



**WINSTAR Display Co.,Ltd.**  
**華凌光電股份有限公司**



# Winstar Display Co., LTD

## 華凌光電股份有限公司



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### SPECIFICATION

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

**MODULE NO.:** WF52ATLASDNGA#

|                                                             |                                                            |
|-------------------------------------------------------------|------------------------------------------------------------|
| <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: 2022/01/05</b> |             |            |             |

TFT Display Inspection Specification: <https://www.winstar.com.tw/technology/download.html>

Precaution in use of TFT module: <https://www.winstar.com.tw/technology/download/declaration.html>



**RECORDS OF REVISION**

**DOC. FIRST ISSUE**

| VERSION | DATE       | REVISED PAGE NO. | SUMMARY                   |
|---------|------------|------------------|---------------------------|
| 0       | 2019/09/05 |                  | First issue               |
| A       | 2022/01/05 |                  | Modify Color Chromaticity |

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# Contents

1.Module Classification Information

2.Summary

3.General Specification

4.Absolute Maximum Ratings

5.Electrical Characteristics

6.DC Characteristics

7.AC Characteristics

8.Optical Characteristics

9.Interface

10.Block Diagram

11.Reliability

12.Touch Panel Information

13.Contour Drawing

14.Initial Code For Reference

15.Other

# 1.Module Classification Information

W F 52 A T L A S D N G A #  
 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 : 5.2” TFT                                                                                                                                                   |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
| ④ | Model serials no.                                                                                                                                                         |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
| ⑤ | Backlight Type :                                                                                                                                                          | F→CCFL, White<br>S→LED, High Light White                                                                                                                                                                                |                                          |         |   |                                                                                                                           | T→LED, White<br>Z→Nichia LED, White                                                                                                                                                                                                          |                                    |               |                                |   |         |
| ⑥ | LCD Polarize Type/<br>Temperature range/<br>Gray Scale Inversion<br>Direction                                                                                             | A→Transmissive, N.T, IPS TFT<br>C→Transmissive, N. T, 6:00 ;<br>F→Transmissive, N.T,12:00 ;<br>I→Transmissive, W. T, 6:00<br>K→Transflective, W.T,12:00<br>L→Transmissive, W.T,12:00<br>N→Transmissive, Super W.T, 6:00 |                                          |         |   |                                                                                                                           | Q→Transmissive, Super W.T, 12:00<br>R→Transmissive, Super W.T, O-TFT<br>V→Transmissive, Super W.T, VA TFT<br>W→Transmissive, Super W.T, IPS TFT<br>X→Transmissive, W.T, VA TFT<br>Y→Transmissive, W.T, IPS TFT<br>Z→Transmissive, W.T, O-TFT |                                    |               |                                |   |         |
| ⑦ | A : TFT LCD<br>B : TFT+SCREW HOLES+CONTROL BOARD<br>C : TFT+ SCREW HOLES +A/D BOARD<br>D : TFT+ SCREW HOLES +A/D BOARD+CONTROL BOARD<br>E : TFT+ SCREW HOLES +POWER BOARD |                                                                                                                                                                                                                         |                                          |         |   | F : TFT+CONTROL BOARD<br>G : TFT+ SCREW HOLES<br>H : TFT+D/V BOARD<br>I : TFT+ SCREW HOLES +D/V BOARD<br>J : TFT+POWER BD |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
| ⑧ | Resolution:                                                                                                                                                               |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
|   | 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                                                                                                                                                                                                                 | N                                        | 128128  | P | 1280800                                                                                                                   | Q                                                                                                                                                                                                                                            | 480800                             | R             | 640320                         | S | 480128  |
|   | T                                                                                                                                                                         | 800320                                                                                                                                                                                                                  | U                                        | 8001280 | V | 176220                                                                                                                    | W                                                                                                                                                                                                                                            | 1280398                            | X             | 1024250                        | Y | 1920720 |
|   | Z                                                                                                                                                                         | 800200                                                                                                                                                                                                                  | 2                                        | 1024324 | 3 | 7201280                                                                                                                   | 4                                                                                                                                                                                                                                            | 19201200                           | 5             | 1366768                        | 6 | 1280320 |
| ⑨ | D: Digital L : LVDS M:MIPI                                                                                                                                                |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
| ⑩ | Interface:                                                                                                                                                                |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
|   | N                                                                                                                                                                         | Without control board                                                                                                                                                                                                   |                                          |         | A | 8Bit                                                                                                                      |                                                                                                                                                                                                                                              | B                                  | 16Bit         |                                | H | HDMI    |
|   | I                                                                                                                                                                         | I2C Interface                                                                                                                                                                                                           |                                          |         | R | RS232                                                                                                                     |                                                                                                                                                                                                                                              | S                                  | SPI Interface |                                | U | USB     |
| ⑪ | TS:                                                                                                                                                                       |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
|   | N                                                                                                                                                                         | Without TS                                                                                                                                                                                                              |                                          |         | T | Resistive touch panel                                                                                                     |                                                                                                                                                                                                                                              |                                    | C             | Capacitive touch panel (G-F-F) |   |         |
|   | G                                                                                                                                                                         | Capacitive touch panel (G-G)                                                                                                                                                                                            |                                          |         |   |                                                                                                                           | C1                                                                                                                                                                                                                                           | Capacitive touch panel (G-F-F)+OCA |               |                                |   |         |
|   | C2                                                                                                                                                                        | Capacitive touch panel (G-F-F)+OCR                                                                                                                                                                                      |                                          |         |   |                                                                                                                           | G1                                                                                                                                                                                                                                           | Capacitive touch panel (G-G)+OCA   |               |                                |   |         |
|   | G2                                                                                                                                                                        | Capacitive touch panel (G-G)+OCR                                                                                                                                                                                        |                                          |         |   |                                                                                                                           | B                                                                                                                                                                                                                                            | CTP+GG+USB                         |               |                                |   |         |
| ⑫ | Version: X:Raspberry pi                                                                                                                                                   |                                                                                                                                                                                                                         |                                          |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |
| ⑬ | Special Code                                                                                                                                                              |                                                                                                                                                                                                                         | #:Fit in with ROHS directive regulations |         |   |                                                                                                                           |                                                                                                                                                                                                                                              |                                    |               |                                |   |         |

|  |  |  |
|--|--|--|
|  |  |  |
|--|--|--|

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## **2.Summary**

TFT 5.2” is a TN transmissive type color active matrix TFT liquid crystal display that use amorphous silicon TFT as switching devices. This module is a composed of a TFT\_LCD module, It is usually designed for industrial application and this module follows RoHs.

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### 3. General Specifications

| Item                           | Dimension                         | Unit |
|--------------------------------|-----------------------------------|------|
| Size                           | 5.2                               | inch |
| Dot Matrix                     | 480 x RGBx128                     | dots |
| Module dimension               | 140.4 x 49.87 x 4.96              | mm   |
| Active area                    | 127.152 x 33.9072                 | mm   |
| Dot pitch                      | 0.0883 x 0.2649                   | mm   |
| LCD type                       | TFT, Normally White, Transmissive |      |
| View Direction                 | 6 o'clock                         |      |
| Gray Scale Inversion Direction | 12 o'clock                        |      |
| Driver IC                      | ST7252 or equivalent              |      |
| TFT Interface                  | RGB 24bit                         |      |
| Aspect Ratio                   | Bar Type                          |      |
| Backlight Type                 | LED, Normally White               |      |
| CTP Driver IC                  | GT911 or equivalent               |      |
| CTP Interface                  | I2C                               |      |
| FW Version                     | 0x95                              |      |
| With /Without TP               | With CTP                          |      |
| Surface                        | 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  $60^{\circ}\text{C}$

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# 5. Electrical Characteristics

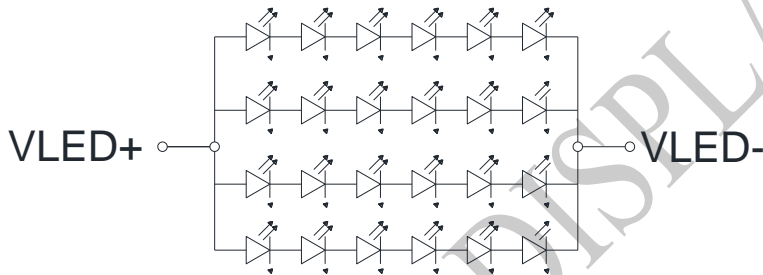
## 5.1. Operating conditions:

| Item                     | Symbol | Condition | Min | Typ | Max | Unit |
|--------------------------|--------|-----------|-----|-----|-----|------|
| Supply Voltage For LCM   | VCC    | —         | 3.0 | 3.3 | 3.6 | V    |
| Supply Voltage For Touch | VDDT   | —         | 2.8 | —   | 3.3 | V    |
| Supply Current For LCM   | ICC    | -         | —   | 20  | —   | mA   |

## 5.2. LED driving conditions

| Parameter     | Symbol | Min. | Typ.   | Max. | Unit | Remark     |
|---------------|--------|------|--------|------|------|------------|
| LED current   |        | -    | 60     | -    | mA   |            |
| LED voltage   | VLED+  | 16.8 | 18.6   | 21   | V    | Note 1     |
| LED Life Time |        | -    | 50,000 | -    | Hr   | Note 2,3,4 |

Note 1 : There are 1 Groups LED



Note 2 :  $T_a = 25\text{ }^\circ\text{C}$

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      | -   | 0.3VCC | V    |           |
| High level input voltage | $V_{IH}$ | 0.7VCC | -   | VCC    | V    |           |

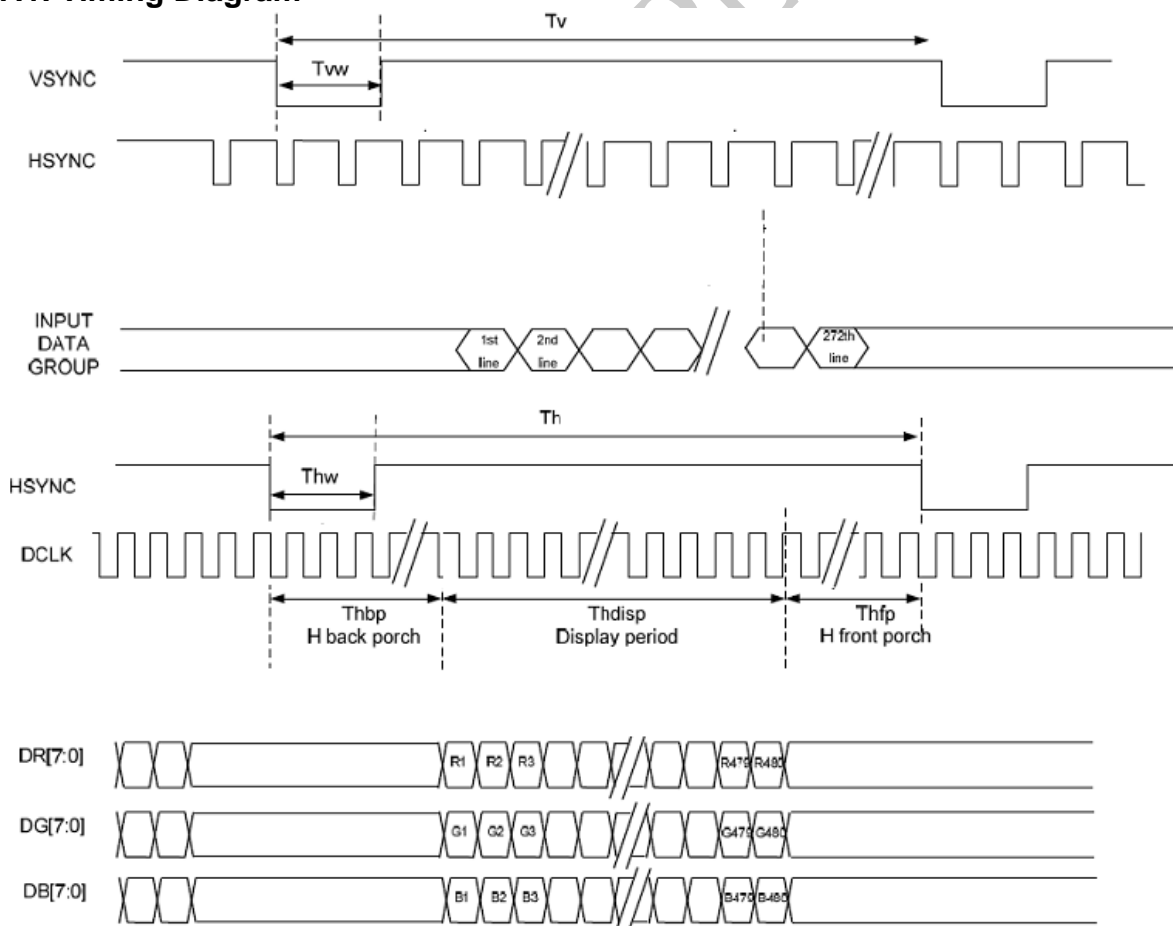
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# 7.AC CHARACTERISTICS

Parallel SYNC mode RGB input timing table

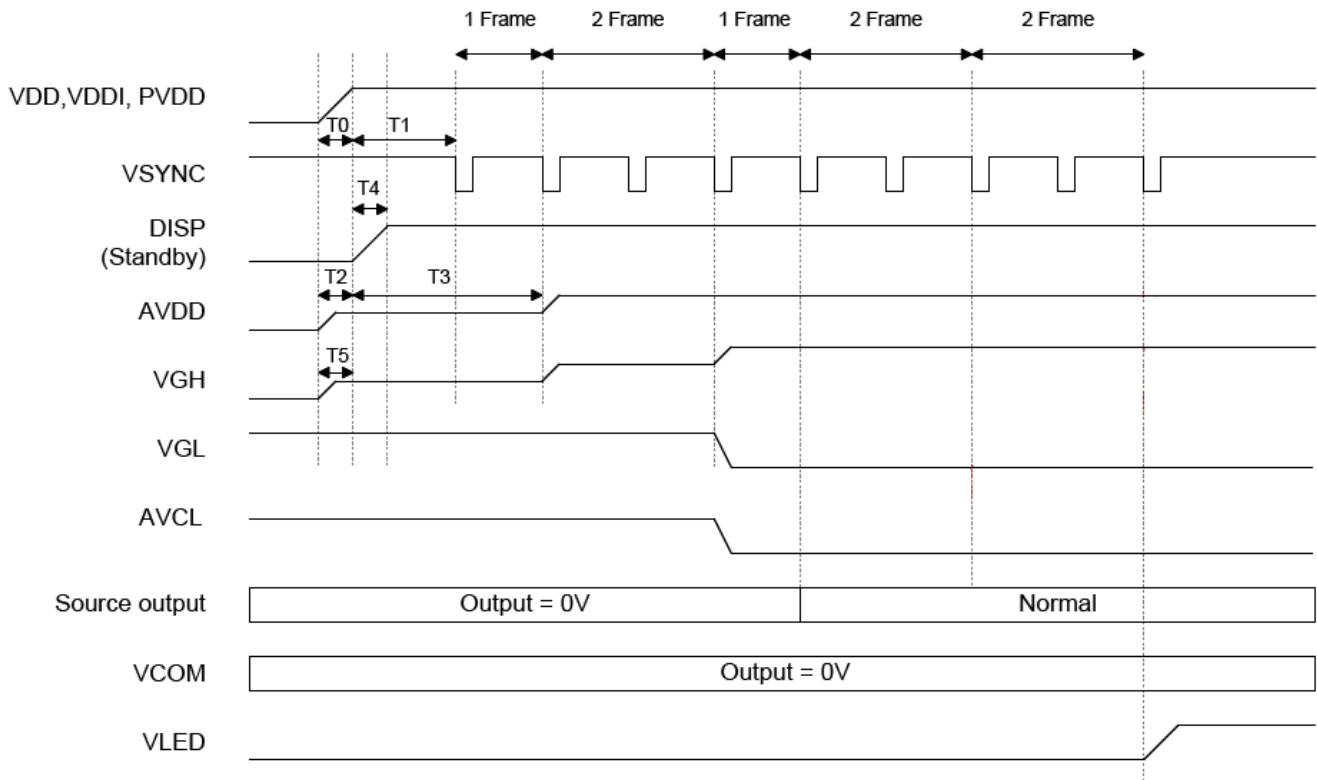
| Item          | Symbol         | Min    | Typ | Max | Unit |      |
|---------------|----------------|--------|-----|-----|------|------|
| CLK frequency | Fclk           | 8      | 9   | 12  | MHz  |      |
| DCLK Period   | Tclk           | 83     | 111 | 125 | ns   |      |
| HSYNC         | Period Time    | Th     | 485 | 531 | DCLK |      |
|               | Display Period | Thdisp | -   | 480 | -    | DCLK |
|               | Back Porch     | Thbp   | 3   | 43  | 43   | DCLK |
|               | Front Porch    | Thfp   | 2   | 8   | 75   | DCLK |
|               | Pulse Width    | Thw    | 2   | 4   | 75   | DCLK |
| VSYNC         | Period Time    | Tv     | 276 | 292 | 321  | H    |
|               | Display Period | Tvdisp | -   | 272 | -    | H    |
|               | Back Porch     | Tvbp   | 2   | 12  | 12   | H    |
|               | Front Porch    | Tvfp   | 2   | 8   | 37   | H    |
|               | Pulse Width    | Tvw    | 2   | 4   | 37   | H    |

## 7.1. Timing Diagram



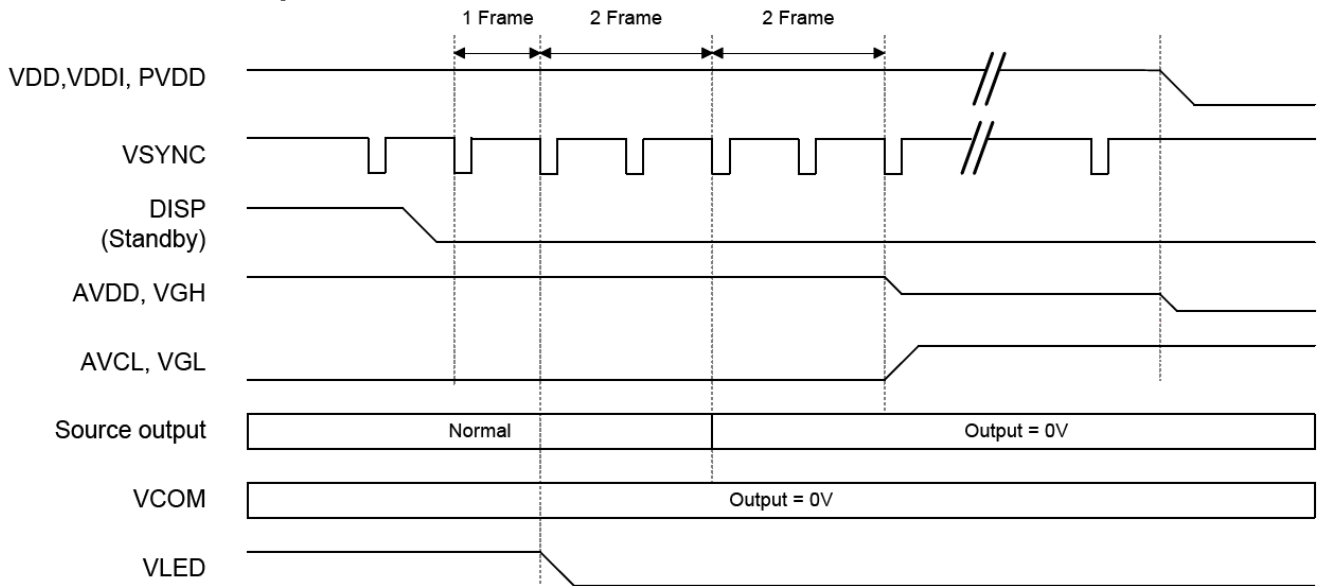
## 7.2. Power Sequence

### 1. Power ON Sequence



|    | Description                                                | Min. Time                           |
|----|------------------------------------------------------------|-------------------------------------|
| T0 | Determined by the external power                           |                                     |
| T1 | Time from stable VDD, VDDI, PVDD set-up to the first VSYNC | $T_1=0$                             |
| T2 | Time from AVDD=0V to AVDD=3.3V                             | $T_2=T_0$                           |
| T3 | Time from AVDD=3.3V to AVDD=6.0V                           | $T_3=T_1 + (1 \times \text{Frame})$ |
| T4 | Time from stable VDD, VDDI, PVDD set-up to DISP asserted   | $T_4=0$                             |
| T5 | Time from VGH=0V to VGH=3.3V                               | $T_5=T_0$                           |

## 2. Power OFF Sequence



## 7.3. Reset Timing

Execute normal display on sequence.

| Function              | W/R | CMD | Par | Note                      |
|-----------------------|-----|-----|-----|---------------------------|
| HW reset              | --  | --  | --  | HW reset sequence         |
| Waiting 100ms         | --  | --  | --  |                           |
| Display On LCD Module | --  | --  | --  | Refer Power On Sequence   |
| Display Check Pattern | --  | --  | --  | Recommend Flicker Pattern |

# 8. Optical Characteristics

| Item                                           | Symbol | Condition.                        | Min                         | Typ.  | Max.  | Unit              | Remark            |        |
|------------------------------------------------|--------|-----------------------------------|-----------------------------|-------|-------|-------------------|-------------------|--------|
| Response time                                  | Tr+ Tf | $\theta=0^\circ$ 、 $\Phi=0^\circ$ | -                           | 35    | -     | .ms               | Note 3            |        |
| Contrast ratio                                 | CR     | At optimized viewing angle        | 300                         | 500   | -     | -                 | Note 4            |        |
| Color Chromaticity                             | White  | Wx                                | $\theta=0^\circ$ 、 $\Phi=0$ | 0.266 | 0.316 | 0.366             | Note 2,6,7        |        |
|                                                |        | Wy                                |                             | 0.295 | 0.345 | 0.395             |                   |        |
| Viewing angle (Gray Scale Inversion Direction) | Hor.   | $\Theta_R$                        | $CR \geq 10$                | 55    | 65    | -                 | Deg.              | Note 1 |
|                                                |        | $\Theta_L$                        |                             | 55    | 65    | -                 |                   |        |
|                                                | Ver.   | $\Phi_T$                          |                             | 55    | 65    | -                 |                   |        |
|                                                |        | $\Phi_B$                          |                             | 45    | 55    | -                 |                   |        |
| Brightness                                     | -      | -                                 | 300                         | 400   | -     | cd/m <sup>2</sup> | Center of display |        |
| Uniformity                                     | (U)    | -                                 | 75                          | -     | -     | %                 | Note5             |        |

Ta=25±2°C, IL=60mA

Note 1: Definition of viewing angle range

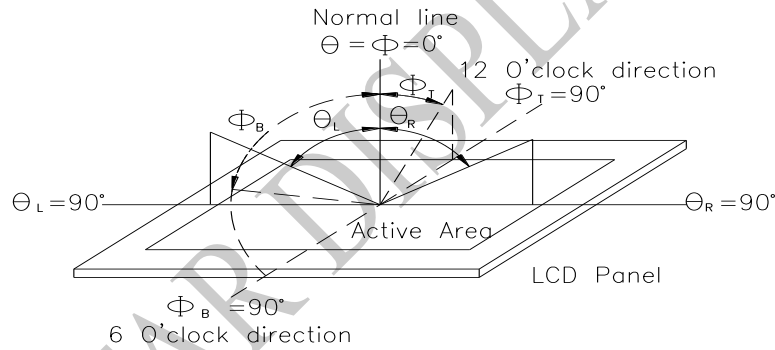


Fig.8.1. Definition of viewing angle

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

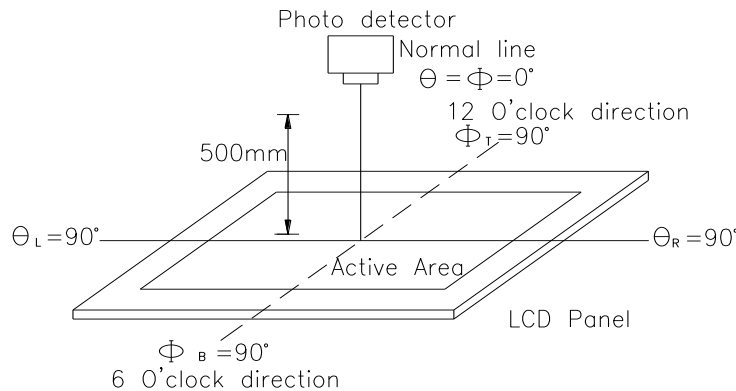
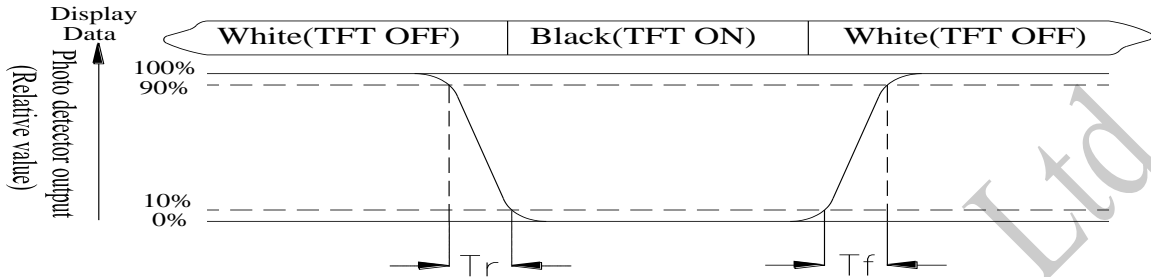


Fig. 8.2. Optical measurement system setup

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: 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

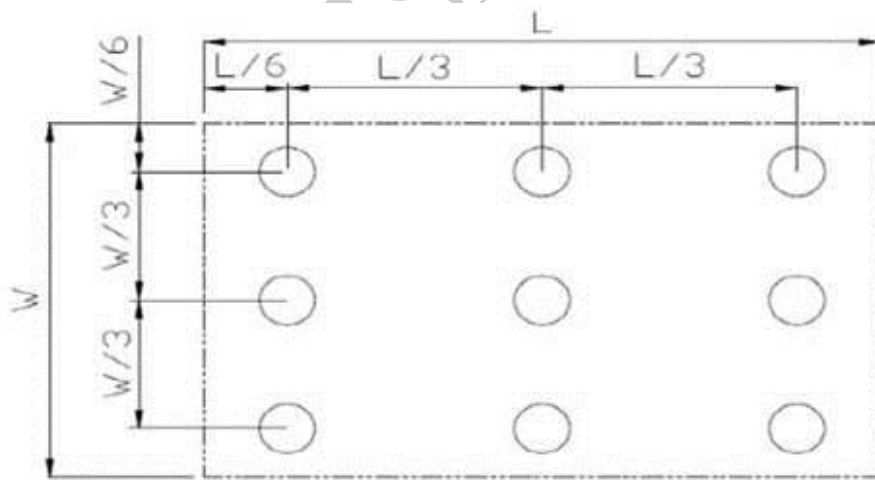


Fig8.3. . Definition of uniformity

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.



# 9.Interface

## 9.1. LCM PIN Definition

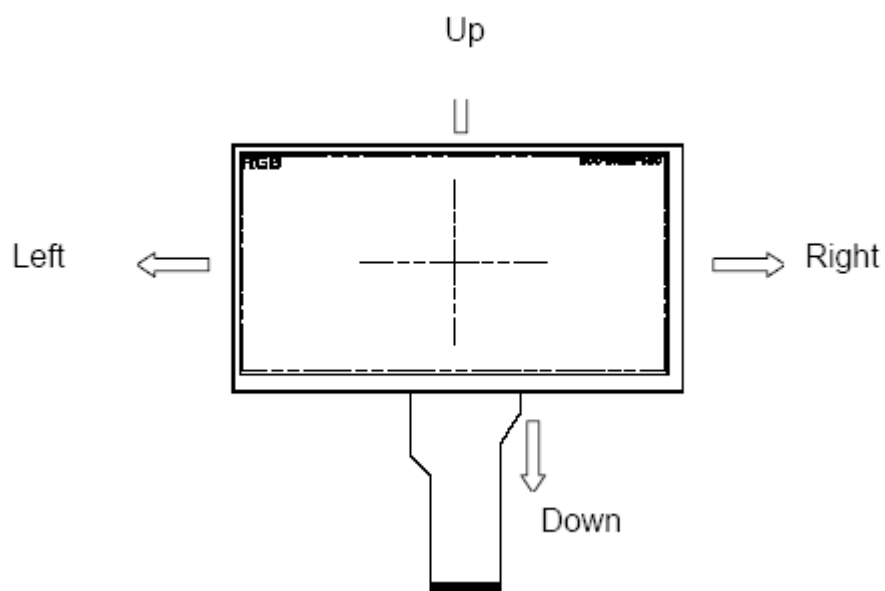
| Pin | Symbol | Function                        | Remark |
|-----|--------|---------------------------------|--------|
| 1   | VLED-  | Power for LED backlight cathode |        |
| 2   | VLED+  | Power for LED backlight anode   |        |
| 3   | GND    | Power ground                    |        |
| 4   | VCC    | Power voltage                   |        |
| 5   | R0     | Red data (LSB)                  |        |
| 6   | R1     | Red data                        |        |
| 7   | R2     | Red data                        |        |
| 8   | R3     | Red data                        |        |
| 9   | R4     | Red data                        |        |
| 10  | R5     | Red data                        |        |
| 11  | R6     | Red data                        |        |
| 12  | R7     | Red data (MSB)                  |        |
| 13  | G0     | Green data (LSB)                |        |
| 14  | G1     | Green data                      |        |
| 15  | G2     | Green data                      |        |
| 16  | G3     | Green data                      |        |
| 17  | G4     | Green data                      |        |
| 18  | G5     | Green data                      |        |
| 19  | G6     | Green data                      |        |
| 20  | G7     | Green data (MSB)                |        |
| 21  | B0     | Blue data (LSB)                 |        |
| 22  | B1     | Blue data                       |        |
| 23  | B2     | Blue data                       |        |
| 24  | B3     | Blue data                       |        |
| 25  | B4     | Blue data                       |        |
| 26  | B5     | Blue data                       |        |
| 27  | B6     | Blue data                       |        |
| 28  | B7     | Blue data (MSB)                 |        |
| 29  | GND    | Power ground                    |        |
| 30  | CLK    | Pixel clock (DCLK)              |        |

|    |       |                                                 |         |
|----|-------|-------------------------------------------------|---------|
| 31 | LR    | Right /Left selection; Default R/L is Pull High | Note1,2 |
| 32 | HSYNC | Horizontal sync signal; negative polarity       |         |
| 33 | VSYNC | Vertical sync signal; negative polarity         |         |
| 34 | NC    | No connection                                   |         |
| 35 | UD    | Up/down selection; Default U/D is Pull High     | Note1,2 |
| 36 | RESET | Reset signal                                    |         |
| 37 | NC    | No connection                                   |         |
| 38 | NC    | No connection                                   |         |
| 39 | NC    | No connection                                   |         |
| 40 | NC    | No connection                                   |         |

Note 1: Selection of scanning mode, and LR,UD Pull High 10KΩ on FPC

| Setting of scan control input |    | Scanning direction        |
|-------------------------------|----|---------------------------|
| UD                            | LR |                           |
| L                             | H  | Down to up, left to right |
| H                             | L  | Up to down, right to left |
| L                             | L  | Down to up, right to left |
| H                             | H  | Up to down, left to right |

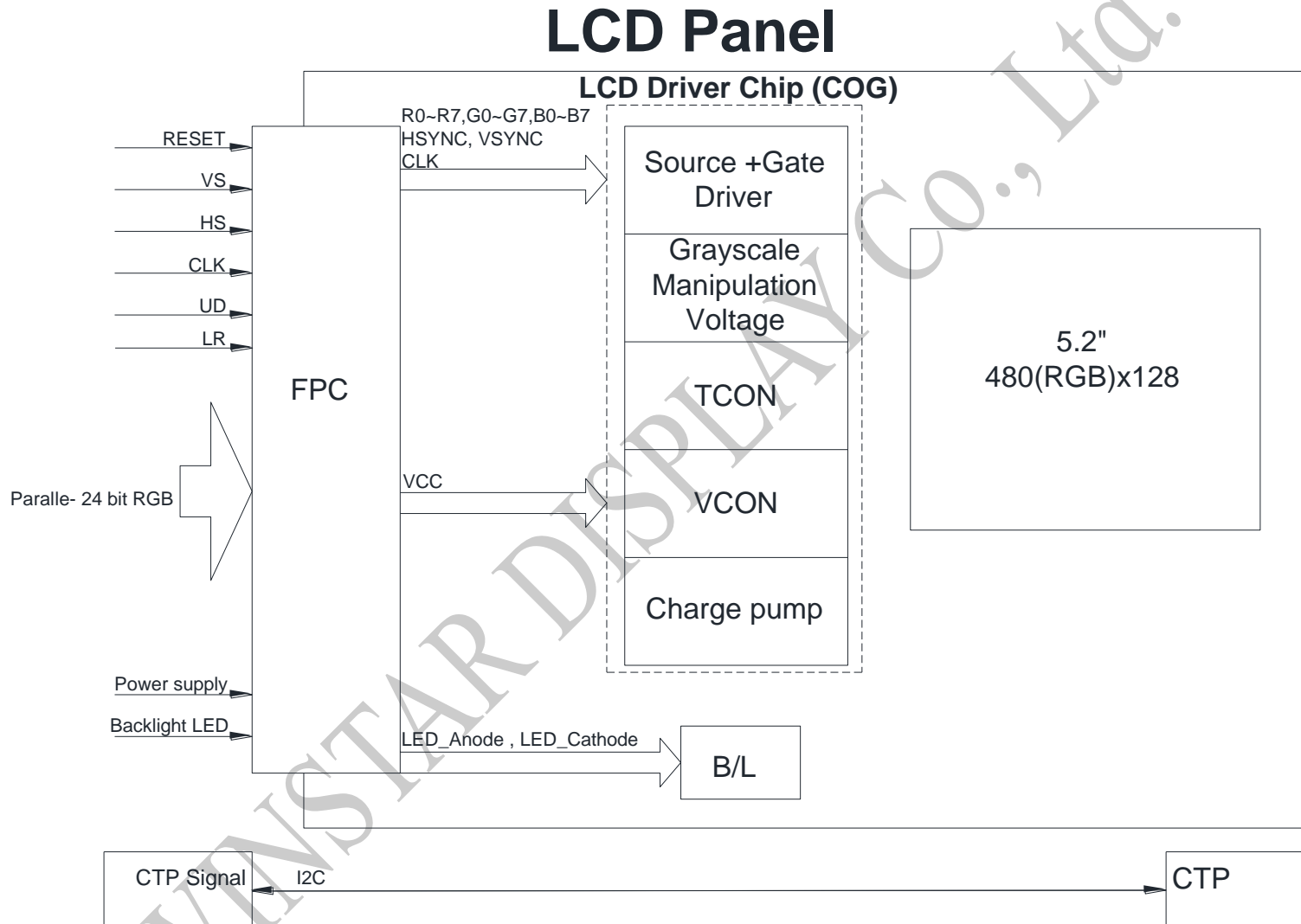
Note 2: Definition of scanning direction. Refer to the figure as below:



## 9.2. CTP PIN Definition

| Pin | Symbol | Function                                                                        | Remark |
|-----|--------|---------------------------------------------------------------------------------|--------|
| 1   | VSS    | Ground for analog circuit                                                       |        |
| 2   | VDDT   | Power Supply : +3.3V                                                            |        |
| 3   | SCL    | I2C clock signal                                                                |        |
| 4   | NC     | No connect                                                                      |        |
| 5   | SDA    | I2C data signal                                                                 |        |
| 6   | NC     | No connect                                                                      |        |
| 7   | RST    | External reset signal, active low                                               |        |
| 8   | NC     | No connect                                                                      |        |
| 9   | INT    | Interrupt signal, active low, asserted to request Host start a new transaction. |        |
| 10  | VSS    | Ground for analog circuit                                                       |        |

# 10. Block Diagram



# 11. Reliability

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

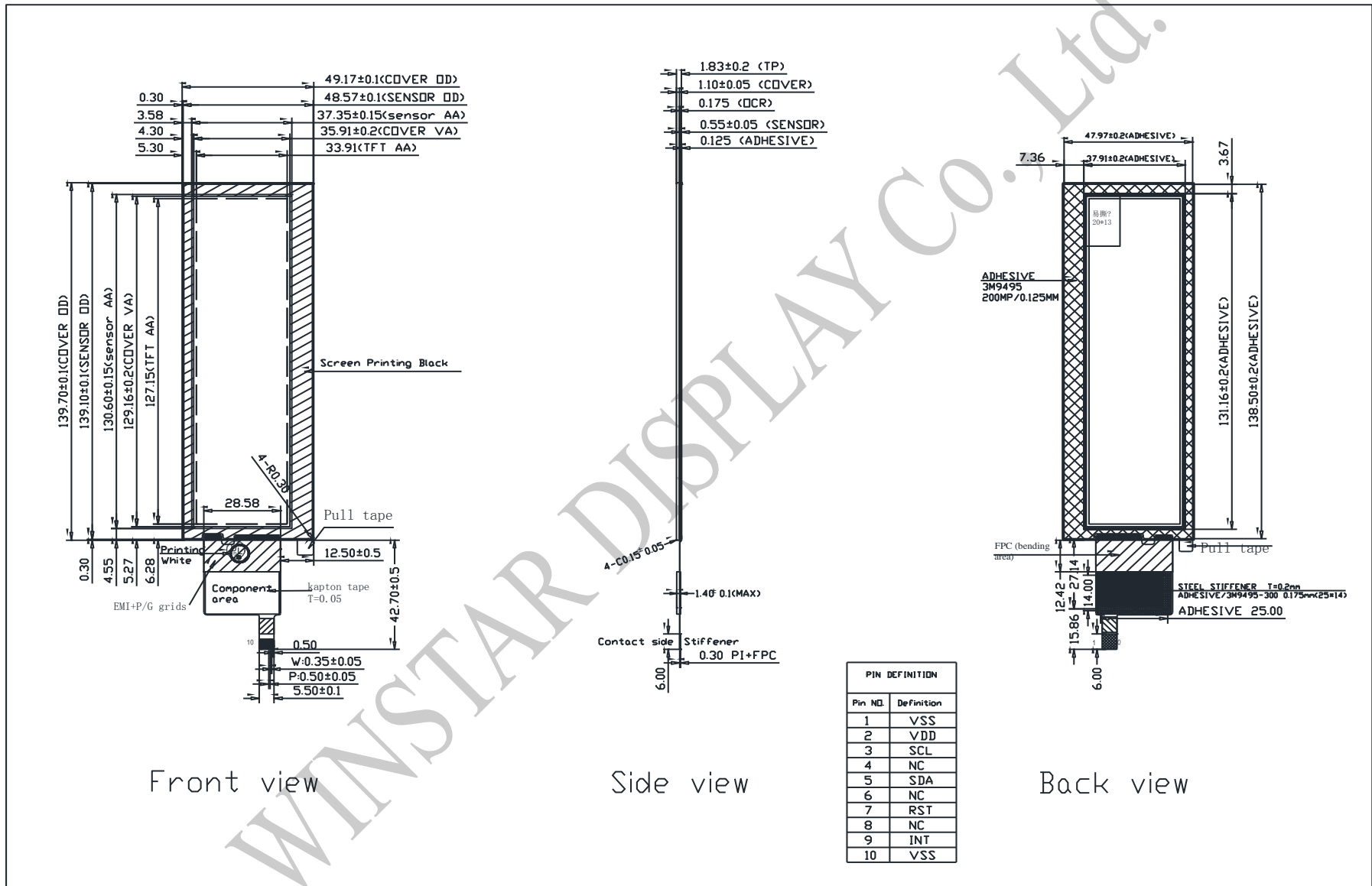
| Environmental Test                      |                                                                                                                                                                                                                                                        |                                                                                                                                        |      |
|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------|
| 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><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 : 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.

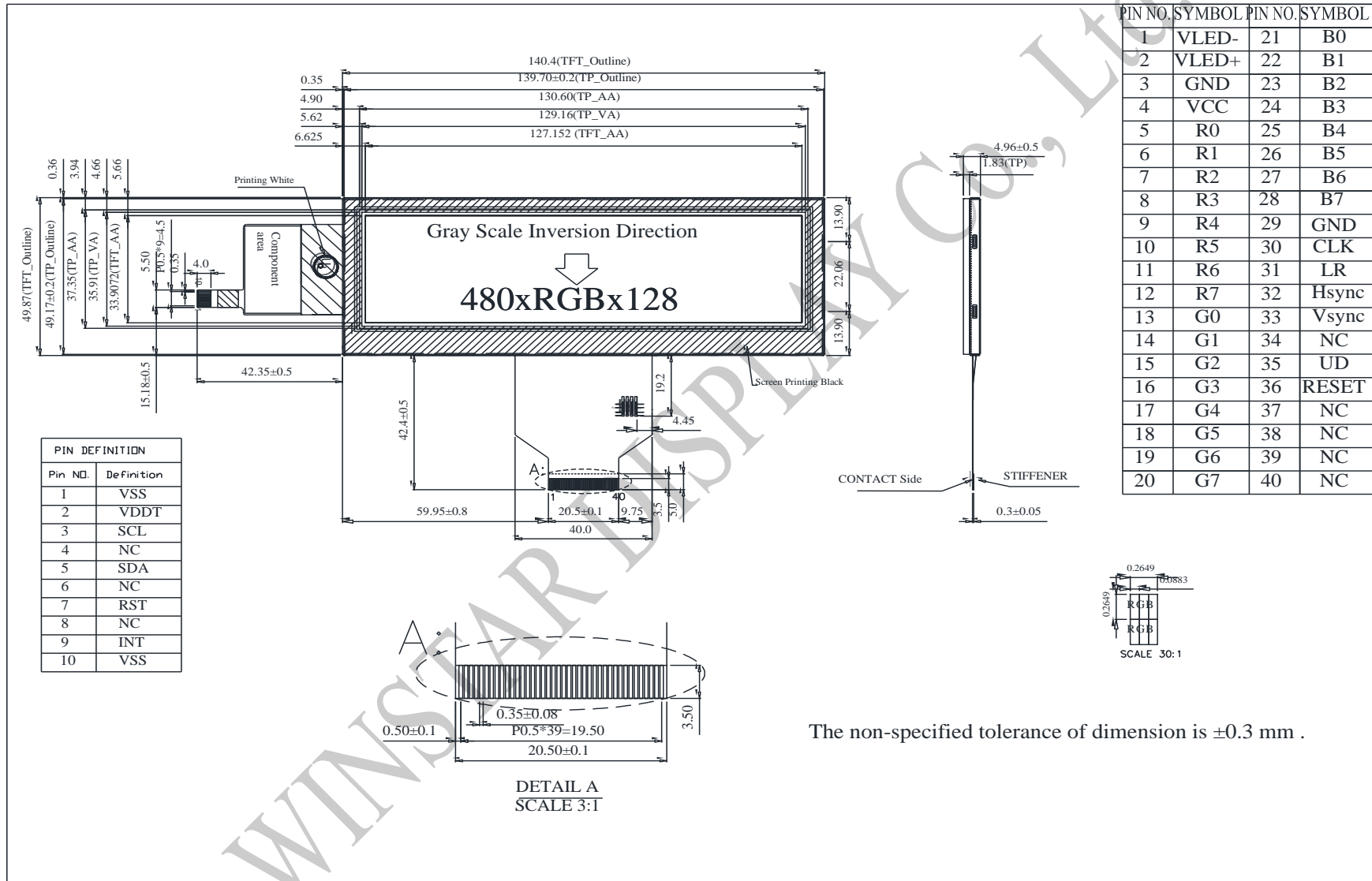
Note2: The function test shall be conducted after 4 hours storage at the normal Temperature and humidity after remove from the test chamber.

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

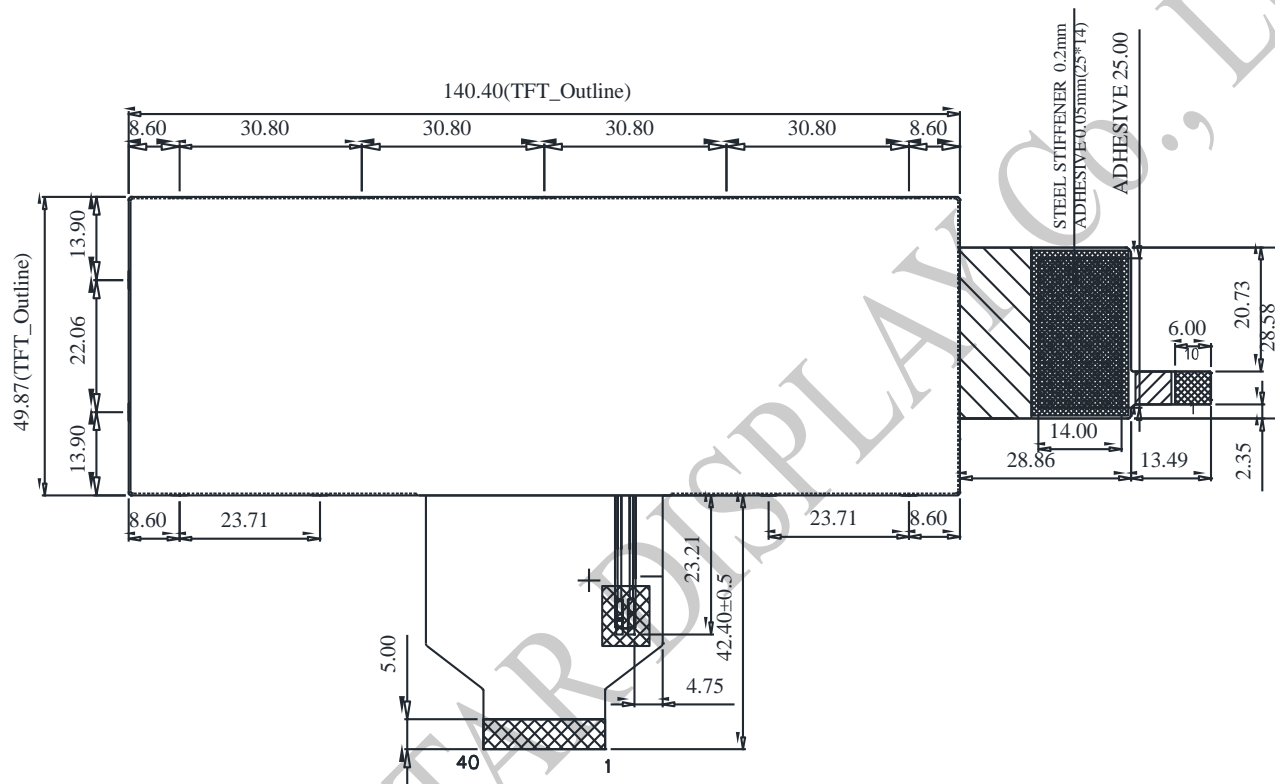
# 12.Touch Panel Information



# 13. Contour Drawing



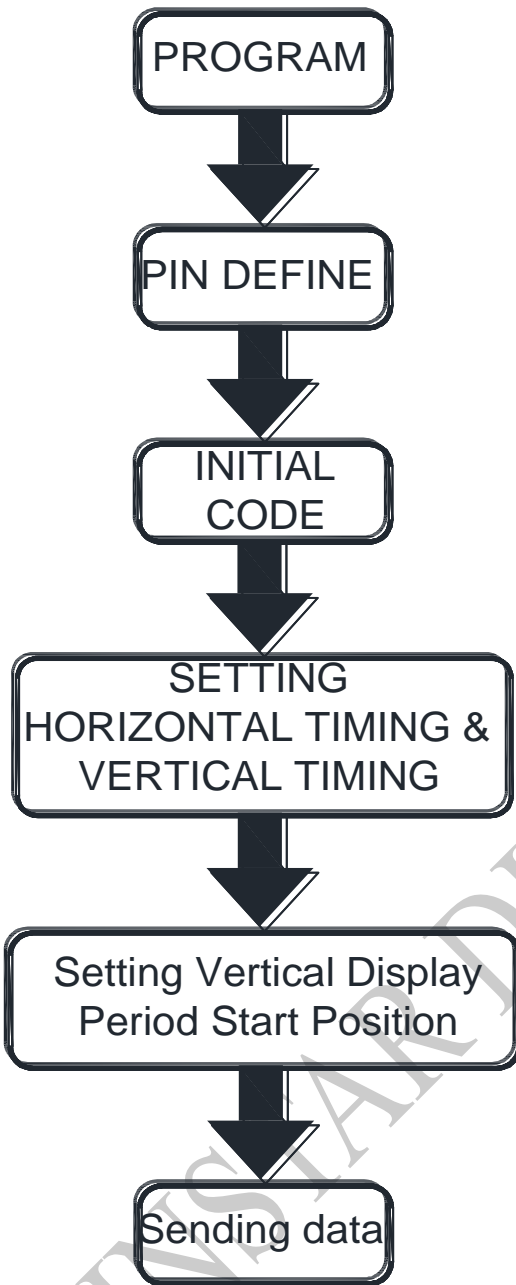
The non-specified tolerance of dimension is  $\pm 0.3$  mm .



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



# 14.Display start address setting



Ex.

One horizontal line=0x0213

VS period time=0x0124

HS Blanking=0x2b

VS Blanking=0x10

HS Front Porch=0x05

VS Front Porch=0x08

Suggestion :

Vertical Display Period

Start Position=0x44

Note :

For different Controller ICs, the value of vertical display period start position need to be adjusted accordingly.



**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 :  Pass  NG , \_\_\_\_\_
- 7. Storage Temperature :  Pass  NG , \_\_\_\_\_
- 8. Others : \_\_\_\_\_

**2、Mechanical**

- 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) :  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 , \_\_\_\_\_



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

Page: 2

**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 :     /     /     \_\_\_\_\_

