**Winstar Display Co., LTD**
**華凌光電股份有限公司**
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# SPECIFICATION

**CUSTOMER :** _____

**MODULE NO.:** WF70-800480B7PD#001-FC

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

| **SALES BY** | **APPROVED BY** | **CHECKED BY** | **PREPARED BY** |
|---|---|---|---|
| first FC components | | | 葉虹蘭 |
| **ISSUED DATE:** **2021/12/28** | | | |

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

# 3.General Specifications

| Item | Dimension | Unit |
|---|---|---|
| Size | 7.0 | inch |
| Dot Matrix | 800 x RGB x 480 (TFT) | dots |
| Module dimension | 165 x 100.0x 13.45 | mm |
| Active area | 154.08 x 85.92 | mm |
| Pixel Pitch | 0.1926 X 0.179 | mm |
| LCD type | TFT, Normally White, Transmissive | |
| View Direction | 12 o'clock | |
| Gray Scale Inversion Direction | 6 o'clock | |
| Aspect Ratio | 16:9 | |
| TFT Interface | 18-bit RGB | |
| Backlight Type | LED ,Normally White | |
| Color arrangement | RGB-STRIPE | |
| Driver IC | Source IC: ST-5623D, Gate IC: ST5091D | |
| With /Without TP | With RTP | |
| 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:**

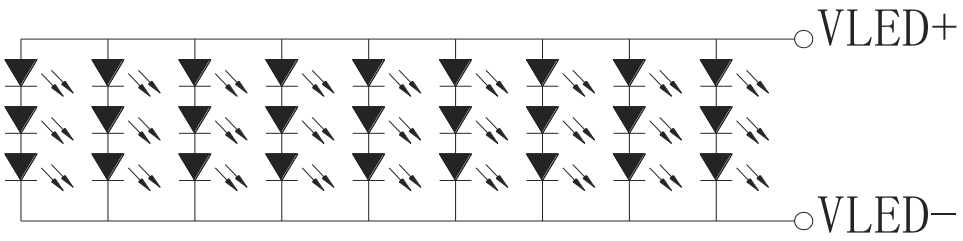
| Item | Symbol | Min | Typ | Max | Unit | Remark |
|---|---|---|---|---|---|---|
| Supply Voltage For Logic | VCC | 3.0 | 3.3 | 3.6 | V | - |
| Power Supply For Current | VCC =3.3V | - | 12 | 18 | mA | - |

Note: Environmental condition: 25±5

**5.2. LED driving conditions**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| LED current | - | - | 180 | - | mA | - |
| LED voltage | VLED+ | 8.4 | 9.8 | 11.0 | V | Note 1 |
| LED Life Time | - | | 50,000 | - | Hr | Note 2,3,4 |

Note 1 : There are 1 Groups LED




CIRCUIT DIAGRAM

Note 2 : Ta = 25 ℃
Note 3 : Brightness to be decreased to 50% of the initial value
Note 4 : The single LED lamp case

# 8.Optical Characteristics

| Item | | Symbol | Condition. | Min | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|---|---|
| Response time | | Tr+ Tf | θ=0°、Φ=0° | - | 25 | 50 | .ms | Note 3 |
| Contrast ratio | | CR | At optimized viewing angle | 500 | 800 | - | - | Note 4 |
| Color Chromaticity | White | Wx | θ=0°、Φ=0 | 0.26 | 0.31 | 0.36 | - | Note 2,5,6 |
| | | Wy | | 0.28 | 0.33 | 0.38 | - | |
| Viewing angle (Gray Scale Inversion Direction) | Hor. | ΘR | CR≧10 | 60 | 70 | - | Deg. | Note 1 |
| | | ΘL | | 60 | 70 | - | | |
| | Ver. | ΦT | | 50 | 60 | - | | |
| | | ΦB | | 60 | 70 | - | | |
| Brightness | | - | - | 200 | 250 | - | cd/m$^2$ | Center of display |
| Uniformity | | (U) | - | 70 | - | - | % | Note 5 |

Ta=25±2℃, IL=180mA

Note 1: Definition of viewing angle range

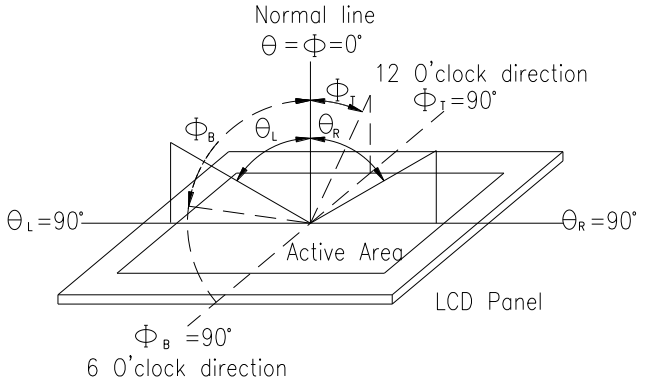
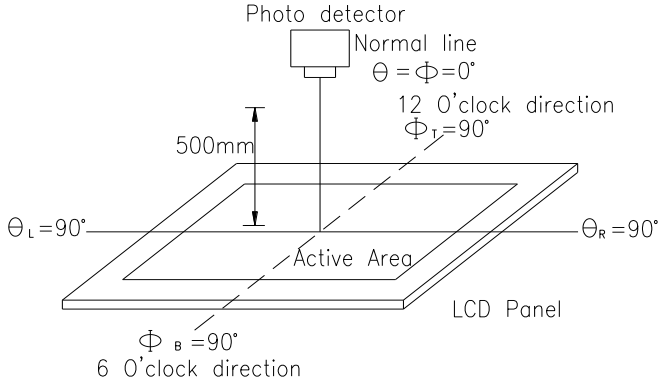



Fig. 8.1. Definition of viewing angle

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.



# 9.Interface

### 9.1. LCM PIN Definition

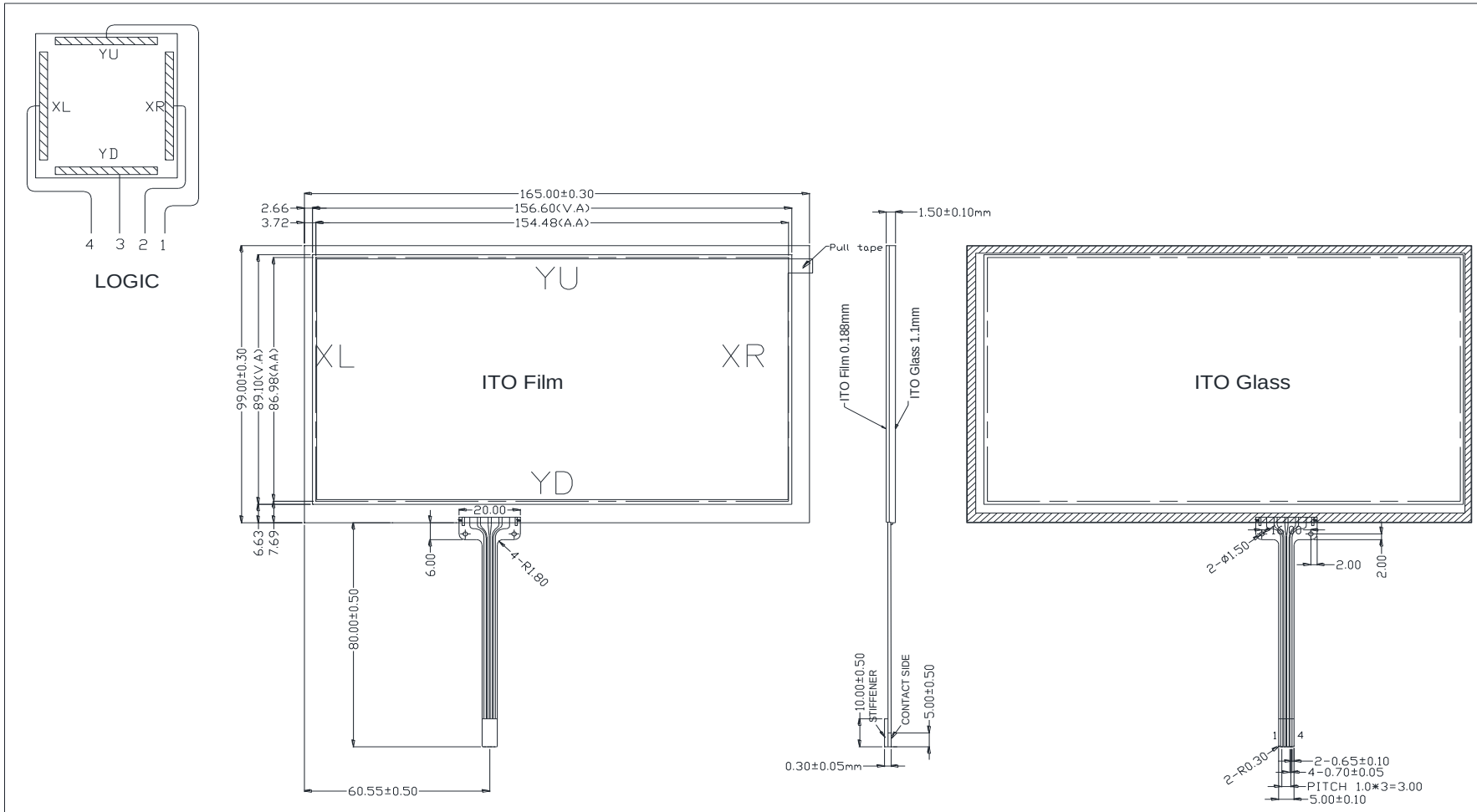
| Pin | Symbol | Function | Remark |
|---|---|---|---|
| 1 | GND | Power ground | |
| 2 | GND | Power ground | |
| 3 | NC | No connection | |
| 4 | VCC | Power for Digital Circuit | |
| 5 | VCC | Power for Digital Circuit | |
| 6 | VCC | Power for Digital Circuit | |
| 7 | VCC | Power for Digital Circuit | |
| 8 | NC | No connection | |
| 9 | DE | Data Input Enable | |
| 10 | GND | Power ground | |
| 11 | GND | Power ground | |
| 12 | GND | Power ground | |
| 13 | B5 | Blue data | |
| 14 | B4 | Blue data | |
| 15 | B3 | Blue data | |
| 16 | GND | Power ground | |
| 17 | B2 | Blue data | |
| 18 | B1 | Blue data | |
| 19 | B0 | Blue data(LSB) | |
| 20 | GND | Power ground | |
| 21 | G5 | Green data | |
| 22 | G4 | Green data | |
| 23 | G3 | Green data | |
| 24 | GND | Power ground | |
| 25 | G2 | Green data | |
| 26 | G1 | Green data | |
| 27 | G0 | Green data(LSB) | |
| 28 | GND | Power ground | |
| 29 | R5 | Red data | |
| 30 | R4 | Red data | |
| 31 | R3 | Red data | |
| 32 | GND | Power ground | |

| | | | |
|---|---|---|---|
| 33 | R2 | Red data | |
| 34 | R1 | Red data | |
| 35 | R0 | Red data(LSB) | |
| 36 | GND | Power ground | |
| 37 | GND | Power ground | |
| 38 | DCLK | Sample clock (CLK) | |
| 39 | GND | Power ground | |
| 40 | GND | Power ground | |

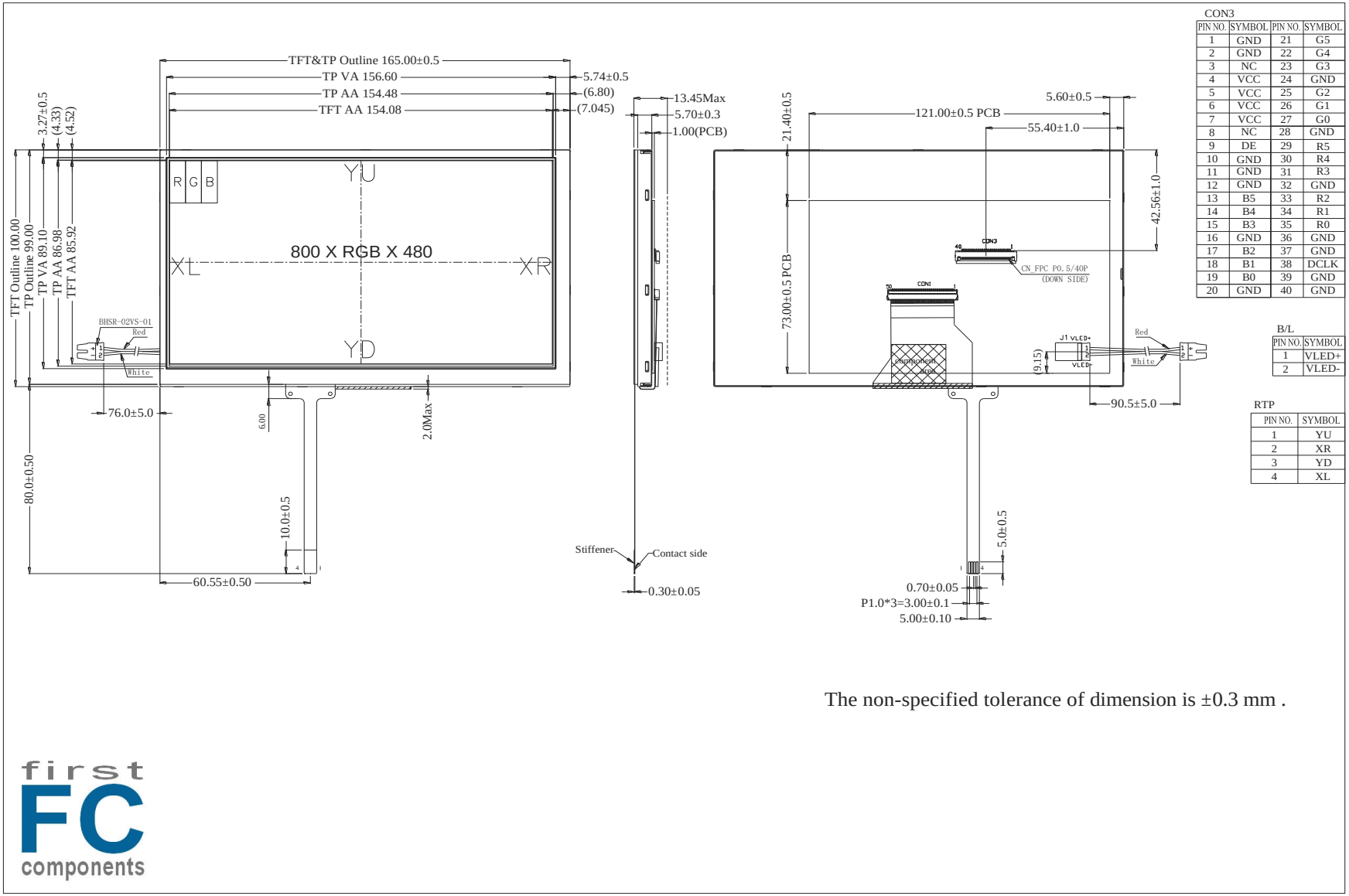
### 9.2. Backlight Driving Part

| Pin No. | Symbol | Description |
|---|---|---|
| 1 | VLED+ | Red, LED_ Anode |
| 2 | VLED- | White, LED_ Cathode |

# 12.Touch Panel Information



# 13.Contour Drawing




CON3

| PIN NO. | SYMBOL | PIN NO. | SYMBOL |
|---|---|---|---|
| 1 | GND | 21 | G5 |
| 2 | GND | 22 | G4 |
| 3 | NC | 23 | G3 |
| 4 | VCC | 24 | GND |
| 5 | VCC | 25 | G2 |
| 6 | VCC | 26 | G1 |
| 7 | VCC | 27 | G0 |
| 8 | NC | 28 | GND |
| 9 | DE | 29 | R5 |
| 10 | GND | 30 | R4 |
| 11 | GND | 31 | R3 |
| 12 | GND | 32 | GND |
| 13 | B5 | 33 | R2 |
| 14 | B4 | 34 | R1 |
| 15 | B3 | 35 | R0 |
| 16 | GND | 36 | GND |
| 17 | B2 | 37 | GND |
| 18 | B1 | 38 | DCLK |
| 19 | B0 | 39 | GND |
| 20 | GND | 40 | GND |

B/L

| PIN NO. | SYMBOL |
|---|---|
| 1 | VLED+ |
| 2 | VLED- |

RTP

| PIN NO. | SYMBOL |
|---|---|
| 1 | YU |
| 2 | XR |
| 3 | YD |
| 4 | XL |

The non-specified tolerance of dimension is ±0.3 mm .