



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 Opttronics, Inc.

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## RFM1040G-AWW-LNB

### SPECIFICATION

CUSTOMER:

|             |  |
|-------------|--|
| APPROVED BY |  |
| PCB VERSION |  |
| DATE        |  |

FOR CUSTOMER USE ONLY

| SALES BY | APPROVED BY | CHECKED BY | PREPARED BY |
|----------|-------------|------------|-------------|
|          |             |            |             |

Release DATE:

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

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

## Revision History

| VERSION | DATE       | REVISED PAGE NO. | Note        |
|---------|------------|------------------|-------------|
| 0       | 2022/05/20 |                  | First issue |

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# 1.Module Classification Information

| R | F | M | 104 | 0G | - | A | W | W | - | L | N  | B  |
|---|---|---|-----|----|---|---|---|---|---|---|----|----|
| 1 | 2 | 3 | 4   | 5  | - | 6 | 7 | 8 | - | 9 | 10 | 11 |

| Item | Description                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                           |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | R : Raystar Optonics 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 : 10.4" 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<br>Type,<br>Temperature<br>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 ; W→Transmissive, Super 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                                                                                                                                                                                                                                                                                                                                             |
|      |                                                                                                                                                                                                                                                                   | 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)                                                                                                                                                                                                                                                               |

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## 2.Summary

TFT 10.4 " is a transmissive type color active matrix liquid crystal display (LCD), which uses amorphous thin film transistor (TFT) as switching devices. This panel has a 10.4 inches diagonally measured active display area with resolution 1024 x 768. This product is composed of a TFT LCD panel, polarizers, driver ICs, FPC and PCBA.

Note: Air-Bonding is recommended.

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### 3.General Specifications

- Size: 10.4 inch
- Dot Matrix: 1024 x RGB x 768 (TFT) dots
- Module dimension: 240.6 x 190.8 x 15.65 mm
- Active area: 210.432 x 157.824 mm
- Pixel pitch: 0.2055 X 0.2055 mm
- LCD type: TFT, Normally Black, Transmissive
- Viewing Angle: 80/80/80/80 min
- Aspect Ratio: 4:3
- TFT Interface: LVDS
- Backlight Type: LED ,Normally White
- CTP IC: ILI2511 or Equivalent
- CTP Interface: USB
- CTP FW Version: 6.0.0.0.0.0.3
- CTP Resolution: 16384\*16384
- With /Without TP: With CTP
- Surface: Glare
- Side screw torque : TBD
- Assembly Instructions:(Need to use edge measuring keyholes to perform fixing  
and support)

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

## 4.Interface

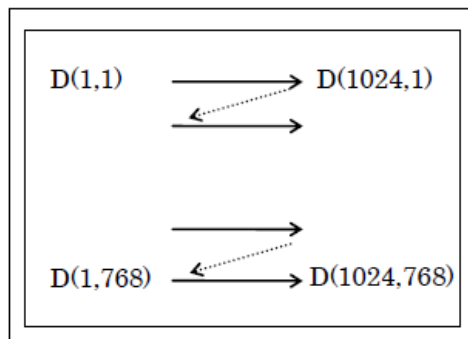
### 4.1. LCM PIN Definition (CON1)

| Pin | Symbol | Function                                             | Remark |
|-----|--------|------------------------------------------------------|--------|
| 1-2 | VDD    | Power supply: + 3.3V                                 |        |
| 3-4 | GND    | Ground                                               |        |
| 5   | Link0- | 0- LVDS differential data input                      |        |
| 6   | Link0+ | 0+ LVDS differential data input                      |        |
| 7   | GND    | Ground                                               |        |
| 8   | Link1- | 1- LVDS differential data input                      |        |
| 9   | Link1+ | 1+ LVDS differential data input                      |        |
| 10  | GND    | Ground                                               |        |
| 11  | Link2- | 2- LVDS differential data input                      |        |
| 12  | Link2+ | 2+ LVDS differential data input                      |        |
| 13  | GND    | Ground                                               |        |
| 14  | CLKIN- | - LVDS differential clock input                      |        |
| 15  | CLKIN+ | + LVDS differential clock input                      |        |
| 16  | GND    | Ground                                               |        |
| 17  | Link3- | 3- LVDS differential data input                      |        |
| 18  | Link3+ | 3+ LVDS differential data input                      |        |
| 19  | MODE   | Bit 6:High(6 Bit);Low(8 Bit)                         |        |
| 20  | SC     | Scan direction selector (Low: Normal ;High: Reverse) |        |

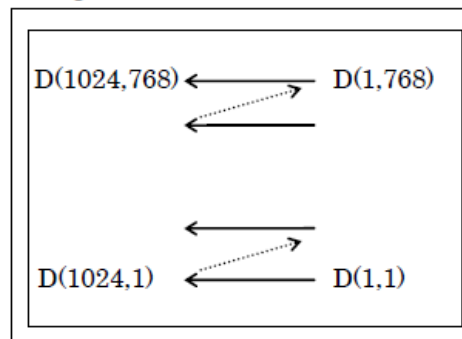
(1) Display Position and Scan Direction

D(X,Y) shows the data number of input signal.

SC: Low



SC: High





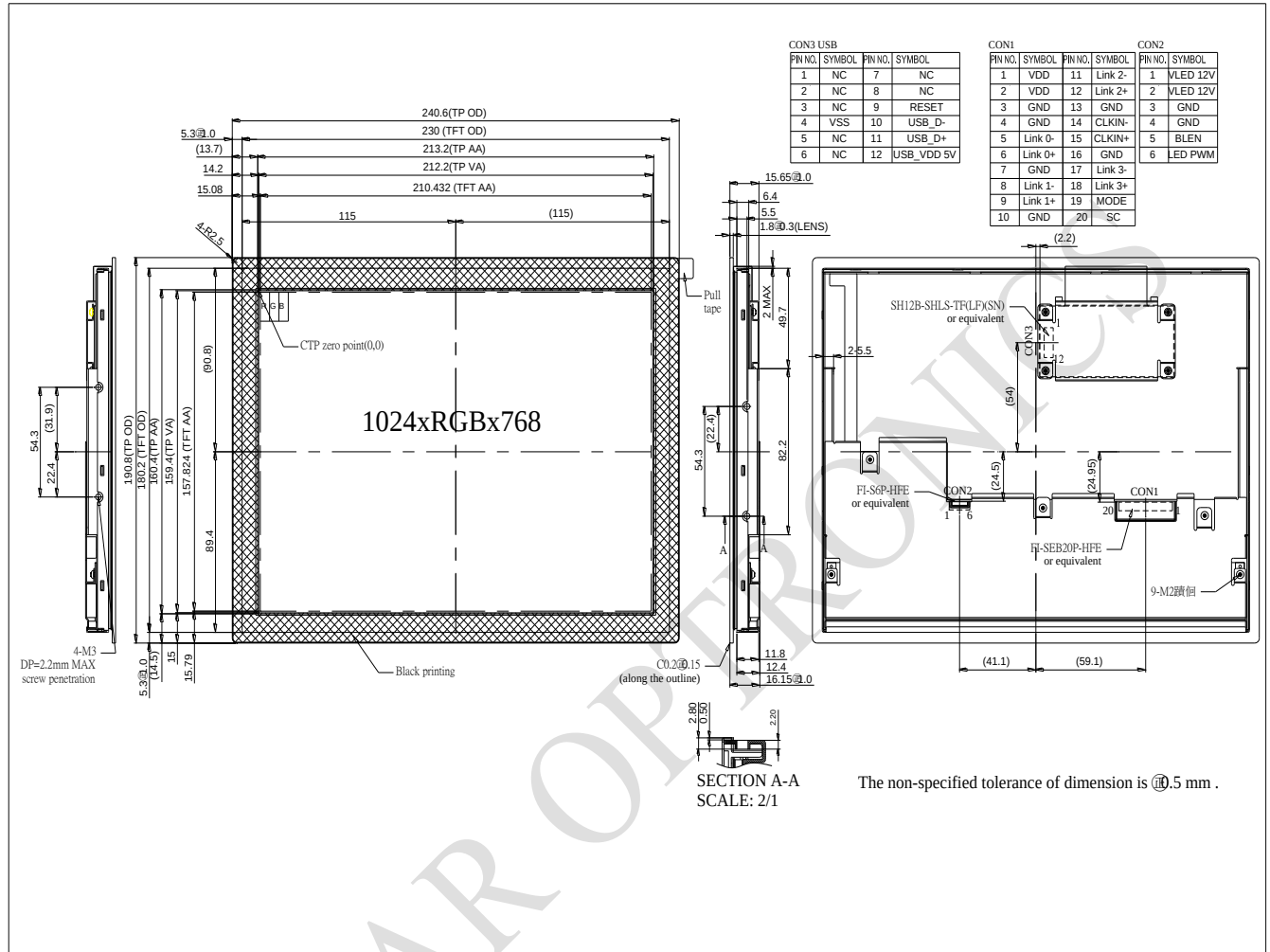
**4.2. CON2**

| Pin | Symbol   | Function                                               | Remark |
|-----|----------|--------------------------------------------------------|--------|
| 1-2 | VLED 12V | 12V input                                              |        |
| 3-4 | GND      | Ground                                                 |        |
| 5   | BLEN     | Backlight ON-OFF                                       |        |
| 6   | LED PWM  | Light Dimming Control (PWM) Input Voltage (Low active) |        |

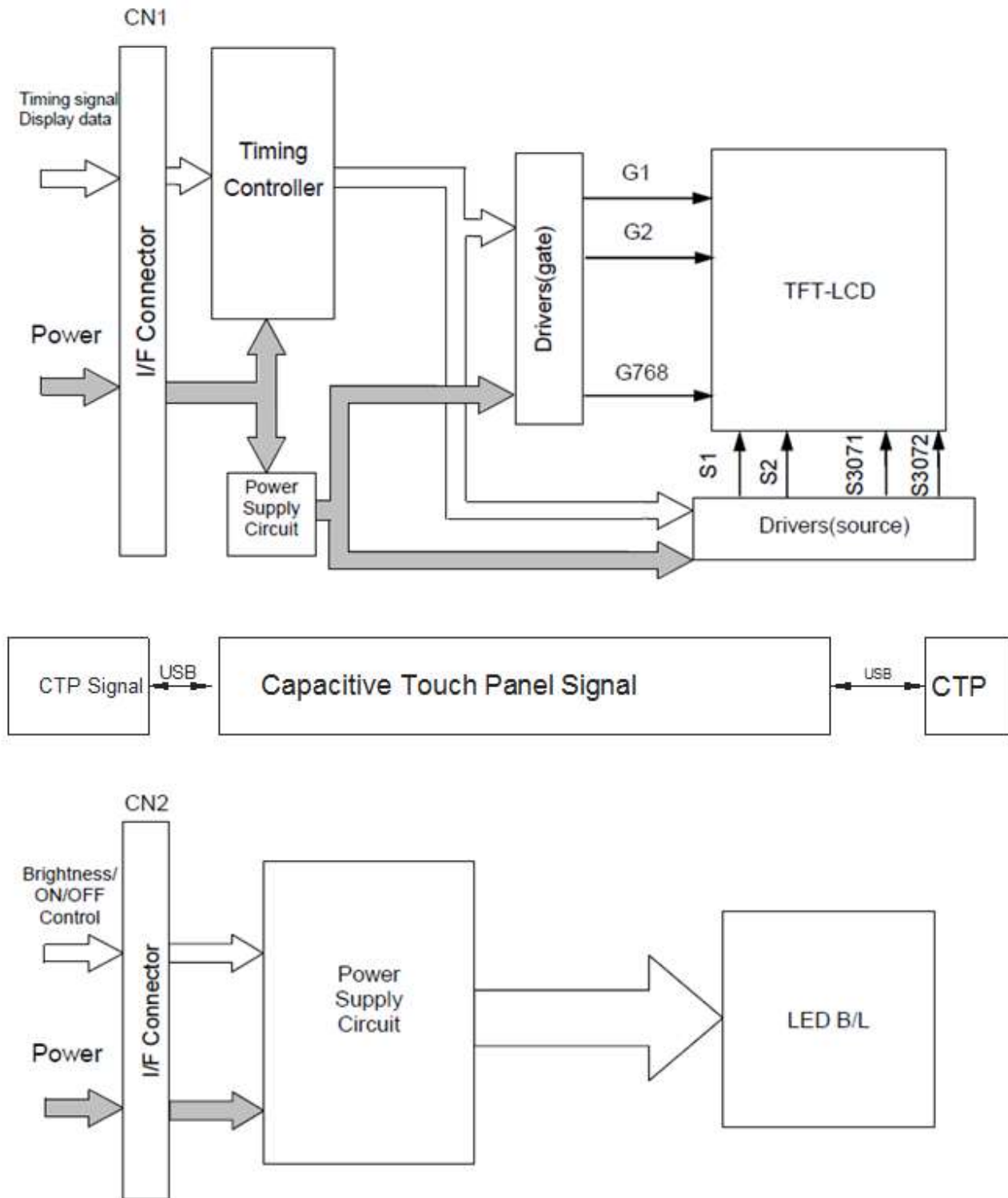
**4.3. CON3**

| Pin | Symbol     | Function      | Remark |
|-----|------------|---------------|--------|
| 1-3 | NC         | No connection |        |
| 4   | Vss        | Power ground. |        |
| 5-8 | NC         | No connection |        |
| 9   | RESET      | RST           |        |
| 10  | USB_D-     | D-            |        |
| 11  | USB_D+     | D+            |        |
| 12  | USB_VDD 5V | Power supply  |        |

## 5. Contour Drawing



## 6. Block Diagram



## 7. Absolute Maximum Ratings

| Item                  | Symbol | Min | Typ | Max | Unit |
|-----------------------|--------|-----|-----|-----|------|
| Operating Temperature | TOP    | -30 | —   | +80 | °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  $60^{\circ}\text{C}$

## 8. Electrical Characteristics

### 8.1. Operating conditions

| Item                     | Symbol              | Standard Value      |     |                     | Unit |
|--------------------------|---------------------|---------------------|-----|---------------------|------|
|                          |                     | Min                 | Typ | Max                 |      |
| Power voltage            | V <sub>DD</sub>     | 3.0                 | 3.3 | 3.6                 | V    |
| Supply CTP               | USB_VDD 5V          | 4.4                 | 5.0 | 5.5                 | V    |
|                          | I <sub>VDD 5V</sub> | —                   | 95  | 145                 | mA   |
| Input logic high voltage | V <sub>IH</sub>     | 0.7 V <sub>DD</sub> | -   | V <sub>DD</sub>     | V    |
| Input logic low voltage  | V <sub>IL</sub>     | 0                   | -   | 0.3 V <sub>DD</sub> | V    |
| Current for Power        | I <sub>VDD</sub>    | -                   | 385 | 424                 | mA   |

### 8.2. LED driving conditions

| Parameter               | Symbol     | Min. | Typ.    | Max. | Unit | Remark |
|-------------------------|------------|------|---------|------|------|--------|
| Backlight Enable(BLEN)  | High Level | 1.3  | 3.3     | -    | V    | Note 2 |
|                         | Low Level  | -    | 0.8     | 1.0  | V    |        |
| PWM Control Level (PWM) | High Level | -    | 3.3     | -    | V    | Note 3 |
|                         | Low Level  | -    | 0       | -    | V    |        |
| PWM Control Duty Ratio  | -          | 0    | -       | 100  | %    |        |
| PWM Control Frequency   | -          | -    | 10K     | -    | Hz   | Note 4 |
| LED Life Time           | -          | -    | 100,000 | -    | Hr   | Note 1 |

Note 1 : Ta = 25 °C

Note 2 : Turn ON the backlight when BLEN =High, Turn OFF when BLEN =Low

Note 3 : PWM High Active Control from lowest brightness to highest brightness

Note 4 : Lower frequency causes the flicker or the image breaking of motion picture.

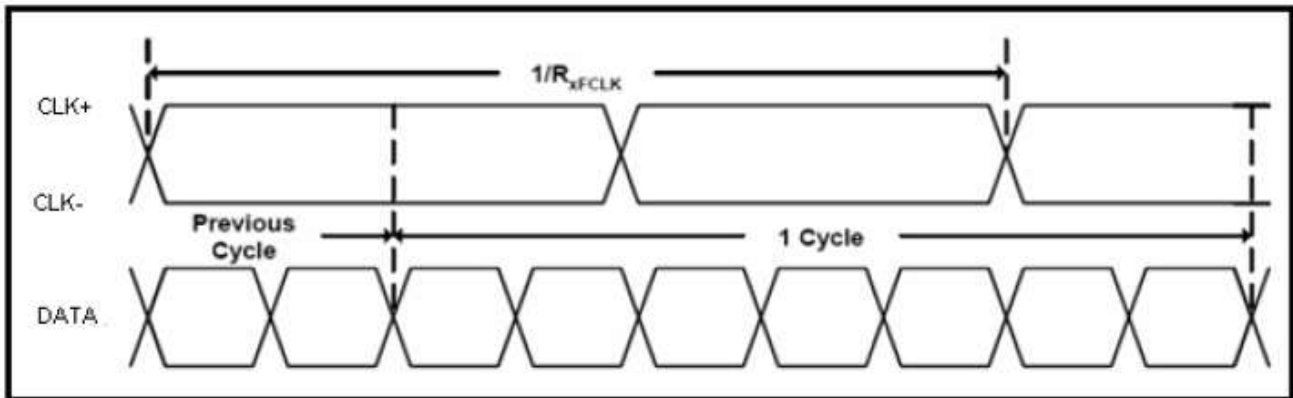
Depending on the PWM signal integrity (jitter etc.), the flicker may be visible. Please evaluate in advance

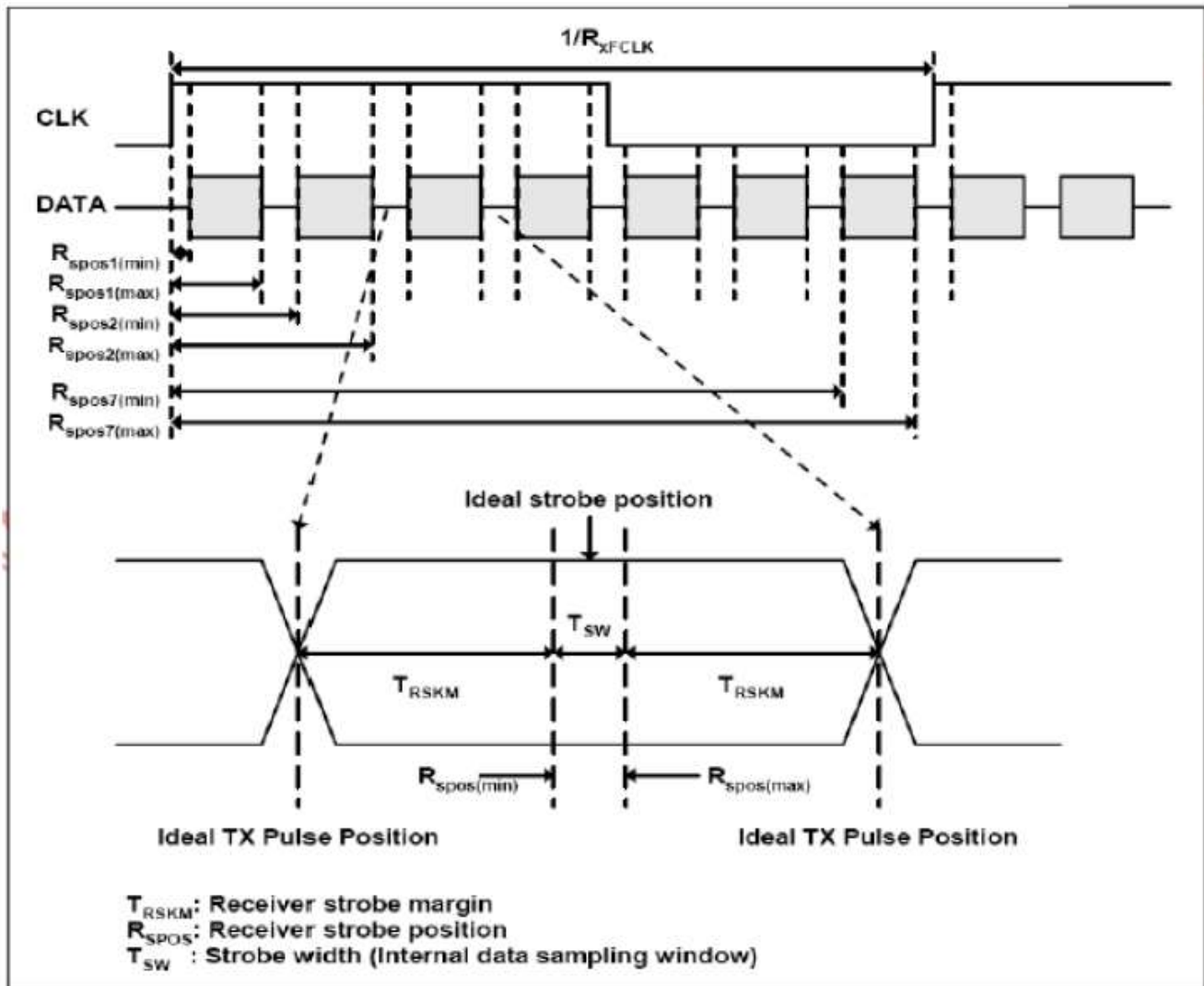
## 9.LVDS Signal Timing Characteristics

### 9.1. AC Electrical characteristics

| Parameter              | Symbol | Min  | Typ                          | Max                          | Unit | Condition                                                                                                                   |
|------------------------|--------|------|------------------------------|------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------|
| Clock frequency        | RxFCLK | 26.2 | 51.2                         | 71                           | MHz  |                                                                                                                             |
| Input data skew margin | TRSKM  | 500  | 500                          | $1/(2 \times \text{RxFCLK})$ | ps   | Typical value for 1024*600 resolution                                                                                       |
| Clock high time        | TLVCH  |      | $4/(7 \times \text{RxFCLK})$ |                              | ns   | $ \text{VID} =400\text{mv}$<br>$\text{RxVCM}=1.2\text{V}$<br>$\text{RxFCLK}=71\text{MHz}$<br>$\text{VDD\_LVDS}=3.3\text{V}$ |
| Clock low time         | TLVCL  |      | $3/(7 \times \text{RxFCLK})$ |                              | ns   |                                                                                                                             |
| VSD setup time         | TenPLL | 0    | TenPLL                       | 150                          | us   |                                                                                                                             |

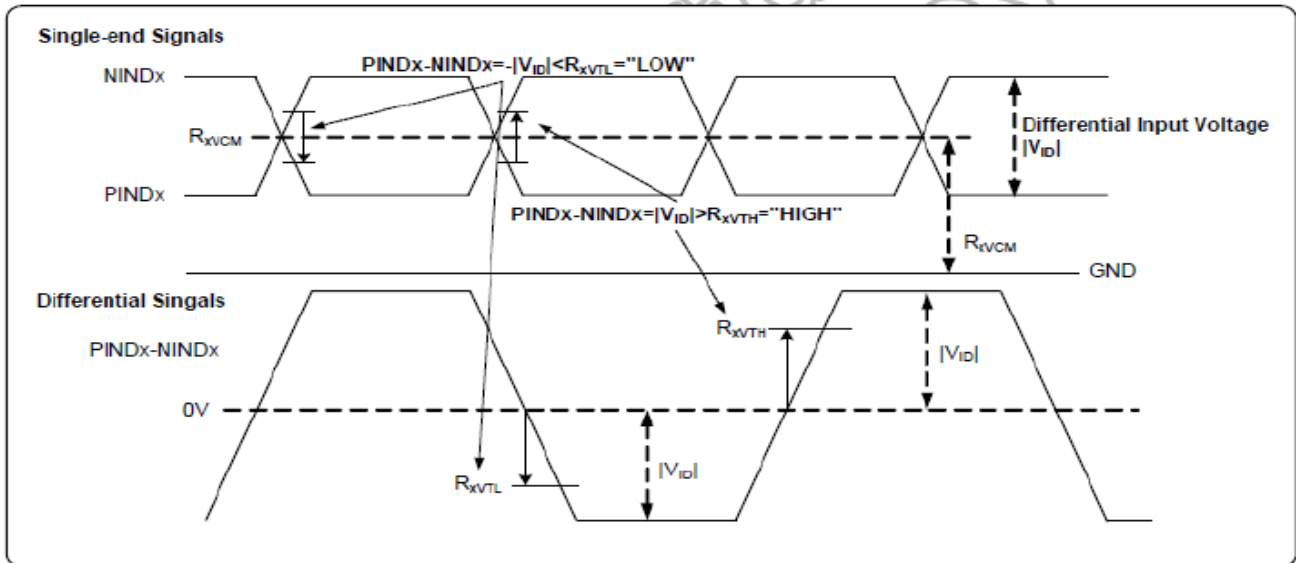
### 9.2. Input clock and data timing diagram





### 9.3. DC electrical characteristics

| Parameter                                      | Symbol     | Values       |      |                      | Unit | Remark          |
|------------------------------------------------|------------|--------------|------|----------------------|------|-----------------|
|                                                |            | Min.         | Typ. | Max.                 |      |                 |
| LVDS Differential input high Threshold voltage | $R_{xVTH}$ | -            | -    | +100                 | mV   | $R_{xVCM}=1.2V$ |
| LVDS Differential input low Threshold voltage  | $R_{xVTL}$ | -100         | -    | -                    | mV   |                 |
| Input Voltage range (Singed-end)               | $R_{xVIN}$ | 0            | -    | $VDD-1.2+ V_{ID} /2$ | V    |                 |
| LVDS Differential input common mode voltage    | $R_{xVCM}$ | $ V_{ID} /2$ | -    | $VDD-1.2$            | V    |                 |
| LVDS Differential voltage                      | $ V_{ID} $ | 0.2          | -    | 0.6                  | V    |                 |



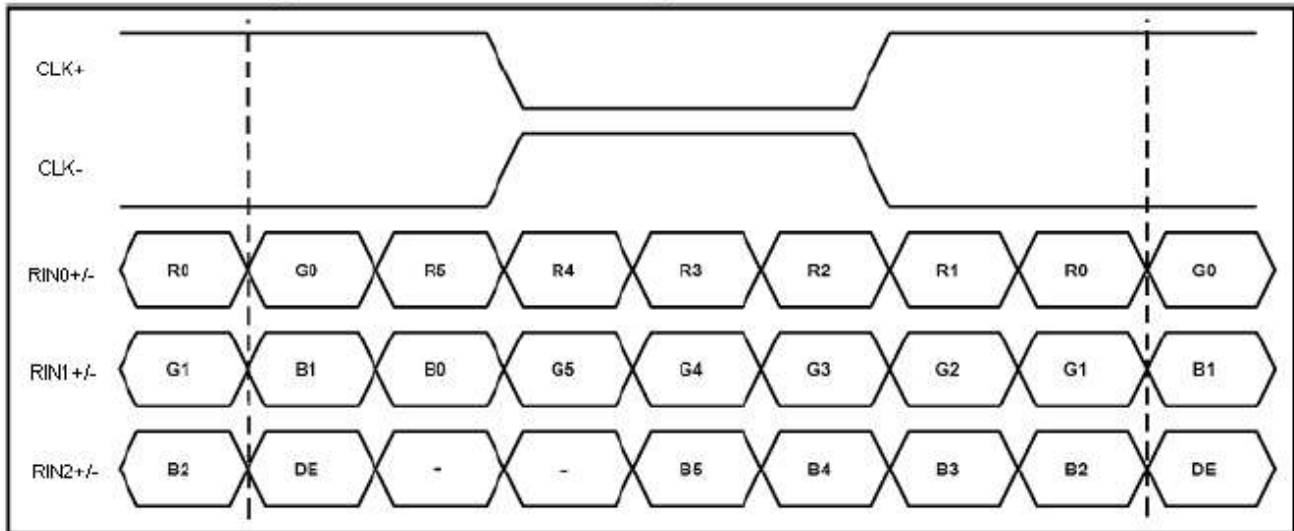
### 9.4. Data timing

| Parameter               | Symbol    | Spec. |      |      | Unit  |
|-------------------------|-----------|-------|------|------|-------|
|                         |           | Min.  | Typ. | Max. |       |
| DCLK frequency          | fclk      | 52    | 65   | 71   | MHz   |
| Horizontal display area | thd       | 1024  |      |      | DCLK  |
| HSD period              | th        | 1114  | 1344 | 1400 | DCLK  |
| HSD blanking            | thb+thfp  | 90    | 320  | 376  | DCLK  |
| Vertical display area   | tvd       | 768   |      |      | $T_H$ |
| VSD period              | tv        | 778   | 806  | 845  | $T_H$ |
| VSD blanking            | tvbp+tvfp | 10    | 38   | 77   | $T_H$ |

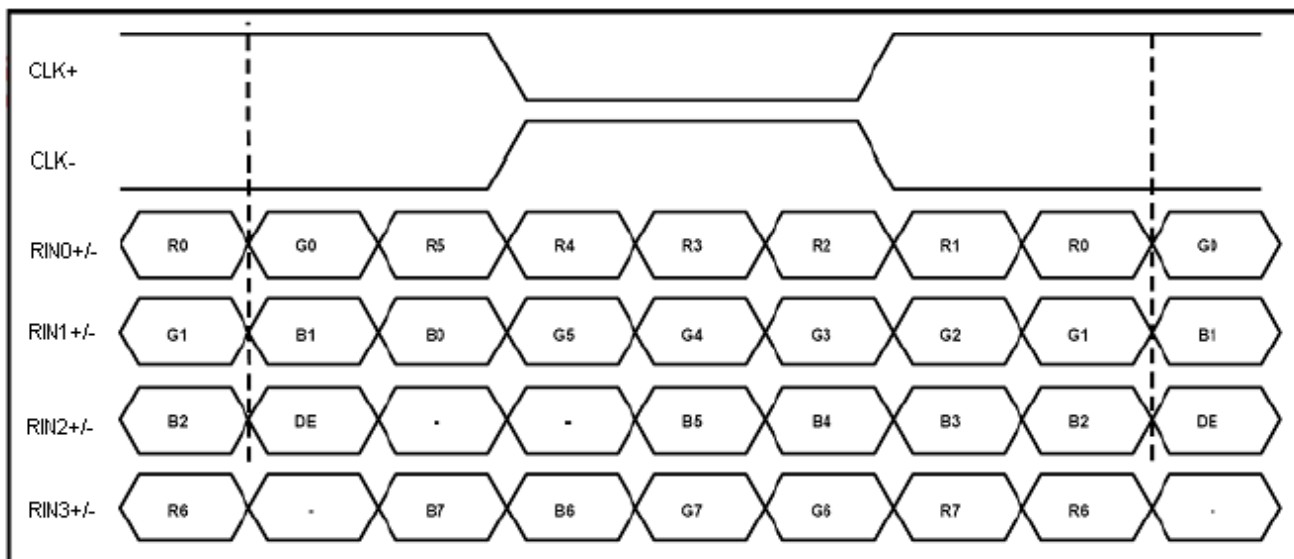


## 9.5. LVDS data input format

SEL6/8 = "High" for 6 bits LVDS Input



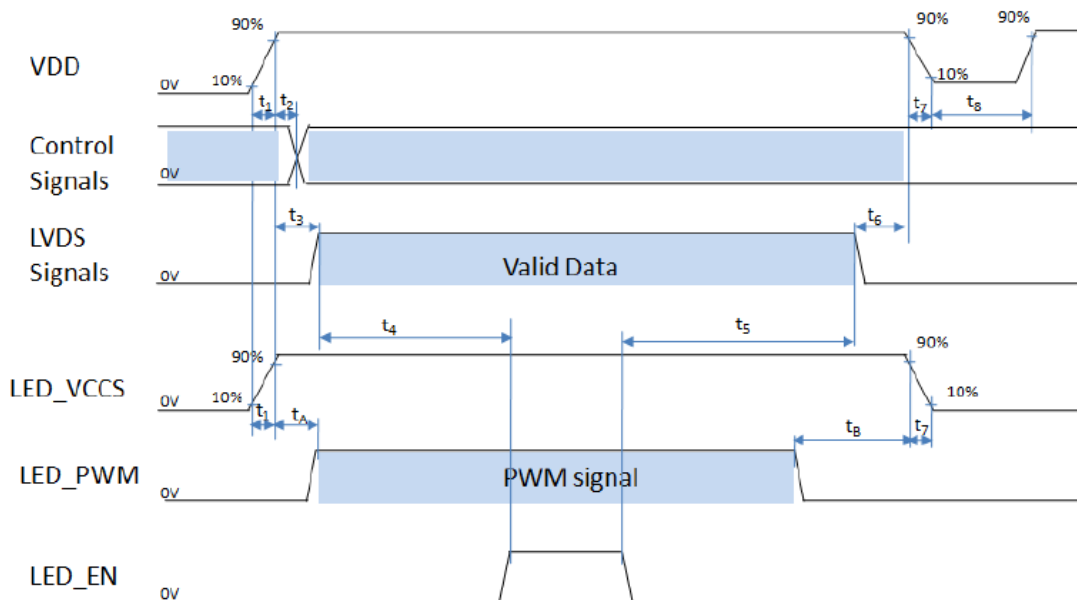
SEL6/8 = "Low" or "NC" for 8 bits LVDS Input



## 10. Power sequence

The power sequence specifications are shown as the following table and diagram.

| Symbol | Value |      | Unit |
|--------|-------|------|------|
|        | Min.  | Max. |      |
| $t_1$  | 1     | 20   | ms   |
| $t_2$  | 1     | 5    | ms   |
| $t_3$  | 10    | 50   | ms   |
| $t_4$  | 200   | 500  | ms   |
| $t_5$  | 200   | 500  | ms   |
| $t_6$  | 50    | 200  | ms   |
| $t_7$  | 0     | 20   | ms   |
| $t_8$  | 500   | -    | ms   |
| $t_A$  | 0     | 50   | ms   |
| $t_B$  | 0     | 50   | ms   |



Note 1: Please don't plug the interface cable of on when system is turned on.

Note 2: Please avoid floating state of the interface signal during signal invalid period.

Note 3: It is recommended that the backlight power must be turned on after the power supply for LCD and the interface signal is valid.

Note 4: Control signals include SEL6/8 & Reverse.

## 11.Optical Characteristics

| Item                                              |       | Symbol     | Condition.                            | Min   | Typ.  | Max.  | Unit              | Remark            |
|---------------------------------------------------|-------|------------|---------------------------------------|-------|-------|-------|-------------------|-------------------|
| Response time                                     |       | Tr+ Tf     | $\theta=0^{\circ}$ 、 $\Phi=0^{\circ}$ | -     | 25    | 35    | .ms               | Note 3            |
| Contrast ratio                                    |       | CR         | At optimized viewing angle            | 800   | 1000  | -     | -                 | Note 4            |
| Color Chromaticity                                | White | Wx         | $\theta=0^{\circ}$ 、 $\Phi=0$         | 0.269 | 0.319 | 0.369 | -                 | Note 2,5,6        |
|                                                   |       | Wy         |                                       | 0.319 | 0.369 | 0.419 | -                 |                   |
| Viewing angle<br>(Gray Scale Inversion Direction) | Hor.  | $\Theta_R$ | $CR\geq 10$                           | 80    | -     | -     | Deg.              | Note 1            |
|                                                   |       | $\Theta_L$ |                                       | 80    | -     | -     |                   |                   |
|                                                   | Ver.  | $\Phi_T$   |                                       | 80    | -     | -     |                   |                   |
|                                                   |       | $\Phi_B$   |                                       | 80    | -     | -     |                   |                   |
| Brightness                                        |       | -          | -                                     | 300   | 400   | -     | cd/m <sup>2</sup> | Center of display |
| Uniformity                                        |       | (U)        | -                                     | 70    | -     | -     | %                 | Note 5            |

Ta=25±2°C,

Note 1: Definition of viewing angle range

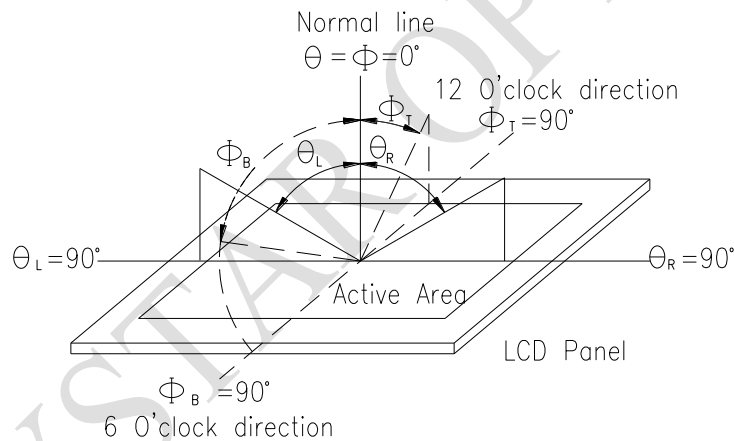


Fig. 11.1. Definition of viewing angle

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-7orBM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.

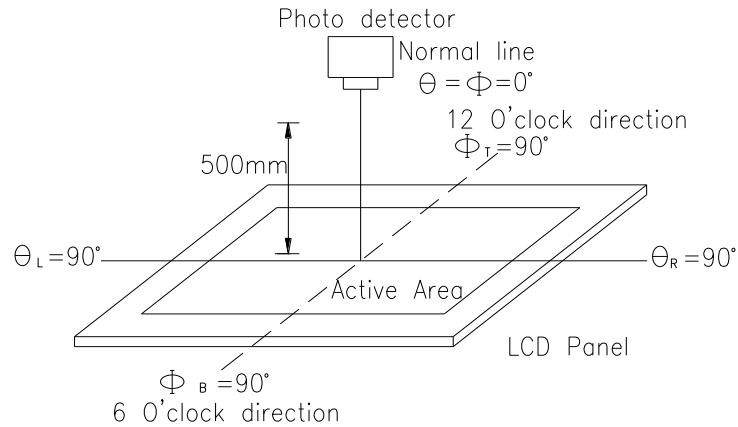
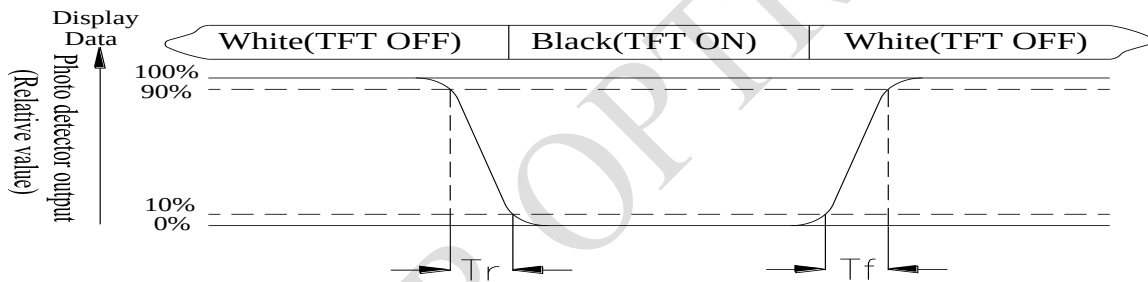


Fig. 11.2. Optical measurement system setup

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.

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

L = Active area length

W = Active area width

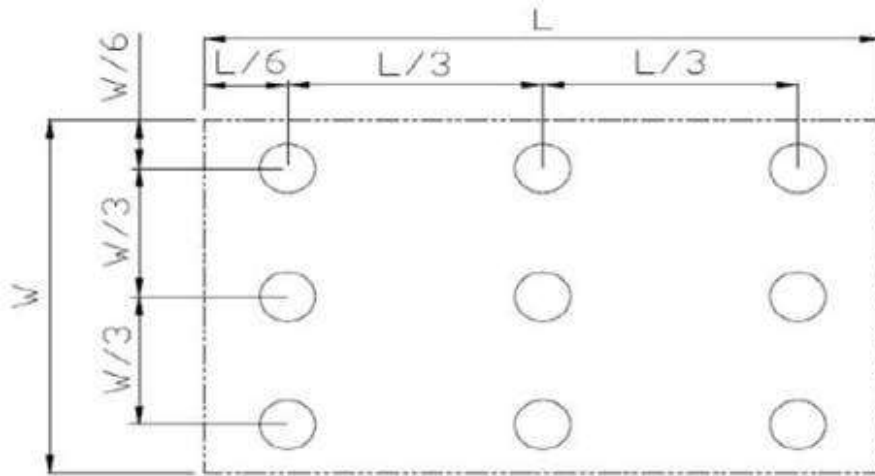


Fig11.3. Definition of uniformity

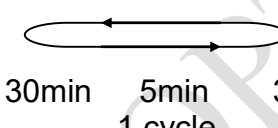
**Note 6: Definition of color chromaticity (CIE 1931)**

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 (Super Wide temperature, -30°C~80°C)

| <b>Environmental Test</b>          |                                                                                                                                                                                                                                                                                      |                                                                                                                                     |             |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Test Item</b>                   | <b>Content of Test</b>                                                                                                                                                                                                                                                               | <b>Test Condition</b>                                                                                                               | <b>Note</b> |
| 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.                                                                                                                                                               | 80°C<br>200hrs                                                                                                                      | —           |
| Low Temperature Operation          | Endurance test applying the electric stress under low temperature for a long time.                                                                                                                                                                                                   | -30°C<br>200hrs                                                                                                                     | 1           |
| High Temperature/ Humidity storage | The module should be allowed to stand at 60°C,90%RH max                                                                                                                                                                                                                              | 60°C,90%RH<br>96hrs                                                                                                                 | 1,2         |
| Thermal shock resistance           | <p>The sample should be allowed stand the following 10 cycles of operation</p> <div style="text-align: center;">  <p>-30°C    25°C    80°C</p> <p>30min    5min    30min</p> <p>1 cycle</p> </div> | -30°C/80°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 finished product housing.                                                                                                                                                                                                         | Contact ±6KV<br>Air ±8KV<br>10 times                                                                                                | 4           |

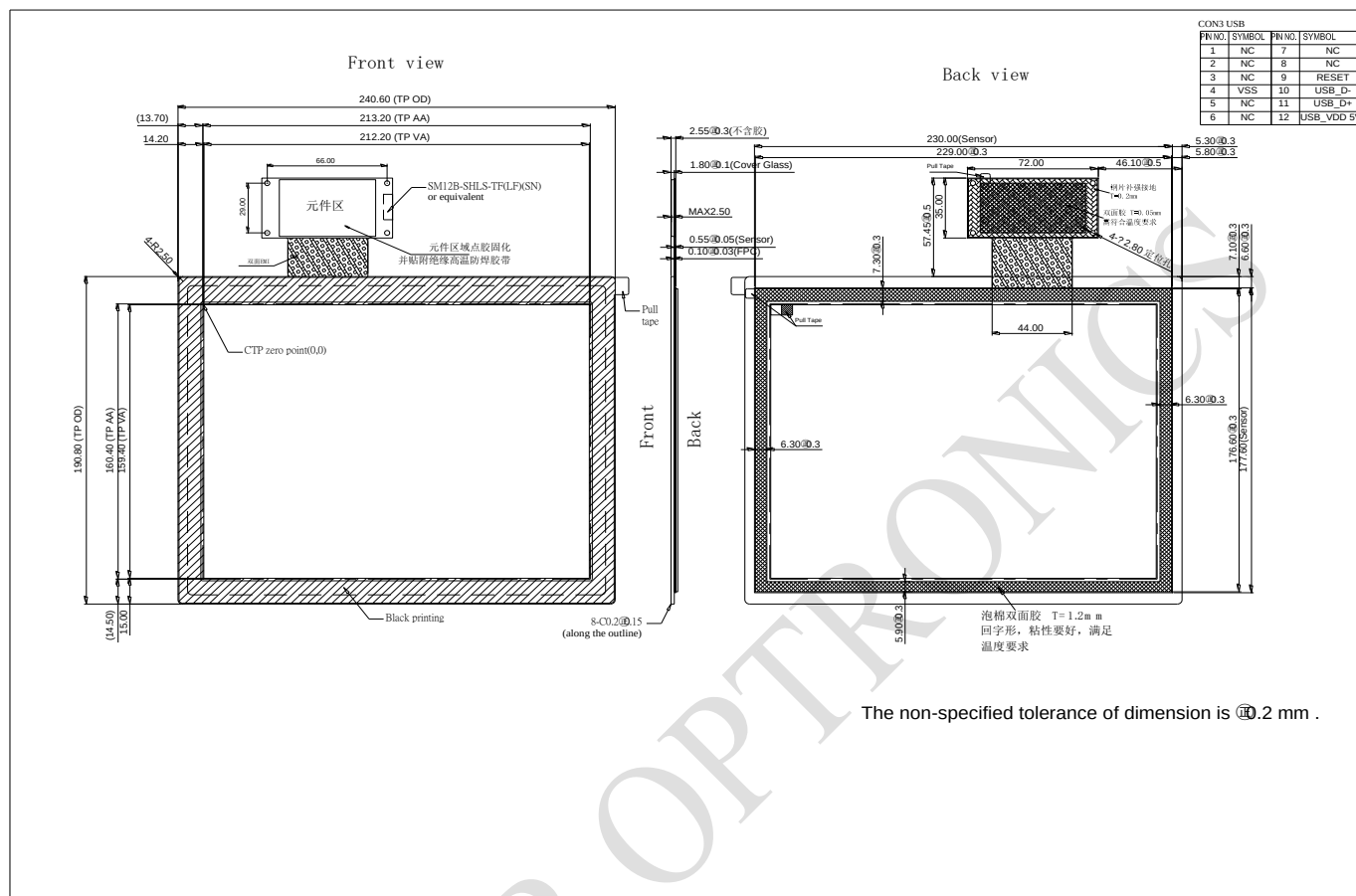
Note1: No dew condensation to be observed.

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.

Note4: Some performance degradation allowed. Need Power off self-recoverable.  
No hardware failure.

## 13.Touch Panel Information



### 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 , _____ |

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**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 :**    /    /