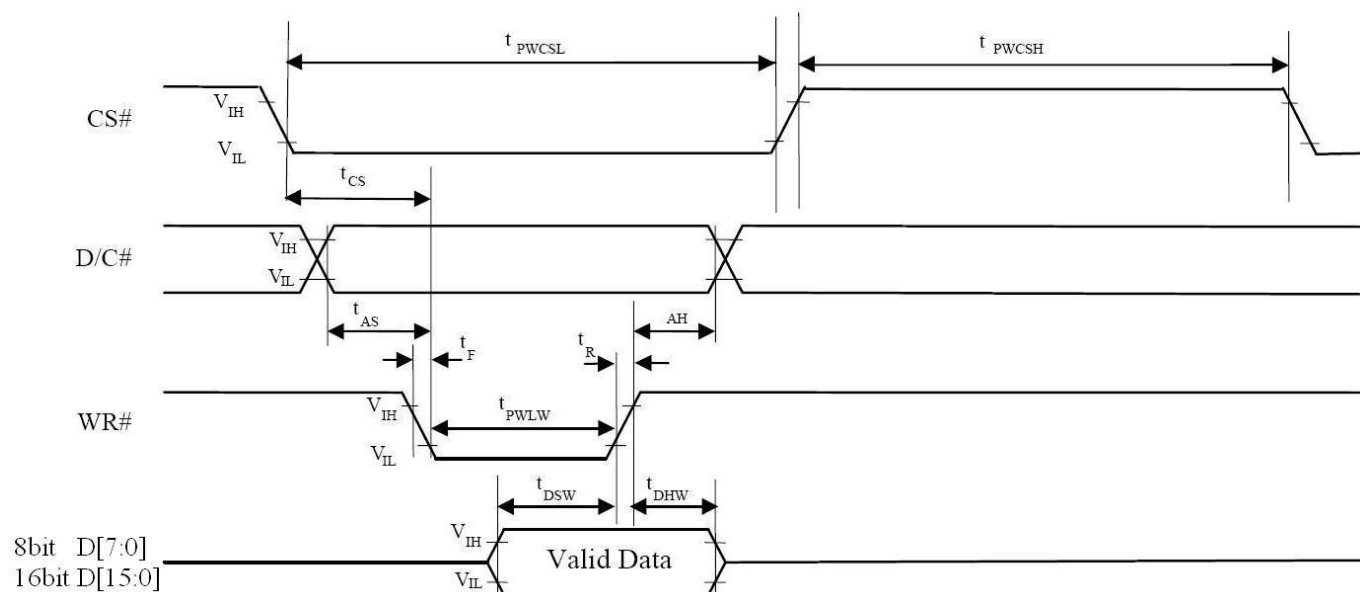
## 7.1. 8080 Mode 8bit/16bit

The 8080 mode MCU interface consist of CS#, D/C#, RD#, WR#, Data Bus signals. 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#.

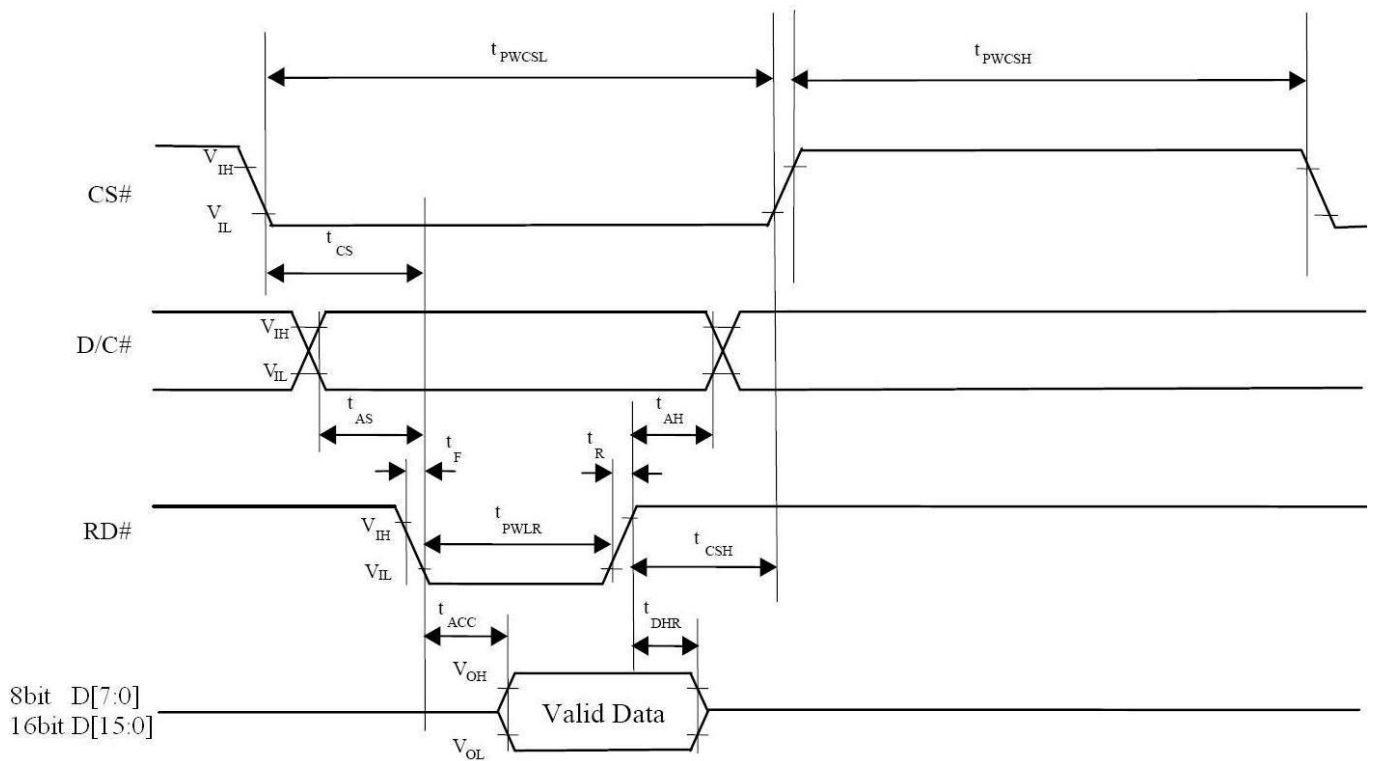
## 7.2. 8080 Mode Write Cycle

| 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             | 13       | 1.5* tMCLK | -   | ns   |
|        | Write<br>Read                        | 30       | 3.5* tMCLK | -   | ns   |
| tPWCSL | Control Pulse Low Width              | 13       | 1.5* tMCLK | -   | ns   |
|        | Write (next write cycle)             | 80       | 9* tMCLK   | -   | ns   |
|        | Write (next read cycle)<br>Read      | 80       | 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   |
| tPWLW  | 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   |

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



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



### 7.5. 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   |

# 8. Optical Characteristics

| Item   | Symbol | Condition.                        | Min        | Typ. | Max. | Unit              | Remark            |            |
|--|--------|-----------------------------------|------------|------|------|-------------------|-------------------|------------|
| Response time  | Tr     | $\theta=0^\circ$ 、 $\Phi=0^\circ$ | -          | 10   | 20   | ms                | Note 3,5          |            |
|  | Tf     |                                   | -          | 15   | 30   | ms                |                   |            |
| Contrast ratio                                       | CR     | At optimized viewing angle        | 400        | 500  | -    | -                 | Note 4,5          |            |
| Color Chromaticity                                   | White  | $\theta=0^\circ$ 、 $\Phi=0^\circ$ | Wx         | 0.26 | 0.31 | 0.36              |                   | Note 2,6,7 |
|  |        |                                   | Wy         | 0.28 | 0.33 | 0.38              |                   |            |
| Viewing angle<br>(Gray Scale Inversion<br>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   | -      | -                                 | 400        | 500  | -    | cd/m <sup>2</sup> | Center of display |            |

Ta=25±2°C, VLED /ILED = 3.3V /270mA

Note 1: Definition of viewing angle range

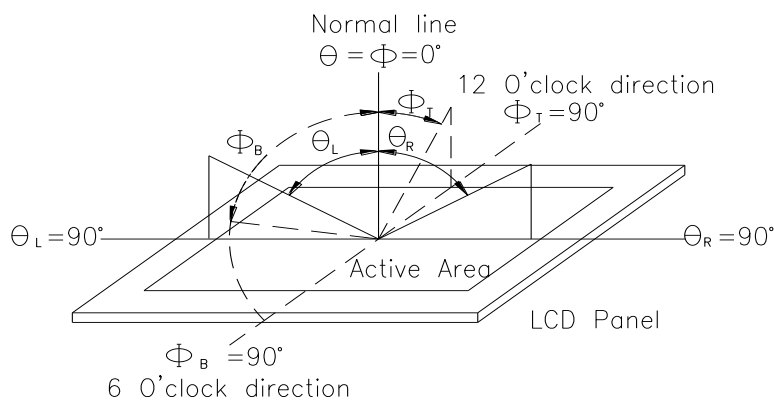


Fig. 8.1. Definition of viewing angle

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.

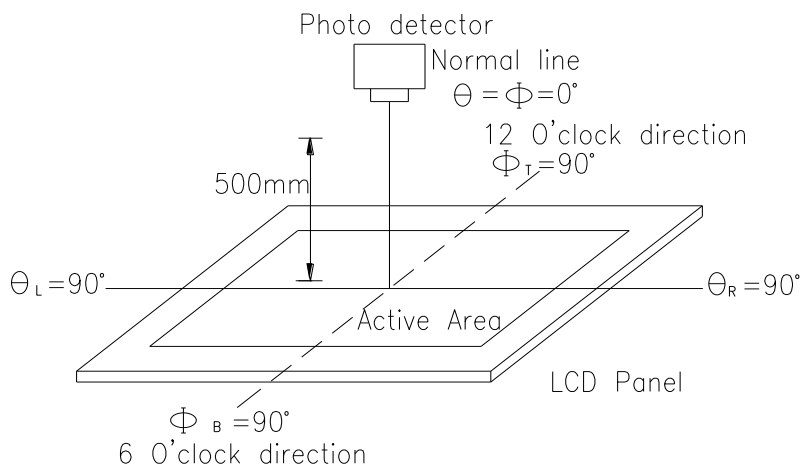
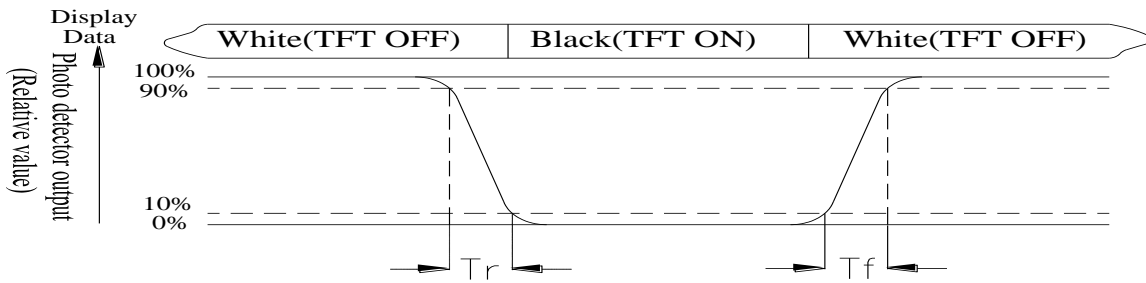


Fig. 8.2. Optical measurement system setup

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.

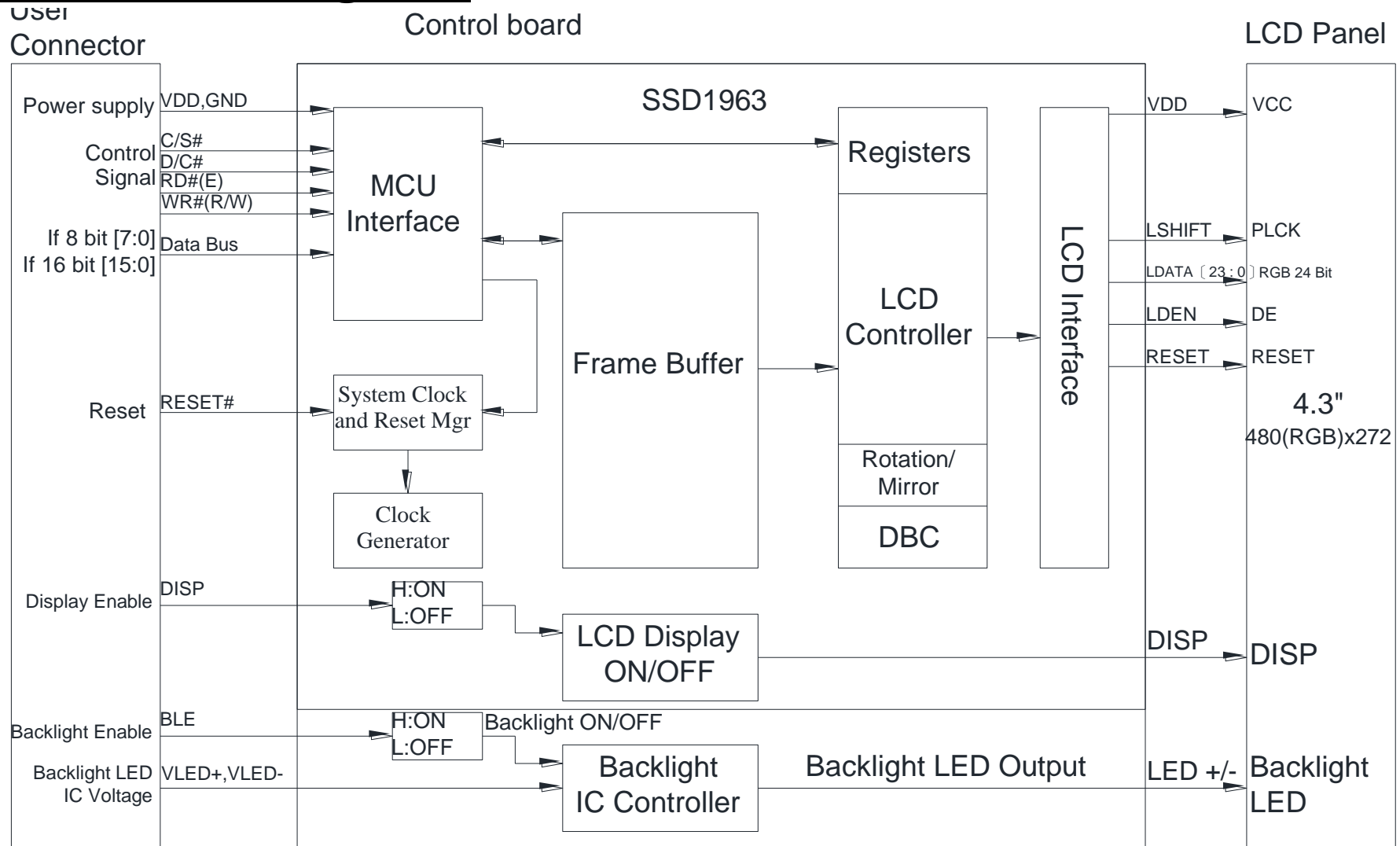
# 9.Interface

## 9.1. LCM PIN Definition (CON3)

| Pin | Symbol | Function   | Remark |
|-----|--------|--|--------|
| 1   | GND    | System round pin of the IC.<br>Connect to system ground. |        |
| 2   | VDD    | Power Supply : +3.3V                                     |        |
| 3   | BL_E   | 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 connection  |        |
| 24  | NC     | No connection  |        |
| 25  | CS     | Chip select  |        |
| 26  | RESET  | Hardware reset   |        |
| 27  | DIP ON | Display control H: On \ L:Off                            |        |
| 28  | NC     | No connection  |        |
| 29  | NC     | No connection  |        |
| 30  | NC     | No connection  |        |
| 31  | NC     | No connection  |        |
| 32  | NC     | No connection  |        |
| 33  | VLED-  | VLED- for B/L LED inverter (GND)                         |        |
| 34  | VLED-  | VLED- for B/L LED inverter (GND)                         |        |
| 35  | VLED+  | VLED+ for B/L LED inverter (+3.3V)                       |        |
| 36  | VLED+  | VLED+ for B/L LED inverter (+3.3V)                       |        |

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

# 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<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/<br>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 style="margin: 0;">-20°C    25°C    70°C</p> <p style="margin: 0;">30min    5min    30min</p> <p style="margin: 0;">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 : 15mm<br>Vibration<br>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=800V,<br>RS=1.5kΩ<br>CS=100pF<br>1 time  | —    |

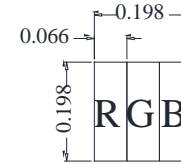
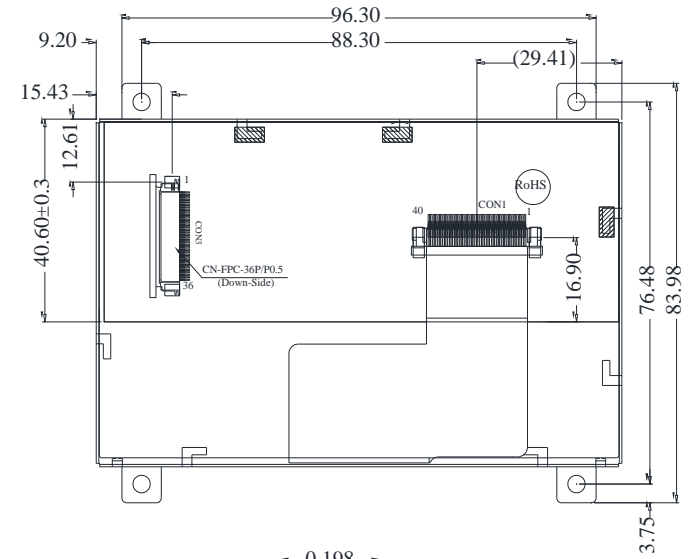
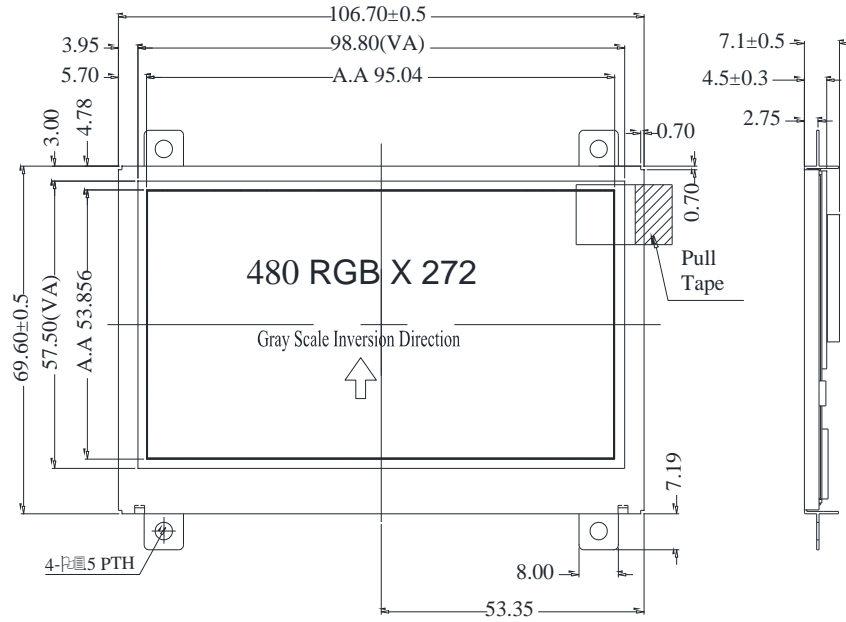
Note1: No dew condensation to be observed.

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. Contour Drawing

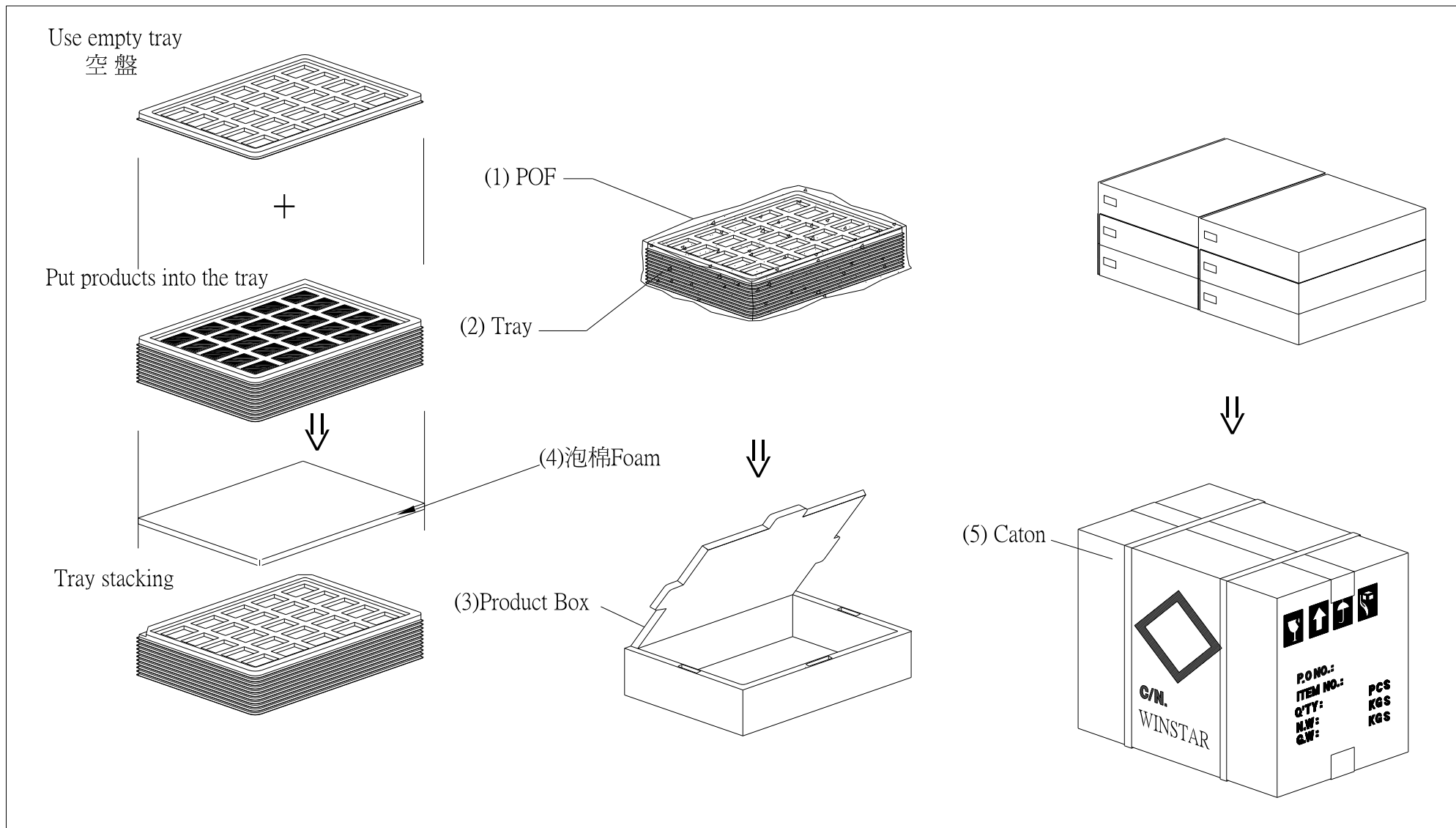
| PIN NO. | SYMBOL  |
|---------|---------|
| 1       | GND     |
| 2       | VDD     |
| 3       | BL_E    |
| 4       | D_C     |
| 5       | WR      |
| 6       | RD      |
| 7       | DB0     |
| 8       | DB1     |
| 9       | DB2     |
| 10      | DB3     |
| 11      | DB4     |
| 12      | DB5     |
| 13      | DB6     |
| 14      | DB7     |
| 15      | DB8     |
| 16      | DB9     |
| 17      | DB10    |
| 18      | DB11    |
| 19      | DB12    |
| 20      | DB13    |
| 21      | DB14    |
| 22      | DB15    |
| 23      | NC      |
| 24      | NC      |
| 25      | CS      |
| 26      | RESET   |
| 27      | DISP_ON |
| 28      | NC      |
| 29      | NC      |
| 30      | NC      |
| 31      | NC      |
| 32      | NC      |
| 33      | VLED-   |
| 34      | VLED-   |
| 35      | VLED+   |
| 36      | VLED+   |



SCALE 1:100

The non-specified tolerance of dimension is  $\pm 0.3\text{mm}$ .





# 14.Initial Code For Reference

```
void Initial_code()
{
    Write_Command(0x01);
    Delay_ms(10);
    Write_Command(0xe0);
    Write_Parameter(0x01);
    Delay_ms(50);
    Write_Command(0xe0);
    Write_Parameter(0x03);
    Delay_ms(5);

    Write_Command(0xb0);
    Write_Parameter(0x20);
    Write_Parameter(0x80);
    Write_Parameter(0x01);
    Write_Parameter(0xdf);
    Write_Parameter(0x01);
    Write_Parameter(0x0f);
    Write_Parameter(0x00);

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

    //Set the MN of PLL
    Write_Command(0xe2);
    Write_Parameter(0x1d);
    Write_Parameter(0x02);
    Write_Parameter(0x54);

    Write_Command(0xe6);
    Write_Parameter(0x01);
    Write_Parameter(0x99);
    Write_Parameter(0x9a);

    //Set front porch and back porch
    Write_Command(0xb4);
    Write_Parameter(0x02);
    Write_Parameter(0x0d);
    Write_Parameter(0x00);
    Write_Parameter(0x14);
    Write_Parameter(0x05);
    Write_Parameter(0x00);
    Write_Parameter(0x00);
    Write_Parameter(0x00);

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

```
Write_Parameter(0x24);  
Write_Parameter(0x00);  
Write_Parameter(0x0a);  
Write_Parameter(0x05);  
Write_Parameter(0x00);  
Write_Parameter(0x00);
```

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

```
Write_Command(0x2b);  
Write_Parameter(0x00);  
Write_Parameter(0x00);  
Write_Parameter(0x01);  
Write_Parameter(0xf);
```

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

```
}
```



**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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**5、Electronic Characteristics of Module :**

- 1. Input Voltage :                     Pass                     NG , \_\_\_\_\_
- 2. Supply Current :                     Pass                     NG , \_\_\_\_\_
- 3. Driving Voltage for LCD :         Pass                     NG , \_\_\_\_\_
- 4. Contrast for LCD :                     Pass                     NG , \_\_\_\_\_
- 5. B/L Driving Method :                 Pass                     NG , \_\_\_\_\_
- 6. Negative Voltage Output :         Pass                     NG , \_\_\_\_\_
- 7. Interface Function :                 Pass                     NG , \_\_\_\_\_
- 8. LCD Uniformity :                     Pass                     NG , \_\_\_\_\_
- 9. ESD test :                             Pass                     NG , \_\_\_\_\_
- 10. Others :                               Pass                     NG , \_\_\_\_\_

**6、Summary :**

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

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

Date :        /        /        \_\_\_\_\_