# SPECIFICATION

**CUSTOMER :**

**MODULE NO.: WF101LSYFPLHGV#**

| APPROVED BY: | |
|---|---|
| **( FOR CUSTOMER USE ONLY )** | **PCB VERSION:** **DATA:** |

| SALES BY | APPROVED BY | CHECKED BY | PREPARED BY |
|---|---|---|---|
| | | | 葉虹蘭 |
| **ISSUED DATE: 2022/01/27** | | | |

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

# Winstar Display Co., LTD
華凌光電股份有限公司

MODLE NO：

| | RECORDS OF REVISION | | DOC. FIRST ISSUE | |
|---|---|---|---|---|

| VERSION | DATE | REVISED PAGE NO. | SUMMARY | |
|---|---|---|---|---|
| 0 | 2021/12/07 | | First issue | |
| A | 2022/01/27 | | Modify Contour Drawing | |

# Contents

# 1.Module Classification Information

W　　F　　101　　L　　S　　Y　　F　　P　　L　　H　　G　　V　　#
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：10.1" TFT | | |
| ④ | Model serials no. | | |
| ⑤ | Backlight Type： | F→CCFL, White | T→LED, White |
| | | S→LED, High Light White | Z→Nichia LED, White |
| ⑥ | LCD Polarize Type/ Temperature range/ Gray Scale Inversion Direction | A→Transmissive, N.T, IPS TFT | Q→Transmissive, Super W.T, 12:00 |
| | | C→Transmissive, N. T, 6:00 ; | R→Transmissive, Super W.T, O-TFT |
| | | F→Transmissive, N.T,12:00 ; | V→Transmissive, Super W.T, VA TFT |
| | | I→Transmissive, W. T, 6:00 | W→Transmissive, Super W.T, IPS TFT |
| | | K→Transflective, W.T,12:00 | X→Transmissive, W.T, VA TFT |
| | | L→Transmissive, W.T,12:00 | Y→Transmissive, W.T, IPS TFT |
| | | N→Transmissive, Super W.T, 6:00 | Z→Transmissive, W.T, O-TFT |
| ⑦ | A：TFT LCD | | F：TFT+CONTROL　BOARD |
| | B：TFT+SCREW HOLES+CONTROL BOARD | | G：TFT+ SCREW HOLES |
| | C：TFT+ SCREW HOLES +A/D BOARD | | H：TFT+D/V　BOARD |
| | D：TFT+ SCREW HOLES +A/D BOARD+CONTROL BOARD | | I：TFT+ SCREW HOLES +D/V BOARD |
| | E：TFT+ SCREW HOLES +POWER　BOARD | | 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) | | F | Capacitive touch panel (G-F) |
| | 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　; V: Raspberry pi 3B+ | |
|---|---|---|
| ⑬ | Special Code | #:Fit in with ROHS directive regulations |

# 2.Summary

TFT 10.1" is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit and a back light system. This TFT LCD has a 10.1 inch diagonally measured active display area with HD (1280 horizontal by 800 vertical pixel) resolution.

# 3.General Specifications

| Item | Dimension | Unit |
|---|---|---|
| Screen Diagonal | 10.1 | inch |
| Number of Pixels | 1280 x 3(R GB) x 800 | dots |
| Module dimension | 257.96 x 168.6 x 28.66 | mm |
| Active area | 216.96 (H) x 135.6(V) | mm |
| Pixel pitch | 0.1695 × 0.1695 | mm |
| Display Mode | Normally Black , Transmissive | |
| Viewing Angle | 80/80/80/80 | |
| Pixel Arrangement | R.G.B. Vertical Stripe | |
| Backlight Type | LED,Normally White | |
| Aspect Ratio | 16:10 | |
| Electrical Interface (Logic) | HDMI(only for DVI) | |
| CTP IC | GT928 or Equivalent | |
| CTP FW Version | 80 | |
| CTP Interface | USB | |
| 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 | ℃ |
| Storage Temperature | TST | -30 | — | +80 | ℃ |

Note: Device is subject to be damaged permanently if stresses beyond those absolute maximum ratings listed above

1. Temp. ≦60℃, 90% RH MAX. Temp.＞60℃, Absolute humidity shall be less than 90% RH at 60℃

# 5.Electrical Characteristics

## 5.1. Operating conditions:

| Item | Symbol | Condition | Min | Typ | Max | Unit | Remark |
|------|--------|-----------|-----|-----|-----|------|--------|
| Supply Voltage For LCM | VDD | — | 4.9 | 5 | 5.1 | V | — |
| Supply Current For LCM | IDD | — | — | 1.6 | 2.4 | A | Note 1 |
| LED life time | — | — | 50000 | — | — | Hr | Note 4 |

Note 1 : This value is test for VDD =5.0V , Ta=25℃ only

Note 2 : Please make sure to support enough current

Note3 : Touch Panel driver is base on the mouse driver program and through USB port connect to PC or embedded board.Can only support the single touch.

Note 4: The "LED life time" is defined as the module brightness decrease to 50% original brightness at Ta=25℃ and IL =480mA. The LED lifetime could be decreased if operating IL is lager than 480mA.

# 6.Optical Characteristics

| Item | | Symbol | Condition. | Min | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|---|---|
| Response time | | Tr+ Tf | θ=0°、Φ=0° | - | 25 | 35 | .ms | Note 3 |
| Contrast ratio | | CR | At optimized viewing angle | 800 | 1000 | - | - | Note 4 |
| Color Chromaticity | White | Wx | θ=0°、Φ=0 | 0.272 | 0.322 | 0.372 | - | Note 2,6,7 |
| | | Wy | | 0.294 | 0.344 | 0.394 | - | |
| Viewing angle | Hor. | ΘR | CR≧10 | 70 | 80 | - | Deg. | Note 1 |
| | | ΘL | | 70 | 80 | - | | |
| | Ver. | ΦT | | 70 | 80 | - | | |
| | | ΦB | | 70 | 80 | - | | |
| Brightness | | - | - | 800 | 900 | - | cd/m$^2$ | Center of display |
| Uniformity | | (U) | - | 70 | - | - | % | Note 5 |

Ta=25±2℃

Note 1: Definition of viewing angle range
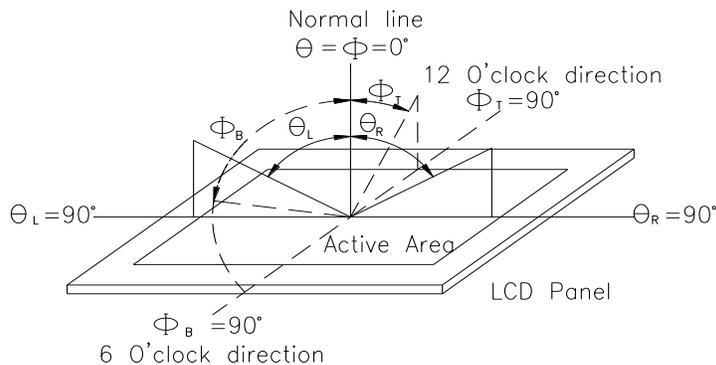


Fig. 6.1. Definition of viewing angle

Note 2: Test equipment setup:
After stabilizing and leaving the panel alone at a driven temperature for 10 minutes, the measurement should be executed. Measurement should be executed in a stable, windless, and dark room. Optical specifications are measured by Topcon BM-7 or BM-5 luminance meter 1.0° field of view at a distance of 50cm and normal direction.
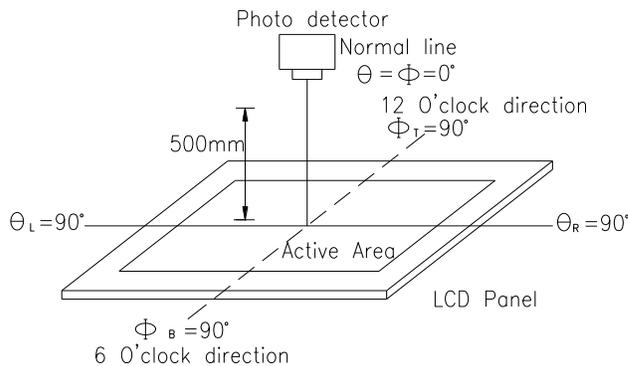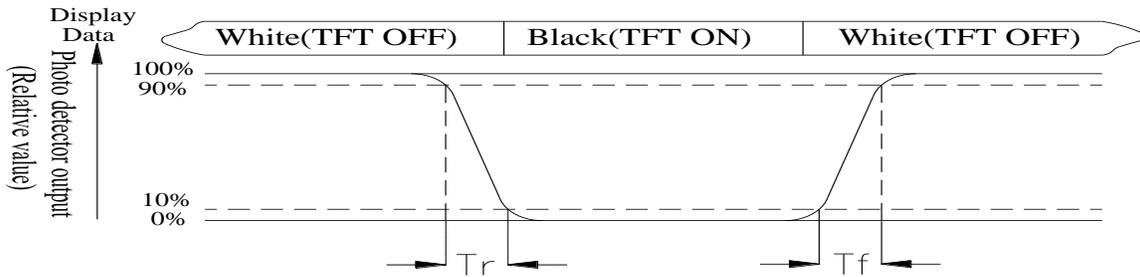


Fig. 6.2. Optical measurement system setup

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, Tr, is the time between photo detector output intensity changed from 90%to 10%. And fall time, Tf, 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) = Lmin/Lmax x100%
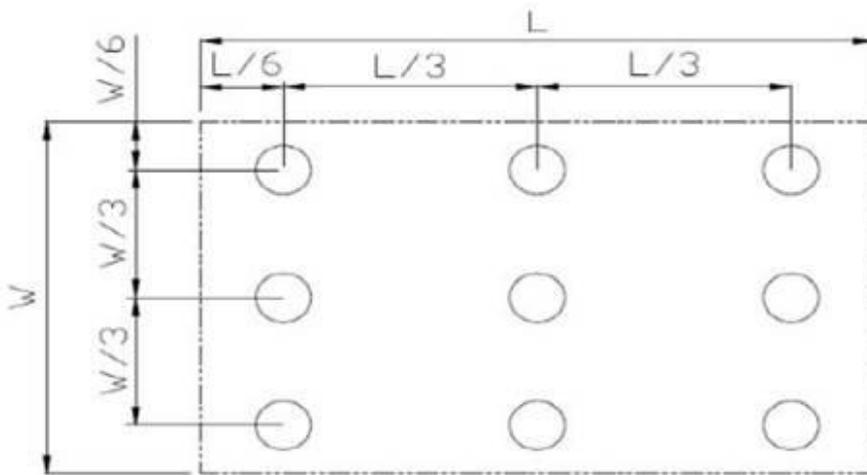L = Active area length
W = Active area width



Fig6.3.　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.

# 7.Interface

## 7.1. CON6

| Pin No. | Symbol | Function | Remark |
|---|---|---|---|
| 1 | 3.3V | TFT Module Power limit can only output 3.3V,100mA | Note1 |
| 2 | 5V | Raspberry Pi:Power 5V | |
| 3 | GPIO02 | Raspberry Pi:GPIO02 | |
| 4 | 5V | Raspberry Pi:Power 5V | |
| 5 | GPIO03 | Raspberry Pi:GPIO03 | |
| 6 | GND | Raspberry Pi:GND | |
| 7 | GPIO04 | Raspberry Pi:GPIO04 | |
| 8 | GPIO14 | Raspberry Pi:GPIO14 | |
| 9 | GND | Raspberry Pi:GND | |
| 10 | GPIO15 | Raspberry Pi:GPIO15 | |
| 11 | GPIO17 | Raspberry Pi:GPIO17 | |
| 12 | BL-PWM (GPIO18) | Backlight Enable (Raspberry Pi:GPIO18) | |
| 13 | GPIO27 | Raspberry Pi:GPIO27 | |
| 14 | GND | Raspberry Pi:GND | |
| 15 | GPIO22 | Raspberry Pi:GPIO22 | |
| 16 | GPIO23 | Raspberry Pi:GPIO23 | |
| 17 | 3.3V | TFT Module Power limit can only output 3.3V,100mA | Note1 |
| 18 | GPIO24 | Raspberry Pi:GPIO24 | |
| 19 | GPIO10 | Raspberry Pi:GPIO10 | |
| 20 | GND | Raspberry Pi:GND | |
| 21 | GPIO09 | Raspberry Pi:GPIO09 | |
| 22 | GPIO25 | Raspberry Pi:GPIO25 | |
| 23 | GPIO11 | Raspberry Pi:GPIO11 | |
| 24 | GPIO08 | Raspberry Pi:GPIO08 | |
| 25 | GND | Raspberry Pi:GND | |
| 26 | GPIO07 | Raspberry Pi:GPIO07 | |
| 27 | ID_SD | Raspberry Pi:ID_SD | |
| 28 | ID_SC | Raspberry Pi:ID_SC | |
| 29 | GPIO05 | Raspberry Pi:GPIO05 | |
| 30 | GND | Raspberry Pi:GND | |

| 31 | GPIO06 | Raspberry Pi:GPIO06 | |
|----|--------|---------------------|---|
| 32 | GPIO12 | Raspberry Pi:GPIO12 | |
| 33 | GPIO13 | Raspberry Pi:GPIO13 | |
| 34 | GND | Raspberry Pi:GND | |
| 35 | GPIO19 | Raspberry Pi:GPIO19 | |
| 36 | GPIO16 | Raspberry Pi:GPIO16 | |
| 37 | GPIO26 | Raspberry Pi:GPIO26 | |
| 38 | GPIO20 | Raspberry Pi:GPIO20 | |
| 39 | GND | Raspberry Pi:GND | |
| 40 | GPIO21 | Raspberry Pi:GPIO21 | |

Note1: The 3.3V supply current is limited; please pay special attention to use

## 7.2. CON5

| Pin No. | Symbol | Function | Remark |
|---------|--------|----------|--------|
| 1 | NC | No connection | |
| 2 | 5V | Raspberry Pi:Power 5V | |
| 3 | GPIO02 | Raspberry Pi:GPIO02 | |
| 4 | 5V | Raspberry Pi:Power 5V | |
| 5 | GPIO03 | Raspberry Pi:GPIO03 | |
| 6 | GND | Raspberry Pi:GND | |
| 7 | GPIO04 | Raspberry Pi:GPIO04 | |
| 8 | GPIO14 | Raspberry Pi:GPIO14 | |
| 9 | GND | Raspberry Pi:GND | |
| 10 | GPIO15 | Raspberry Pi:GPIO15 | |
| 11 | GPIO17 | Raspberry Pi:GPIO17 | |
| 12 | BL-PWM (GPIO18) | Backlight Enable (Raspberry Pi:GPIO18) | |
| 13 | GPIO27 | Raspberry Pi:GPIO27 | |
| 14 | GND | Raspberry Pi:GND | |
| 15 | GPIO22 | Raspberry Pi:GPIO22 | |
| 16 | GPIO23 | Raspberry Pi:GPIO23 | |
| 17 | NC | No connection | |
| 18 | GPIO24 | Raspberry Pi:GPIO24 | |
| 19 | GPIO10 | Raspberry Pi:GPIO10 | |
| 20 | GND | Raspberry Pi:GND | |

| 21 | GPIO09 | Raspberry Pi:GPIO09 | |
|----|--------|---------------------|---|
| 22 | GPIO25 | Raspberry Pi:GPIO25 | |
| 23 | GPIO11 | Raspberry Pi:GPIO11 | |
| 24 | GPIO08 | Raspberry Pi:GPIO08 | |
| 25 | GND | Raspberry Pi:GND | |
| 26 | GPIO07 | Raspberry Pi:GPIO07 | |
| 27 | ID_SD | Raspberry Pi:ID_SD | |
| 28 | ID_SC | Raspberry Pi:ID_SC | |
| 29 | GPIO05 | Raspberry Pi:GPIO05 | |
| 30 | GND | Raspberry Pi:GND | |
| 31 | GPIO06 | Raspberry Pi:GPIO06 | |
| 32 | GPIO12 | Raspberry Pi:GPIO12 | |
| 33 | GPIO13 | Raspberry Pi:GPIO13 | |
| 34 | GND | Raspberry Pi:GND | |
| 35 | GPIO19 | Raspberry Pi:GPIO19 | |
| 36 | GPIO16 | Raspberry Pi:GPIO16 | |
| 37 | GPIO26 | Raspberry Pi:GPIO26 | |
| 38 | GPIO20 | Raspberry Pi:GPIO20 | |
| 39 | GND | Raspberry Pi:GND | |
| 40 | GPIO21 | Raspberry Pi:GPIO21 | |

## 7.3. CTP USB PIN Definition

| Pin | Symbol | Function | Remark |
|-----|--------|----------|--------|
| 1 | 5V | Power Supply (5V) | |
| 2 | D- | Data line - | |
| 3 | D+ | Data line + | |
| 4 | NC | No connection | |
| 5 | GND | Power Ground | |

## 7.4. HDMI

| Pin No. | Symbol | I/O | Function | Remark |
|---|---|---|---|---|
| 1 | Rx2+ | I | +LVDS Differential Data Input | |
| 2 | GND | P | Ground | |
| 3 | Rx2- | I | -LVDS Differential Data Input | |
| 4 | Rx1+ | I | +LVDS Differential Data Input | |
| 5 | GND | P | Ground | |
| 6 | Rx1- | I | -LVDS Differential Data Input | |
| 7 | Rx0+ | I | +LVDS Differential Data Input | |
| 8 | GND | P | Ground | |
| 9 | Rx0- | I | -LVDS Differential Data Input | |
| 10 | RxC+ | I | +LVDS Differential Clock Input | |
| 11 | GND | P | Ground | |
| 12 | RxC- | I | -LVDS Differential Clock Input | |
| 13-14 | NC | - | No connection | |
| 15 | SCL | I/O | DDC(Data Display Channel) Clock | |
| 16 | SDA | I/O | DDC(Data Display Channel) Data | |
| 17 | GND | P | Ground | |
| 18 | 5V | P | Power Supply | |
| 19 | Detect | I/O | Hot plug detect | |

I: input, O: output, P: Power

## 7.5. POWER-JACK

| Pin No. | Symbol | I/O | Function | Remark |
|---|---|---|---|---|
| 1 | 5V | P | Power Supply (5V) | |
| 2 | GND | P | Ground | |
| 3 | NC | - | No connection | |

# 8.Reliability

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

| 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℃ 200hrs | 2 |
| Low Temperature storage | Endurance test applying the low storage temperature for a long time. | -30℃ 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℃ 200hrs | ―― |
| Low Temperature Operation | Endurance test applying the electric stress under low temperature for a long time. | -20℃ 200hrs | 1 |
| High Temperature/ Humidity Operation | The module should be allowed to stand at 60℃,90%RH max | 60℃,90%RH 96hrs | 1,2 |
| Thermal shock resistance | The sample should be allowed stand the following 10 cycles of operation<br><br>  -20℃       25℃       70℃<br><br><br>  30min    5min      30min<br>         1 cycle | -20℃/70℃ 10 cycles | ―― |
| Vibration test | Endurance test applying the vibration during transportation and using. | Total fixed amplitude : 1.5mm Vibration Frequency : 10~55Hz 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), ±800v(air), RS=330Ω CS=150pF 10 times | ―― |
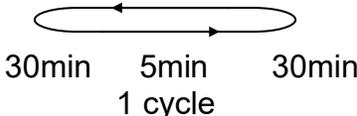
Note1: No dew condensation to be observed.
Note2: The function test shall be conducted after 4 hours storage at the normal
    Temperature and humidity after remove from the test chamber.
Note3: The packing have to including into the vibration testing.

# 9.Contour Drawing

TP OUTLINE 257.96

TFT OUTLINE 230.56

TP VA 218.00

TFT AA 216.96

14.27¡Õ5

18.69

(19.21)

9.48¡Õ5

6.40¡Õ3

1.60(PCB)

14.10MAX

9.00MAX

6.60MAX

11.50MAX

2.0MAX

28.66MAX

3.57¡Õ5

13.98

(14.68)

R G B

CTP Zero point(0,0)

1280 X RGB X 800

TP OUTLINE 168.6

TFT OUTLINE 155.01

TP VA 137.00

TFT AA 135.60

4-R7.00

Pull tape

Black printing

The non-specified tolerance of dimension is ¡Ó0.3 mm .

## DVI
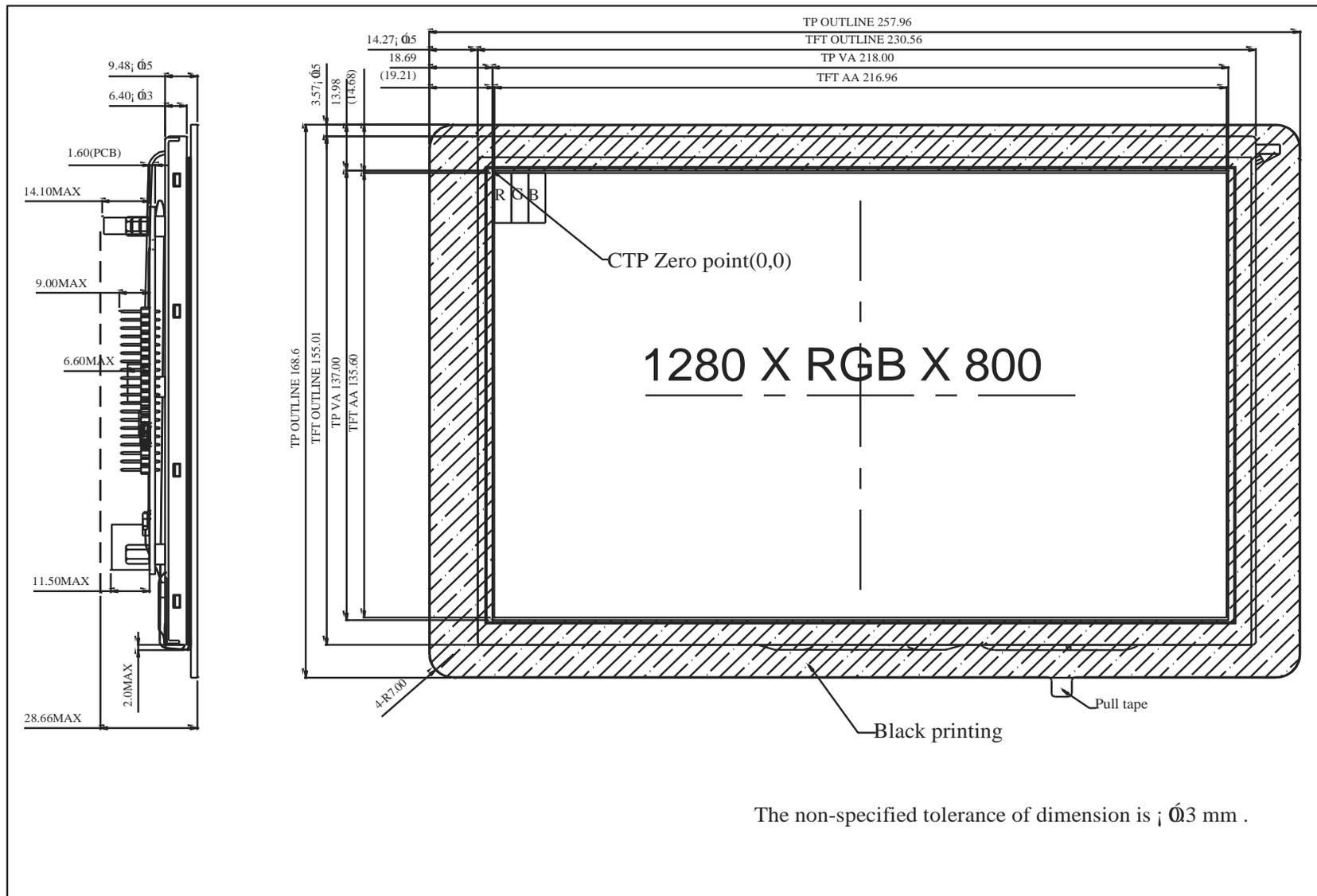
| Pin | Symbol |
|-----|--------|
| 1 | RX2+ |
| 2 | GND |
| 3 | RX2- |
| 4 | RX1+ |
| 5 | GND |
| 6 | RX1- |
| 7 | RX0+ |
| 8 | GND |
| 9 | RX0- |
| 10 | RXC+ |
| 11 | GND |
| 12 | RXC- |
| 13 | NC |
| 14 | NC |
| 15 | SCL |
| 16 | SDA |
| 17 | GND |
| 18 | 5V |
| 19 | Detect |
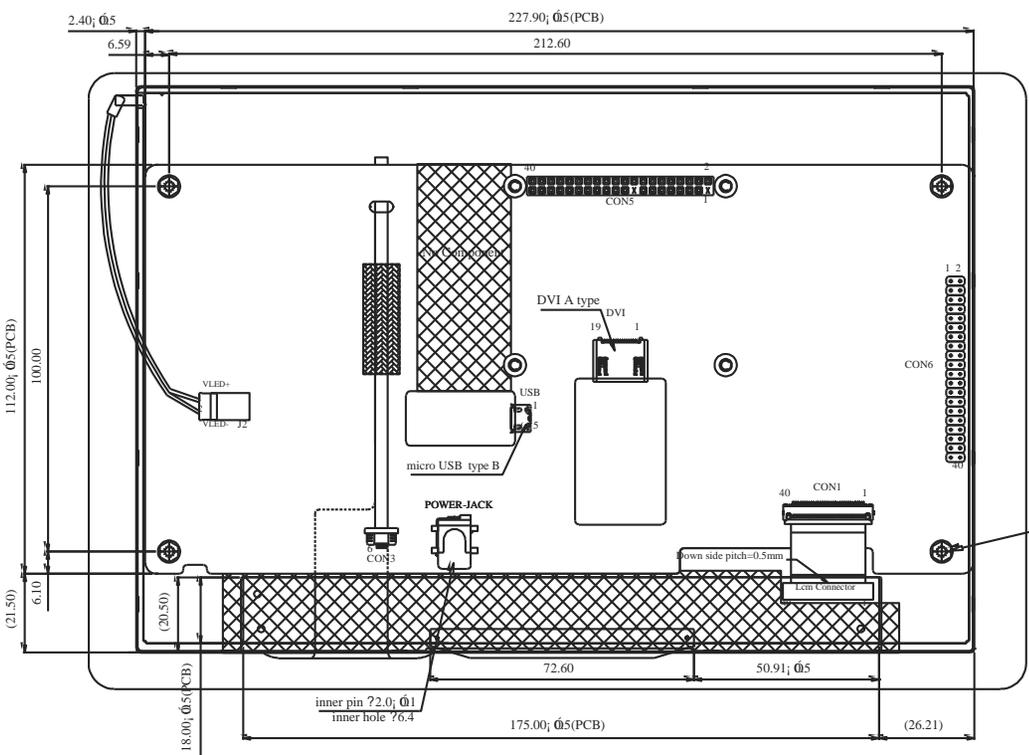
## CON5

| Pin | Symbol | Pin | Symbol |
|-----|--------|-----|--------|
| 1 | NC | 21 | GPIO09 |
| 2 | 5V | 22 | GPIO25 |
| 3 | GPIO02 | 23 | GPIO11 |
| 4 | 5V | 24 | GPIO08 |
| 5 | GPIO03 | 25 | GND |
| 6 | GND | 26 | GPIO07 |
| 7 | GPIO04 | 27 | ID_SD |
| 8 | GPIO14 | 28 | ID_SC |
| 9 | GND | 29 | GPIO05 |
| 10 | GPIO15 | 30 | GND |
| 11 | GPIO17 | 31 | GPIO06 |
| 12 | BL-PWM (GPIO18) | 32 | GPIO12 |
| 13 | GPIO27 | 33 | GPIO13 |
| 14 | GND | 34 | GND |
| 15 | GPIO22 | 35 | GPIO19 |
| 16 | GPIO23 | 36 | GPIO16 |
| 17 | NC | 37 | GPIO26 |
| 18 | GPIO24 | 38 | GPIO20 |
| 19 | GPIO10 | 39 | GND |
| 20 | GND | 40 | GPIO21 |

## CON6

| Pin | Symbol | Pin | Symbol |
|-----|--------|-----|--------|
| 1 | 3.3V | 21 | GPIO09 |
| 2 | 5V | 22 | GPIO25 |
| 3 | GPIO02 | 23 | GPIO11 |
| 4 | 5V | 24 | GPIO08 |
| 5 | GPIO03 | 25 | GND |
| 6 | GND | 26 | GPIO07 |
| 7 | GPIO04 | 27 | ID_SD |
| 8 | GPIO14 | 28 | ID_SC |
| 9 | GND | 29 | GPIO05 |
| 10 | GPIO15 | 30 | GND |
| 11 | GPIO17 | 31 | GPIO06 |
| 12 | BL-PWM (GPIO18) | 32 | GPIO12 |
| 13 | GPIO27 | 33 | GPIO13 |
| 14 | GND | 34 | GND |
| 15 | GPIO22 | 35 | GPIO19 |
| 16 | GPIO23 | 36 | GPIO16 |
| 17 | 3.3V | 37 | GPIO26 |
| 18 | GPIO24 | 38 | GPIO20 |
| 19 | GPIO10 | 39 | GND |
| 20 | GND | 40 | GPIO21 |

## POWER JACK

| Pin | Symbol |
|-----|--------|
| 1 | 5V |
| 2 | GND |
| 3 | NC |

2 ——(GND)  1——(5V)

## USB

| Pin | Symbol |
|-----|--------|
| 1 | 5V |
| 2 | D- |
| 3 | D+ |
| 4 | NC |
| 5 | GND |

M3 X P0.5

Hex Standoffs
SCALE:3/1
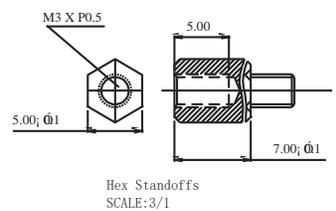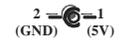
The non-specified tolerance of dimension is ¡Ó0.3 mm .

**1、Panel Specification**：

   1. Panel Type：    □ Pass    □ NG ,_____

   2. View Direction：    □ Pass    □ NG ,_____

   3. Numbers of Dots：    □ Pass    □ NG ,_____

   4. View Area：    □ Pass    □ NG ,_____

   5. Active Area：    □ Pass    □ NG ,_____

   6. Operating Temperature：    □ Pass    □ NG ,_____

   7. Storage Temperature：    □ Pass    □ NG ,_____

   8. Others：_____

**2、Mechanical**

   1. PCB Size：    □ Pass    □ NG ,_____

   2. Frame Size：    □ Pass    □ NG ,_____

   3. Material of Frame：    □ Pass    □ NG ,_____

   4. Connector Position：    □ Pass    □ NG ,_____

   5. Fix Hole Position：    □ Pass    □ NG ,_____

   6. Backlight Position：    □ Pass    □ NG ,_____

   7. Thickness of PCB：    □ Pass    □ NG ,_____

   8. Height of Frame to PCB：    □ Pass    □ NG ,_____

   9. Height of Module：    □ Pass    □ NG ,_____

   10. Others：    □ Pass    □ NG ,_____

**3、Relative Hole Size**：

   1. Pitch of Connector：    □ Pass    □ NG ,_____

   2. Hole size of Connector：    □ Pass    □ NG ,_____

   3. Mounting Hole size：    □ Pass    □ NG ,_____

   4. Mounting Hole Type：    □ Pass    □ NG ,_____

   5. Others：    □ Pass    □ NG ,_____

**4、Backlight Specification**：

   1. B/L Type：    □ Pass    □ NG ,_____

   2. B/L Color：    □ Pass    □ NG ,_____

   3. B/L Driving Voltage (Reference for LED Type)：    □ Pass    □ NG ,_____

   4. B/L Driving Current：    □ Pass    □ NG ,_____

   5. Brightness of B/L：    □ Pass    □ NG ,_____

   6. B/L Solder Method：    □ Pass    □ NG ,_____

   7. Others：    □ Pass    □ NG ,_____

＞＞ **Go to 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**：_____ / _____ / _____