

# INDUSTRIAL STRENGTH... Start Your Application From YOURITECH

Integration support

Obsolescence Management

PCAP

Embedded Systems

Human Machine Interface

Touch Solutions

Software

Quality Management

Open Frame Monitors

LCD Controller

Research & Development

Firmware

EMC tests

on-site service

Optical Bonding

In-house Manufacturing

Cover glass

System solutions

OEM Solutions

Custom Display

Production  
Custom designs  
Installation

Mechanical design



# PRODUCT SPECIFICATION

**YOURITECH Model: ET050WV01-KD-HDMI**

**CUSTOMER Model: -**

**Description: 5' HDMI Display Module**

**Version: 1.1**

| YOURITECH | PREPARED BY | CHECKED BY | APPROVED BY |
|-----------|-------------|------------|-------------|
| SIGNATURE |             |            |             |
| DATE      | 2025.01.02  | 2025.01.02 | 2025.01.02  |

| CUSTOMER<br>APPROVAL | SIGNATURE | DATE |
|----------------------|-----------|------|
|                      |           |      |



## Record of Revisions

[illegible]

|                                                    |           |
|----------------------------------------------------|-----------|
| <b>1. General Specifications .....</b>             | <b>4</b>  |
| <b>2. Interface .....</b>                          | <b>5</b>  |
| <b>3. Elecrical Characteristics .....</b>          | <b>8</b>  |
| <b>4. Optical Specifications .....</b>             | <b>10</b> |
| <b>5. Reliability Test Items .....</b>             | <b>14</b> |
| <b>6. Mechanical Drawing .....</b>                 | <b>15</b> |
| <b>7. Packing .....</b>                            | <b>16</b> |
| <b>8. Precautions for Use of LCD modules .....</b> | <b>17</b> |



# 1. General Specifications

## 1.1 LCM General Information

| Item                  | Specification                      | Unit     |
|-----------------------|------------------------------------|----------|
| LCD Size              | 5                                  | inch     |
| Number of Pixels      | 800 (H) RGB x 480 (V)              | pixels   |
| Display Mode          | Normally Black                     | -        |
| Viewing Direction     | Free                               | o' clock |
| Video Interface       | HDMI/TYPE-C                        | -        |
| Display Colors        | 16.7M                              | colors   |
| Outline Dimension     | 147.00 (H) x 104.00 (V) x 8.46 (D) | mm       |
| Active Area           | 108.00 (H) x 64.80 (V)             | mm       |
| Pixel Pitch           | 0.135 (H) x 0.135 (V)              | mm       |
| Operation Temperature | -20~70                             | °C       |
| Storage Temperature   | -30~80                             | °C       |
| Power Input           | 7~30V                              | -        |

## 1.2 Touch Panel Information

| Item                  | Specification       |
|-----------------------|---------------------|
| Touch Structure       | G+G                 |
| Bonding Type with LCM | OCA Optical Bonding |
| Driver IC             | ILI2511             |
| Interface             | USB(Type-C)         |
| Touch Count Max       | 5 Points            |
| Surface treatment     | -                   |
| Surface hardness      | 6H                  |
| Origin of coordinate  | Top Left Corner     |

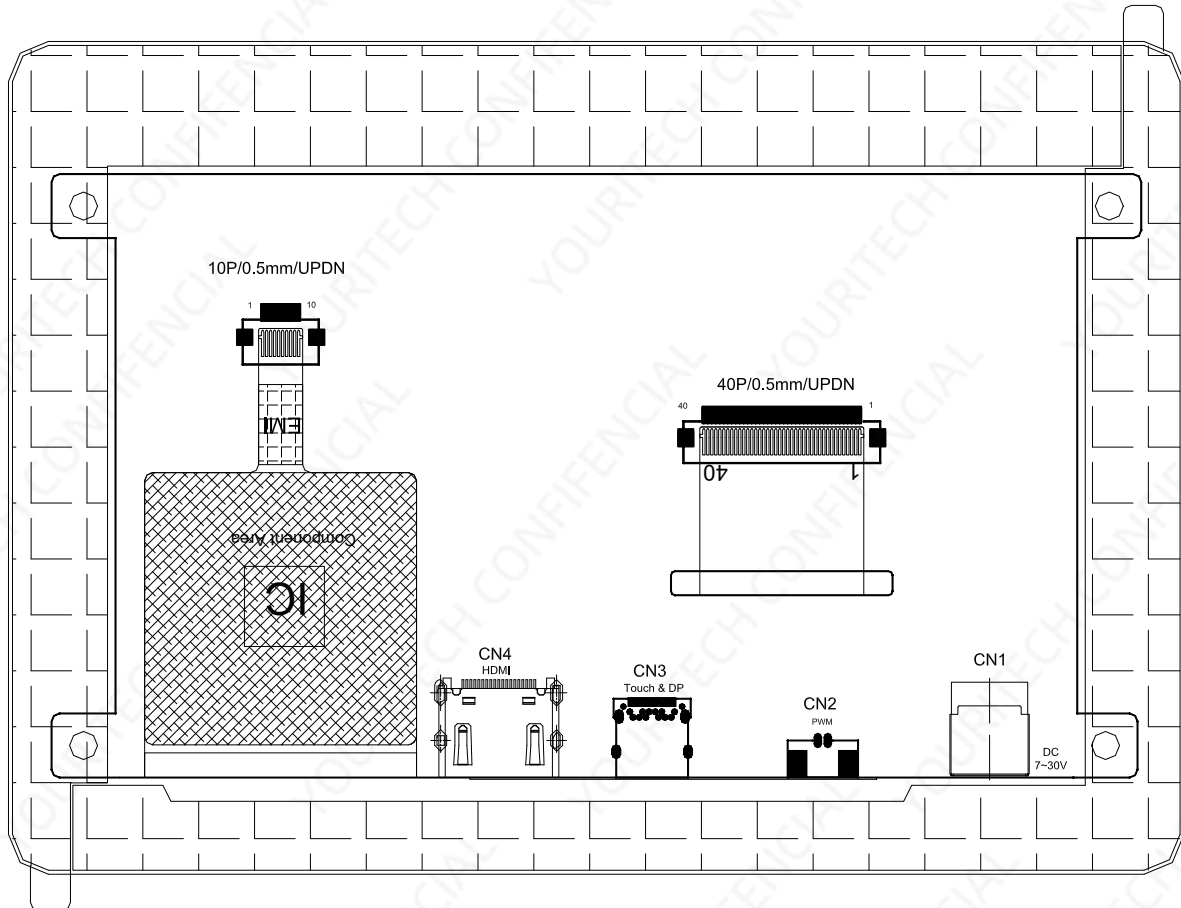
Note1:Requirements on environmental protection RoHS compliant.



## 2. Interface

### 2.1 PCB overview

Picture below shows the connectors exact placement and their descriptions.



## 2.2 Connector Description

| Item | Type      | Description                       |
|------|-----------|-----------------------------------|
| CN1  | Powr Jack | DC Jack (5.9mm OD/2.1mm ID)       |
| CN2  | PWM       | PWM(2P-1.25mm)                    |
| CN3  | HDMI      | HDMI-A                            |
| CN4  | Type-C    | Type C Video Signal and USB Touch |

## 2.3 CN1 (DC) 5.9mm OD/2.1mm ID

| Pin No. | Symbol | Description           |
|---------|--------|-----------------------|
| 1       | VDD    | Power supply DC;7~30V |
| 2       | GND    | GND                   |

## 2.4 CN2 (PWM)2P-1.25MM

| Pin No. | Symbol | Description         |
|---------|--------|---------------------|
| 1       | PWM    | PWM dimming control |
| 2       | GND    | GND                 |

## 2.5 CN3 (HDMI)

| Pin No. | Symbol        | Description                 |
|---------|---------------|-----------------------------|
| 1       | TMDS_Data 2+  | TMDS differential signal 2+ |
| 2       | TMDS_Data 2_S | Data2 shielding ground      |
| 3       | TMDS_Data 2-  | TMDS differential signal 2- |
| 4       | TMDS_Data 1+  | MDS differential signal 1+  |
| 5       | TMDS_Data 1_S | Data1 shielding ground      |
| 6       | TMDS_Data 1-  | TMDS differential signal 1- |
| 7       | TMDS_Data 0+  | TMDS differential signal 0+ |



|    |               |                                 |
|----|---------------|---------------------------------|
| 8  | TMDS_Data 0_S | Data0 shielding ground          |
| 9  | TMDS_Data 0-  | TMDS differential signal 0-     |
| 10 | TMDS_CLK+     | TMDS differential signal Clock+ |
| 11 | TMDS_CLK_S    | Clock shielding ground          |
| 12 | TMDS_CLK-     | TMDS differential signal clock- |
| 13 | CEC           | Electronic protocol CEC         |
| 14 | NC            | No connection                   |
| 15 | SCL           | IIC clock Line                  |
| 16 | SDA           | IIC data Line                   |
| 17 | DDC/CEC_GND   | Data display channel            |
| 18 | +5V           | HDMI 5V                         |
| 19 | HOT_PLUG_DET  | Hot plug detect                 |

## 2.6 CN4 (Type-C)

| Pin No. | Symbol | Description                                 |
|---------|--------|---------------------------------------------|
| A1      | GND    | Ground                                      |
| A2      | TX1+   | SuperSpeed differential signal, positive    |
| A3      | TX1-   | SuperSpeed differential signal, negative    |
| A4      | VBUS   | VBUS Power;5V                               |
| A5      | CC1    | Configuration channel                       |
| A6      | D+     | USB differential pair, position 1, positive |
| A7      | D-     | USB differential pair, position 1, negative |
| A8      | SBU1   | Sideband use                                |
| A9      | VBUS   | VBUS Power;5V                               |
| A10     | RX2-   | SuperSpeed differential signal, positive    |
| A11     | RX2+   | SuperSpeed differential signal, negative    |
| A12     | GND    | Ground                                      |
| B1      | GND    | Ground                                      |
| B2      | TX2+   | SuperSpeed differential signal, positive    |
| B3      | TX2-   | SuperSpeed differential signal, negative    |
| B4      | VBUS   | VBUS Power;5V                               |



|     |      |                                             |
|-----|------|---------------------------------------------|
| B5  | CC2  | Configuration channel                       |
| B6  | D+   | USB differential pair, position 2, positive |
| B7  | D-   | USB differential pair, position 2, negative |
| B8  | SBU2 | Sideband use                                |
| B9  | VBUS | VBUS Power;5V                               |
| B10 | RX1- | SuperSpeed differential signal, positive    |
| B11 | RX1+ | SuperSpeed differential signal, negative    |
| B12 | GND  | Ground                                      |

### 3. Electrical Characteristics

#### 3.1 Recommended Operating Condition for TFT LCD

| Item                  | Symbol           | Min.    | Typ. | Max.    | Unit | Note     |
|-----------------------|------------------|---------|------|---------|------|----------|
| Analog Supply voltage | VDD              | 3.0     | 3.3  | 3.6     | V    |          |
| Analog supply current | I <sub>VDD</sub> | -       | TBD  | -       | mA   | VDD=3.3V |
| Logic input voltage   | V <sub>IH</sub>  | 0.7*VDD | -    | VDD     | V    |          |
|                       | V <sub>IL</sub>  | GND     | -    | 0.3*VDD | V    |          |

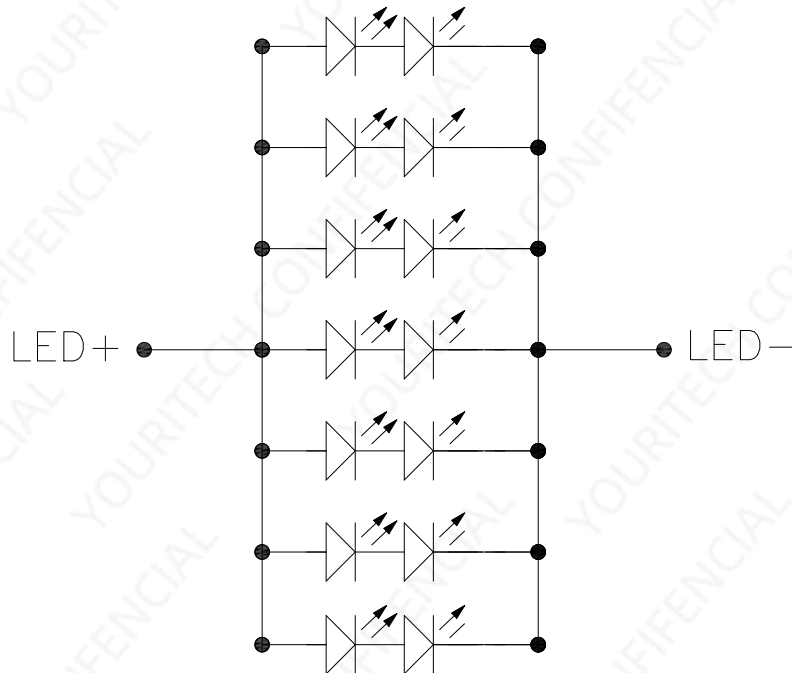
#### 3.2 Recommended Driving Condition for Backlight

| Item              | Symbol           | Min.  | Typ.   | Max.  | Unit  | Note             |
|-------------------|------------------|-------|--------|-------|-------|------------------|
| Driving Current   | I <sub>BLU</sub> | -     | 140    | -     | mA    |                  |
| Driving Voltage   | V <sub>BLU</sub> | 10.8  | -      | 13.6  | V     |                  |
| Power consumption | W <sub>BLU</sub> | 1.512 | -      | 1.904 | W     |                  |
| LED Life-Time     | N/A              | -     | 50,000 | -     | Hours | Ta=25℃<br>Note 1 |

Note 1:LED lifetime is defined as the module brightness decay 50% of original brightness at Ta=25 degree, typical current.



Note 2:LED circuit :



### 3.3 Touch Panel (USB-C)

| Item                     | Symbol             | Min.                            | Typ. | Max.                            | Unit | Note                 |
|--------------------------|--------------------|---------------------------------|------|---------------------------------|------|----------------------|
| Power Supply voltage     | USB_VDD (5V)       | -                               | 5.0  | -                               | V    |                      |
| Analog supply current    | $I_{USB\_VDD(5V)}$ | -                               | TBD  | -                               | mA   | USB_VDD(5V)<br>=5.0V |
| Input high-level voltage | $V_{IH}$           | $0.7 \cdot \text{USB\_VDD}(5V)$ | -    | $\text{USB\_VDD}(5V)$           | V    |                      |
| Input low -level voltage | $V_{IL}$           | GND                             | -    | $0.3 \cdot \text{USB\_VDD}(5V)$ | V    |                      |



## 4. Optical Specifications

| Item                               | Symbol     | Condition                    | Min.  | Typ.  | Max.  | Unit              | Note           |
|------------------------------------|------------|------------------------------|-------|-------|-------|-------------------|----------------|
| Viewing Angle<br>(CR≥10)<br>B/L ON | $\theta_T$ | $\Phi=90^\circ$ (12 o'clock) | 70    | 80    | -     | deg               | Note2          |
|                                    | $\theta_B$ | $\Phi=270^\circ$ (6 o'clock) | 70    | 80    | -     | deg               | Note2          |
|                                    | $\theta_L$ | $\Phi=180^\circ$ (9 o'clock) | 70    | 80    | -     | deg               | Note2          |
|                                    | $\theta_R$ | $\Phi=0^\circ$ (3 o'clock)   | 70    | 80    | -     | deg               | Note2          |
| Response Time                      | $T_{ON}$   | Normal $\theta=\Phi=0^\circ$ | -     | 15    | 20    | msec              | Note4          |
|                                    | $T_{OFF}$  |                              | -     | 15    | 20    | msec              | Note4          |
| Contrast Ratio                     | CR         |                              | 800   | 1000  | -     | -                 | Note1<br>Note3 |
| Color Chromaticity                 | $W_X$      |                              | 0.270 | 0.320 | 0.370 | -                 | Note1<br>Note5 |
|                                    | $W_Y$      |                              | 0.295 | 0.345 | 0.395 | -                 | Note1<br>Note5 |
| Luminance                          | L          |                              | 700   | 800   | -     | cd/m <sup>2</sup> | Note1<br>Note7 |
| Luminance<br>Uniformity            | $Y_U$      |                              | 75    | 80    | -     | %                 | Note1<br>Note6 |
| NTSC                               | -          |                              | 45    | 50    | -     | %                 | -              |

Note 1:Definition of optical measurement system

The optical characteristics should be measured in dark room. After 5 minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



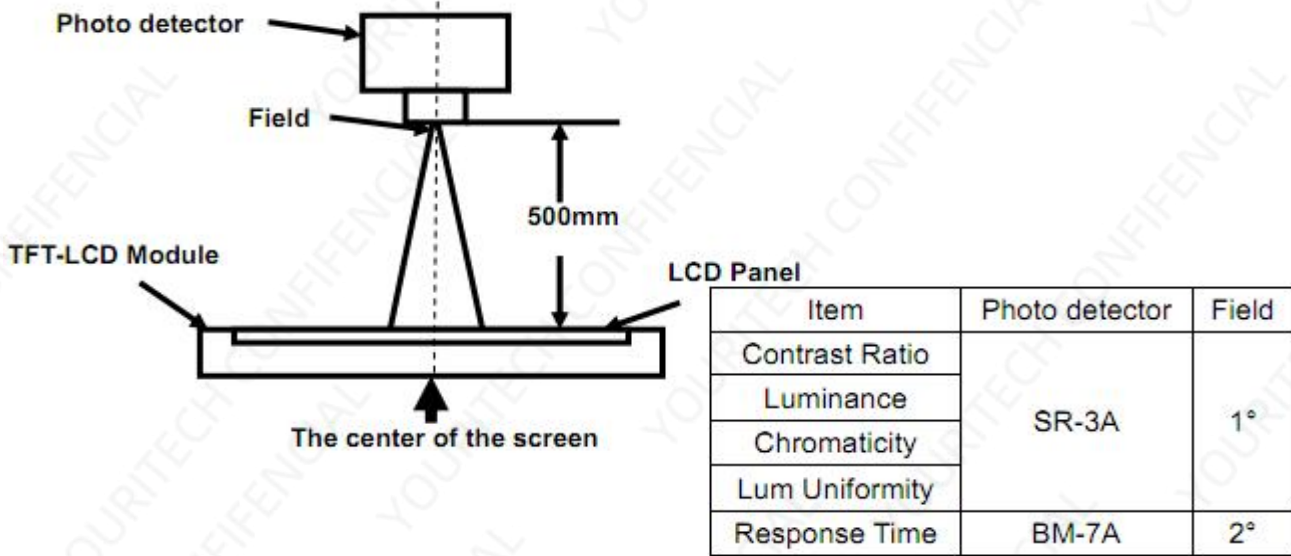


Fig 1

Note 2: Definition of viewing angle range and measurement system.  
viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80).

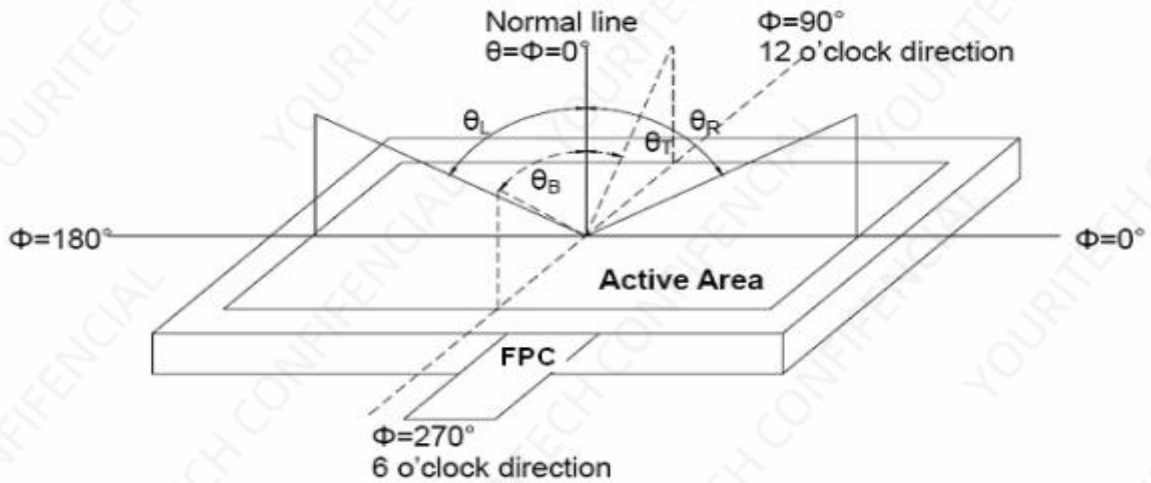


Fig 2 Definition of viewing angle

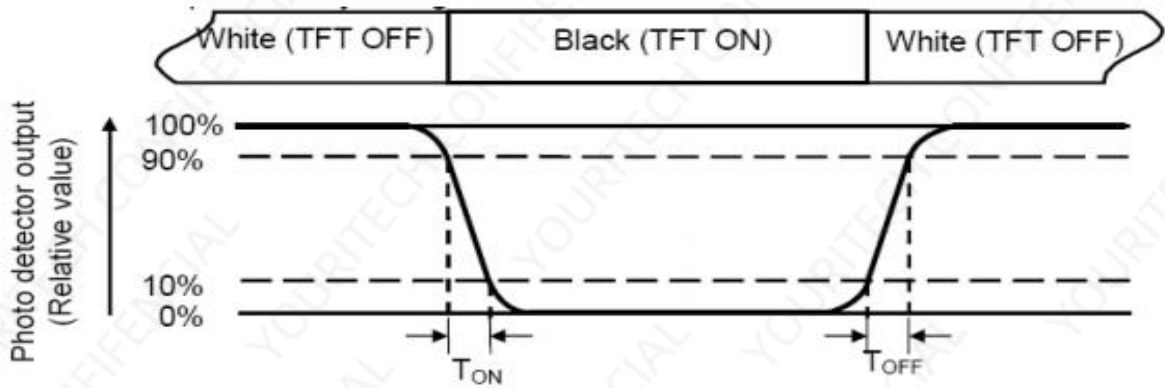
Note 3: Definition of contrast ratio

$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$



**Note 4: Definition of Response time**

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



**Note 5: Definition of color chromaticity (CIE1931)**

Color coordinates measured at center point of LCD.

**Note 6: Definition of Luminance Uniformity**

The luminance uniformity in surface luminance is determined by measuring luminance at each test position 1 through n, and then dividing the maximum luminance of n points luminance by minimum luminance of n points luminance. For more information see FIG.3-a/b

**Note 7:** Surface luminance is the luminance with all pixels displaying white.

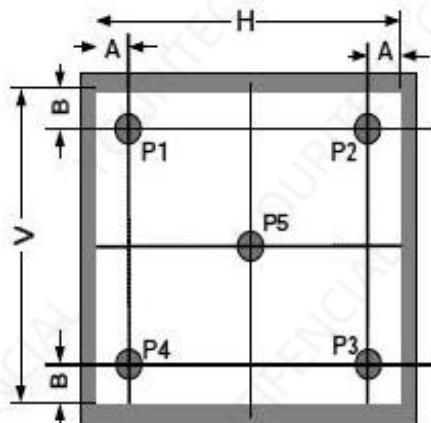
$L_v$  = Average Surface Luminance with all white pixels( $P_1, P_2, P_3, \dots, P_n$ )

For more information see FIG.3-a/b

**Note 8:** Size :  $S \leq 5"$  (see Figure a) A : 5 mm B : 5 mm. H, V : Active area

Light spot size  $\varnothing = 5\text{mm}$  (BM-5) or  $\varnothing = 7.7\text{mm}$  (BM-7) 50cm distance or test spot position : see Figure a.

measurement instrument : TOPCON's luminance meter SR-3A or BM-7 or compatible (see Figure 1).



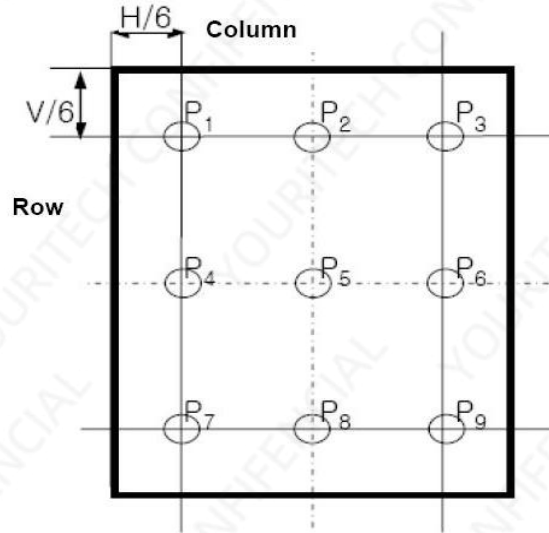
**Fig. 3-a Definition of points**



5" < S ≤ 12.3" (see Figure b) . H, V : Active area

Light spot size  $\varnothing = 5\text{mm}$  (BM-5) or  $\varnothing = 7.7\text{mm}$  (BM-7) 50cm distance or compatible distance from the LCD surface to detector lens. test spot position : see Figure b.

measurement instrument : TOPCON's luminance meter SR-3A or BM-7 or compatible (see Figure 1).



**Fig. 3-b Definition of points**



## 5. Reliability Test Items

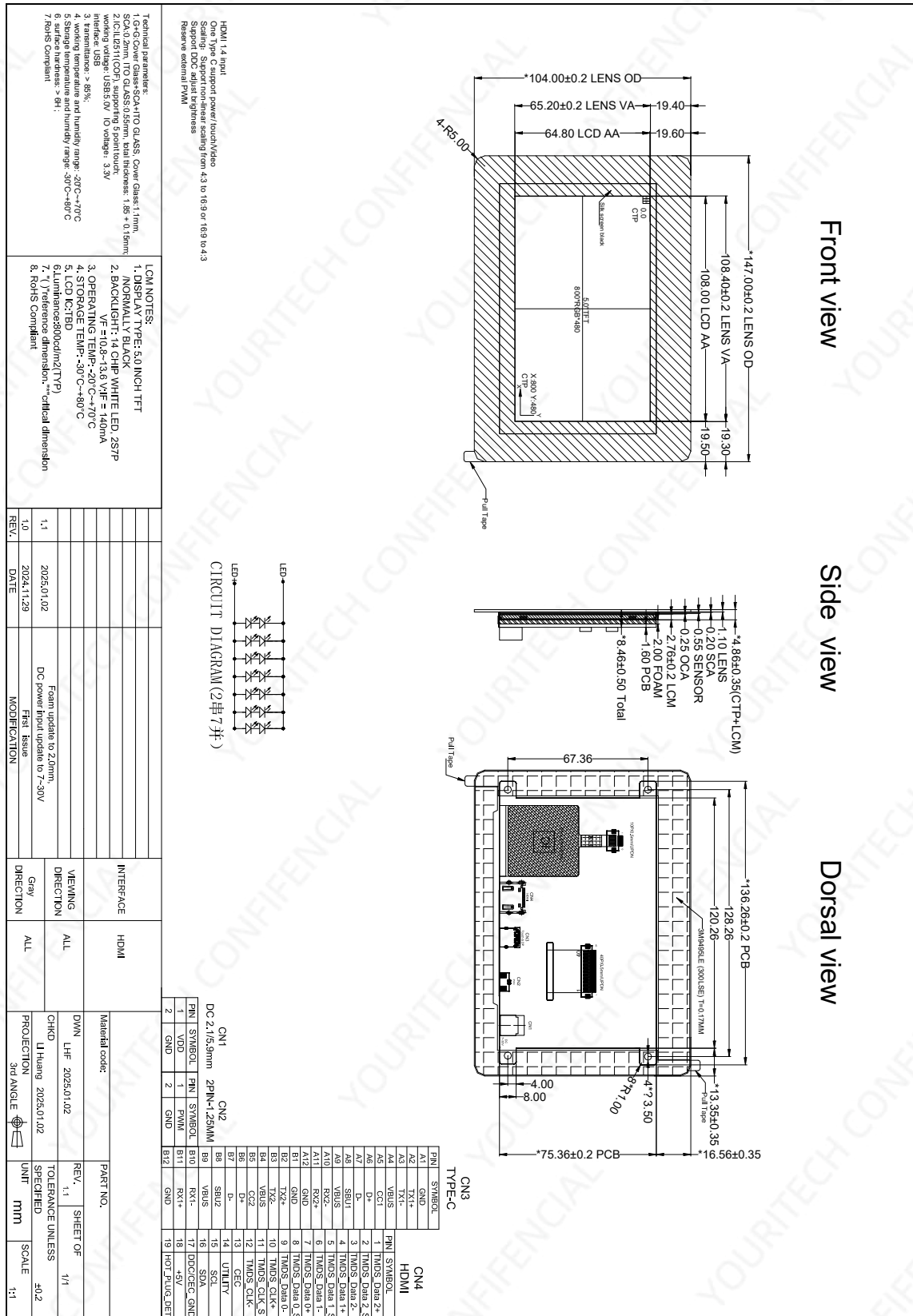
| Test Item                             | Test Conditions                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------|
| High Temperature Storage              | Ta= +80℃ 240hrs                                                                                     |
| Low Temperature Storage               | Ta= -30℃ 240hrs                                                                                     |
| High Temperature Operation            | Ta= +70℃ 240hrs                                                                                     |
| Low Temperature Operation             | Ta= -20℃ 240hrs                                                                                     |
| High Temperature and Humidity Storage | Ta= +60℃, 90% RH 240hrs                                                                             |
| Thermal Shock<br>(Non-operation)      | -30℃/30 min ~ +80℃/30 min for 20 cycles<br>Start with cold temperature<br>end with high temperature |
| Electro Static Discharge              | Contact = ± 4 kV, class B<br>Air = ± 8 kV, class B<br>R=330Ω,C=150pF                                |
| Vibration                             | Sweep: 10Hz~55Hz~10Hz<br>Stroke: 1.5mm<br>2 hrs for each direction of X .Y. Z.                      |
| Mechanical Shock                      | 60G 6ms,±X,±Y,±Z<br>3 times for each direction                                                      |
| Package Drop Test                     | Height: 60 cm<br>1 corner, 3 edges, 6 surfaces                                                      |

Notes: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample will not be accepted if appear these defects:

- 1). Air bubble in the LCD
- 2). Seal leak or Glass crack
- 3). Non display or abnormal display
- 4). Brightness reduction >50%



## 6. Mechanical Drawing



## 7. Packing

TBD



## 8. Precautions for Use of LCD modules

### 8.1 Handling Precautions

8.1.1. The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

8.1.2. If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

8.1.3. Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

8.1.4. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

8.1.5. If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

- Water
- Ketene
- Aromatic solvents

8.1.6. Do not attempt to disassemble the LCD Module.

8.1.7. If the logic circuit power is off, do not apply the input signals.

8.1.8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

8.1.8.1. Be sure to ground the body when handling the LCD Modules.

8.1.8.2. Tools required for assembly, such as soldering irons, must be properly ground.

8.1.8.3. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

8.1.8.4. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

### 8.2 Storage Precautions

8.2.1. When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

8.2.2. The LCD modules should be stored under the storage temperature range if the LCD modules will be stored for a long time, the recommend condition is :

Temperature : 0℃ ~40℃    Relatively humidity: ≤80%

8.2.3. The LCD modules should be stored in the room without acid, alkali and harmful gas.

### 8.3 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

