



RAYSTAR

RAYSTAR Optronics, Inc.  
曜凌光電股份有限公司



# 曜凌光電股份有限公司 Raystar Optronics, Inc.

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## RFJ280K-ALW-DNS

### 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>

## Revision History

| VERSION | DATE       | REVISED PAGE NO. | Note        |
|---------|------------|------------------|-------------|
| 0       | 2021/10/29 |                  | First issue |

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## 2.Summary

TFT 2.8" is a TN transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is composed of a TFT\_LCD module, It is usually designed for industrial application and this module follows RoHs,

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## 3.General Specifications

- Size: 2.8"
- Dot Matrix: 240 x RGB x 320(TFT) dots
- Module dimension: 50.0(W) x 69.2(H) x 3.48(D) mm
- Active area: 43.2 x 57.6 mm
- Pixel pitch: 0.18 x 0.18 mm
- LCD type: TFT, Normally White, Transmissive
- TFT Interface: SPI
- TFT Driver IC: ST7789V or Equivalent
- View Direction: 6 o'clock
- Gray Scale Inversion Direction: 12 o'clock
- Aspect Ratio: Portrait
- Backlight Type: LED, Normally White
- With /Without TP: With RTP
- Surface: Glare

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

## 4.Interface

### 4.1. LCM PIN Definition

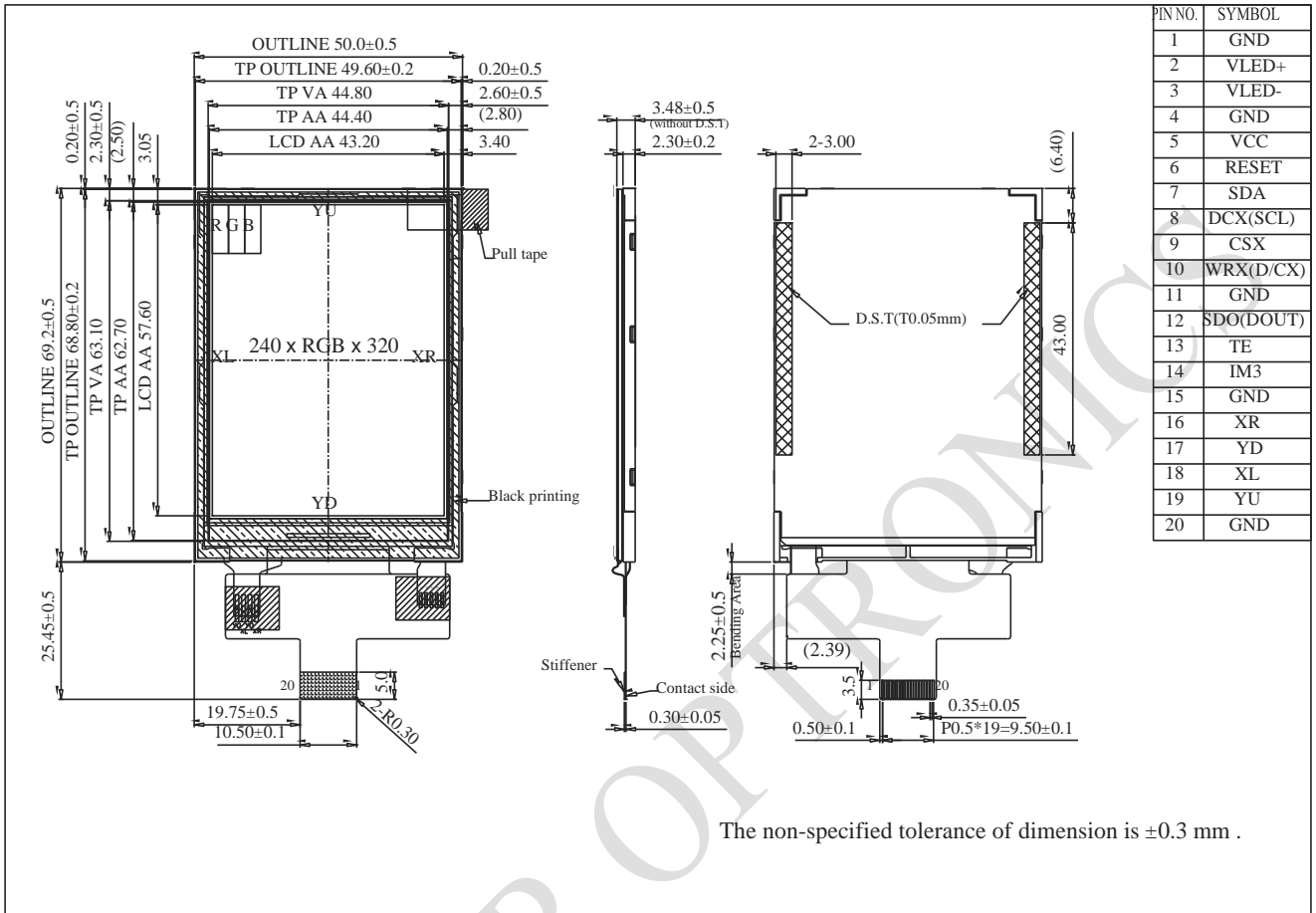
| NO  | Symbol    | Function                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
|-----|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------|---------------------|-----|--------------------|----------|---|---|---|---|------------------------|-------------|---|---|---|---|---------------------------|---------------------|
| 1   | GND       | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 2   | VLED+     | Anode of LED backlight.                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 3   | VLED-     | Cathode of LED backlight.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 4   | GND       | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 5   | VCC       | Power supply                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 6   | RESET     | System reset pin. (RESX)<br>signal is active low                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 7   | SDA       | When IM3: Low, SPI interface input/output pin.<br>When IM3: High, SPI interface input pin.<br>The data is latched on the rising edge of the SCL signal.<br>If not used, please fix this pin at VDDI or DGND level.                                                                                                                                                                                                                                                              |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 8   | DCX(SCL)  | This pin is used to be serial interface clock.<br>DCX='1': display data or parameter.<br>DCX='0': command data.<br>If not used, please fix this pin at VDDI or DGND.                                                                                                                                                                                                                                                                                                            |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 9   | CSX       | Chip selection pin<br>Low enable.<br>High disable.                                                                                                                                                                                                                                                                                                                                                                                                                              |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 10  | WRX(D/CX) | Display data/command selection pin in 4-line serial interface.<br>Second Data lane in 2 data lane serial interface.<br>If not used, please fix this pin at VDDI or DGND.                                                                                                                                                                                                                                                                                                        |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 11  | GND       | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 12  | SDO(DOUT) | SPI interface output pin.<br>The data is output on the falling edge of the SCL signal.<br>If not used, let this pin open.                                                                                                                                                                                                                                                                                                                                                       |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 13  | TE        | Tearing effect signal is used to synchronize MCU to frame memory writing.<br>If not used, please let this pin open                                                                                                                                                                                                                                                                                                                                                              |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 14  | IM3       | The MCU interface mode select.<br><table border="1" data-bbox="523 1686 1465 1917"> <thead> <tr> <th>IM3</th> <th>IM2</th> <th>IM1</th> <th>IM0</th> <th>MPU Interface Mode</th> <th>Data pin</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>1</td> <td>0</td> <td>4-line 8bit serial I/F</td> <td>SDA: in/out</td> </tr> <tr> <td>1</td> <td>1</td> <td>1</td> <td>0</td> <td>4-line 8bit serial I/F II</td> <td>SDA:in/<br/>SDO: out</td> </tr> </tbody> </table> | IM3 | IM2                       | IM1                 | IM0 | MPU Interface Mode | Data pin | 0 | 1 | 1 | 0 | 4-line 8bit serial I/F | SDA: in/out | 1 | 1 | 1 | 0 | 4-line 8bit serial I/F II | SDA:in/<br>SDO: out |
| IM3 | IM2       | IM1                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | IM0 | MPU Interface Mode        | Data pin            |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 0   | 1         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0   | 4-line 8bit serial I/F    | SDA: in/out         |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 1   | 1         | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0   | 4-line 8bit serial I/F II | SDA:in/<br>SDO: out |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 15  | GND       | Ground                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 16  | XR        | Right electrode                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |
| 17  | YD        | Bottom electrode                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                           |                     |     |                    |          |   |   |   |   |                        |             |   |   |   |   |                           |                     |



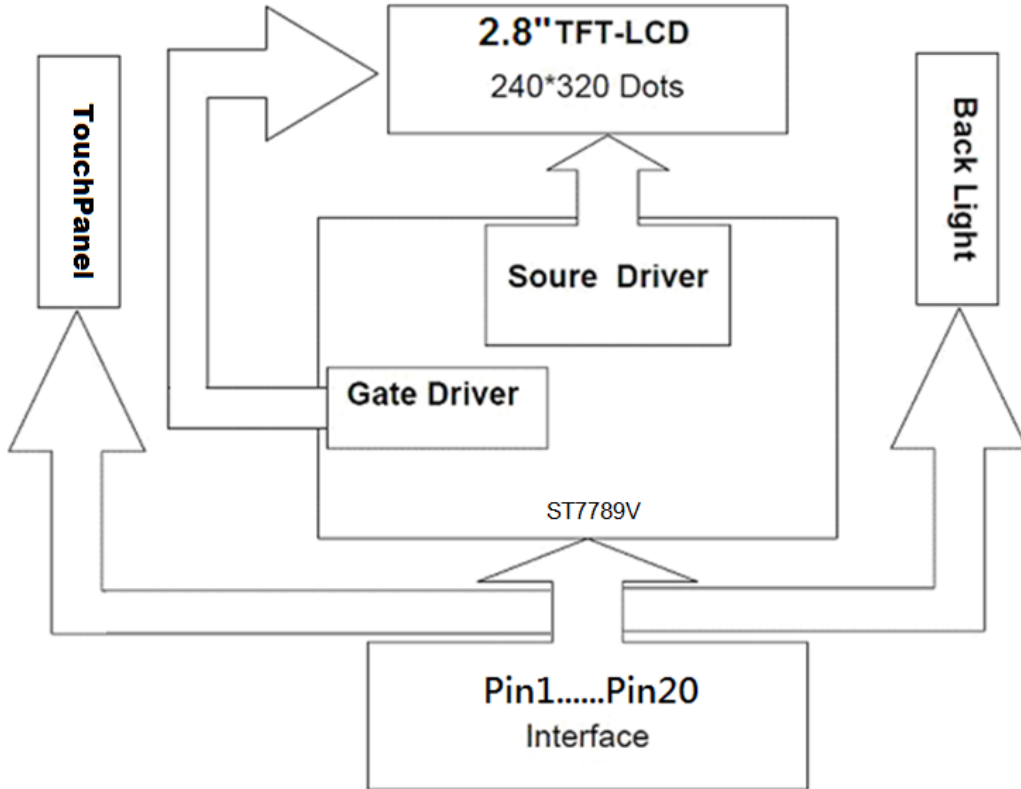
|    |     |                |
|----|-----|----------------|
| 18 | XL  | Left electrode |
| 19 | YU  | Top electrode  |
| 20 | GND | Ground         |

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## 5. Contour Drawing



## 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.  $\leq 40^{\circ}\text{C}$ , 90% RH MAX. Temp.  $> 40^{\circ}\text{C}$ , Absolute humidity shall be less than 90% RH at  $40^{\circ}\text{C}$

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## 8. Electrical Characteristics

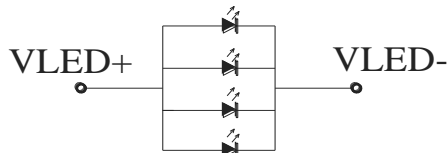
### 8.1. Operating conditions

| Item                      | Symbol          | Min | Typ | Max  | Unit |
|---------------------------|-----------------|-----|-----|------|------|
| Supply Voltage For Analog | V <sub>cc</sub> | 2.4 | 3.3 | 3.6  | V    |
| Supply Current For LCM    | I <sub>cc</sub> | —   | 6.7 | 10.0 | mA   |

### 8.2. LED driving conditions

| Parameter         | Symbol            | Min.   | Typ. | Max. | Unit | Remark     |
|-------------------|-------------------|--------|------|------|------|------------|
| LED current       | —                 | —      | 80   | —    | mA   | —          |
| Power Consumption | —                 | 224    | 256  | 272  | mW   | —          |
| LED voltage       | V <sub>LED+</sub> | 2.8    | 3.2  | 3.4  | V    | Note 1     |
| LED Life Time     | —                 | 50,000 | —    | —    | Hr   | Note 2,3,4 |

Note 1 : There are 1 Groups LED



Back Light Circuit

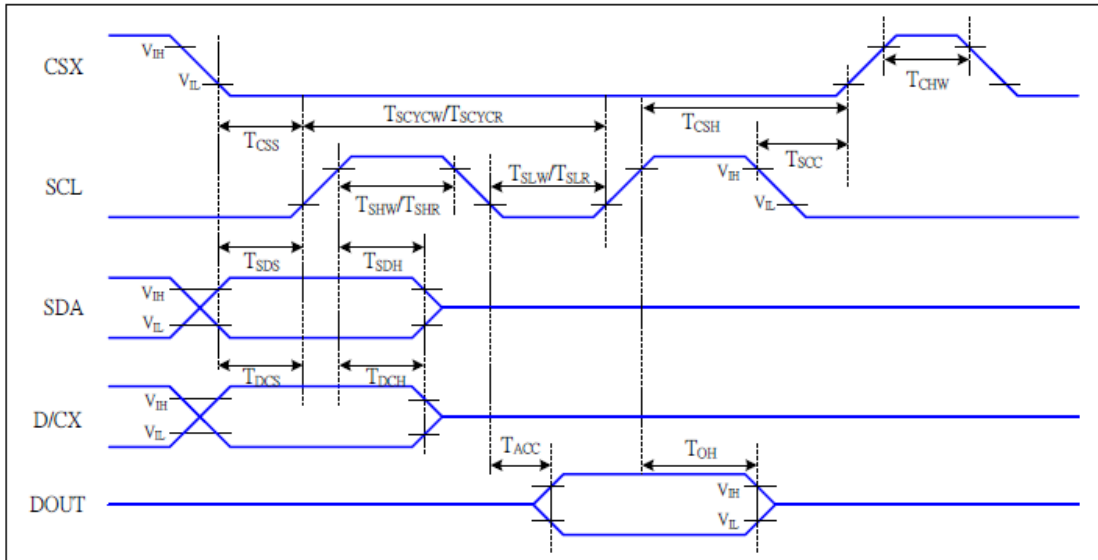
Note 2 : T<sub>a</sub> = 25 °C

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

Note 4 : The single LED lamp case

## 9.AC Characteristics

### 9.1. Serial Interface Characteristics (4-line serial)



**Figure 1 4-line serial Interface Timing Characteristics**

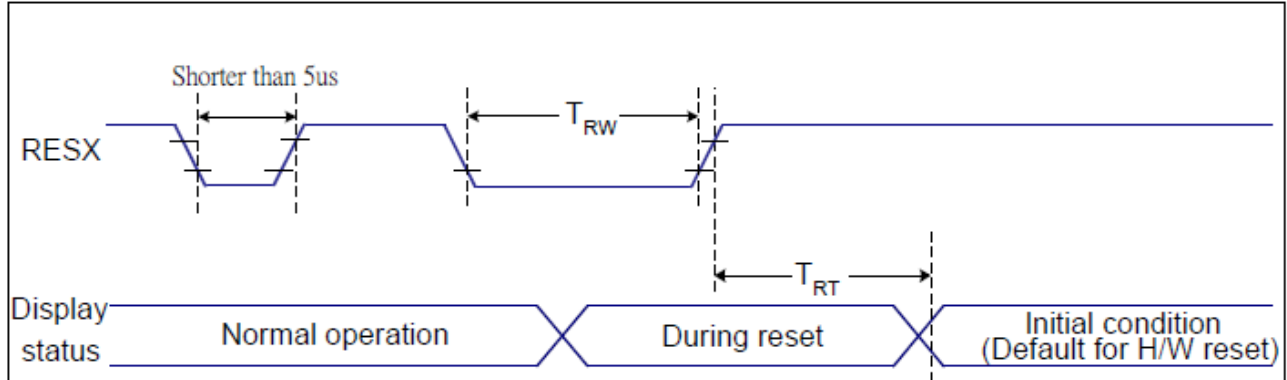
VDDI=1.65 to 3.6V, VDD=2.4 to 3.6V, AGND=DGND=0V, Ta=25 °C

| Signal       | Symbol             | Parameter                      | MIN | MAX | Unit | Description               |
|--------------|--------------------|--------------------------------|-----|-----|------|---------------------------|
| CSX          | T <sub>CSS</sub>   | Chip select setup time (write) | 15  |     | ns   |                           |
|              | T <sub>CSH</sub>   | Chip select hold time (write)  | 15  |     | ns   |                           |
|              | T <sub>CSS</sub>   | Chip select setup time (read)  | 60  |     | ns   |                           |
|              | T <sub>SCC</sub>   | Chip select hold time (read)   | 65  |     | ns   |                           |
|              | T <sub>CHW</sub>   | Chip select "H" pulse width    | 40  |     | ns   |                           |
| SCL          | T <sub>SCYCW</sub> | Serial clock cycle (Write)     | 16  |     | ns   | -write command & data ram |
|              | T <sub>SHW</sub>   | SCL "H" pulse width (Write)    | 7   |     | ns   |                           |
|              | T <sub>SLW</sub>   | SCL "L" pulse width (Write)    | 7   |     | ns   |                           |
|              | T <sub>SCYCR</sub> | Serial clock cycle (Read)      | 150 |     | ns   | -read command & data ram  |
|              | T <sub>SHR</sub>   | SCL "H" pulse width (Read)     | 60  |     | ns   |                           |
|              | T <sub>SLR</sub>   | SCL "L" pulse width (Read)     | 60  |     | ns   |                           |
| D/CX         | T <sub>DCS</sub>   | D/CX setup time                | 10  |     | ns   |                           |
|              | T <sub>DCH</sub>   | D/CX hold time                 | 10  |     | ns   |                           |
| SDA<br>(DIN) | T <sub>SDS</sub>   | Data setup time                | 7   |     | ns   |                           |
|              | T <sub>SDH</sub>   | Data hold time                 | 7   |     | ns   |                           |
| DOUT         | T <sub>ACC</sub>   | Access time                    | 10  | 50  | ns   | For maximum CL=30pF       |
|              | T <sub>OH</sub>    | Output disable time            | 15  | 50  | ns   | For minimum CL=8pF        |

**Table 1 4-line serial Interface Characteristics**

Note : The rising time and falling time (Tr, Tf) of input signal are specified at 15 ns or less. Logic high and low levels are specified as 30% and 70% of VDDI for Input signals.

**9.2. Reset Timing:**



**Figure 2 Reset Timing**  
 VDDI=1.65 to 3.6V, VDD=2.4 to 3.6V, AGND=DGND=0V, Ta=25 °C

| Related Pins | Symbol | Parameter            | MIN | MAX                | Unit |
|--------------|--------|----------------------|-----|--------------------|------|
| RESX         | TRW    | Reset pulse duration | 10  | -                  | us   |
|              | TRT    | Reset cancel         | -   | 5 (Note 1, 5)      | ms   |
|              |        |                      |     | 120 (Note 1, 6, 7) | ms   |

Notes:

1. The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NVM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.
2. Spike due to an electrostatic discharge on RESXline does not cause irregular system reset according to the table below:

| RESX Pulse          | Action         |
|---------------------|----------------|
| Shorter than 5us    | Reset Rejected |
| Longer than 9us     | Reset          |
| Between 5us and 9us | Reset starts   |

3. During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode.) and then return to Default condition for Hardware Reset.
4. Spike Rejection also applies during a valid reset pulse as shown below:

## 10. Optical Characteristics

| Item                                              | Symbol | Condition.                        | Min                               | Typ.  | Max.  | Unit              | Remark            |        |
|---------------------------------------------------|--------|-----------------------------------|-----------------------------------|-------|-------|-------------------|-------------------|--------|
| Response time                                     | Tr     | $\theta=0^\circ$ 、 $\phi=0^\circ$ | -                                 | 4     | 8     | ms                | Note 3            |        |
|                                                   | Tf     |                                   | -                                 | 12    | 24    | ms                |                   |        |
| Contrast ratio                                    | CR     | At optimized viewing angle        | 400                               | 500   | -     | -                 | Note 4            |        |
| Color Chromaticity                                | White  | Wx                                | $\theta=0^\circ$ 、 $\phi=0^\circ$ | 0.253 | 0.303 | 0.353             | Note 2,6,7        |        |
|                                                   |        | Wy                                |                                   | 0.275 | 0.325 | 0.375             |                   |        |
| Viewing angle<br>(Gray Scale Inversion Direction) | Hor.   | $\theta_R$                        | $CR \geq 10$                      | 35    | 45    | -                 | Deg.              | Note 1 |
|                                                   |        | $\theta_L$                        |                                   | 35    | 45    | -                 |                   |        |
|                                                   | Ver.   | $\phi_T$                          |                                   | 40    | 50    | -                 |                   |        |
|                                                   |        | $\phi_B$                          |                                   | 10    | 20    | -                 |                   |        |
| Brightness                                        | -      | -                                 | 250                               | 350   | -     | cd/m <sup>2</sup> | Center of display |        |
| Uniformity                                        | (U)    | -                                 | 75                                | -     | -     | %                 | Note5             |        |

Ta=25±2°C

Note 1: Definition of viewing angle range

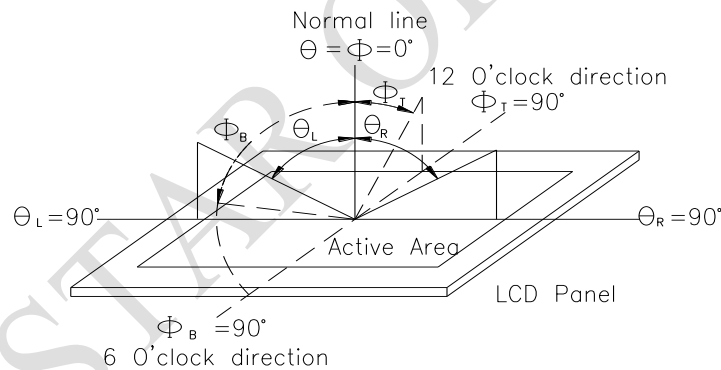


Fig. 10.1. Definition of viewing angle

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.



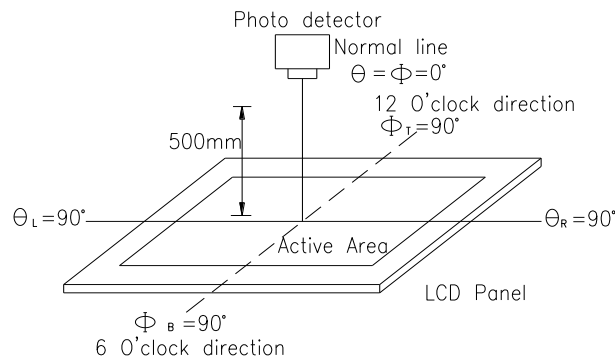
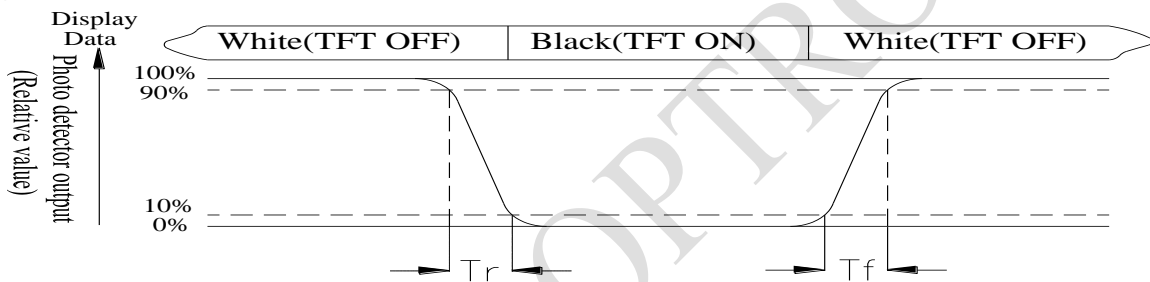


Fig. 10.2. Optical measurement system setup

**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

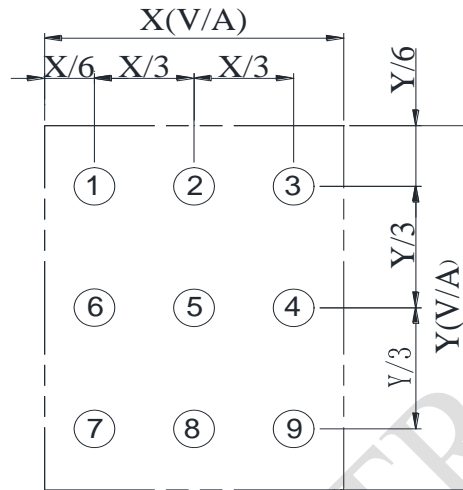


Fig10.3. Definition of uniformity

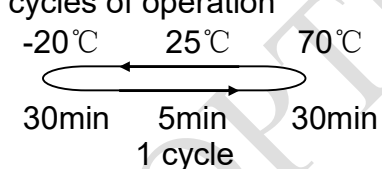
**Note 6: Definition of color chromaticity (CIE 1931)**

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.

# 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>96hrs                                                                                                                          | 2    |
| Low Temperature storage              | Endurance test applying the low storage temperature for a long time.                                                                                                                                     | -30°C<br>96hrs                                                                                                                         | 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>96hrs                                                                                                                          | —    |
| Low Temperature Operation            | Endurance test applying the electric stress under low temperature for a long time.                                                                                                                       | -20°C<br>96hrs                                                                                                                         | 1    |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 40°C, 90%RH max                                                                                                                                                 | 40°C, 90%RH<br>96hrs                                                                                                                   | 1,2  |
| Thermal shock resistance             | The sample should be allowed stand the following 10 cycles of operation<br><div style="text-align: center;">  </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<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=±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.



**12.1. Resistance Touch Panel General Specifications**

| Item                                                | Description                 |
|-----------------------------------------------------|-----------------------------|
| Driving condition                                   | DC5V                        |
| Operating force                                     | 20~100g                     |
| Linearity max                                       | $\leq 1.5\%$                |
| Insulating resistance                               | $> 20M\Omega \cdot 25V(DC)$ |
| Light transparence                                  | 70%                         |
| Structure type                                      | ITO Film/ITO Glass(F/G)     |
| Surface Hardness                                    | 3H typ                      |
| Pen Hitting Durability<br>(with the silicon rubber) | $> 1000,000$ times          |
| X resistance                                        | 150~500 $\Omega$            |
| Y resistance                                        | 350~900 $\Omega$            |

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**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 <<

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

**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 : / /

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