| | |
|---|---|
| Project No.<br>项目编号 | TXW133016A0-LZ |
| Customer<br>客户名称 | |
| Module No.<br>客户型号 | |
| Product type<br>产品内容 | **Standard LCD Module**<br>**TFT：1920*RGBx1080Dots**<br>**13.3”TFT LCD+CTP** |

| 客户确认Customer Approval | |
|---|---|
| 项目负责人Project Manager | |
| 品质主管Director of Quality | |
| 采购工程师Purchasing Engineer | |

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

**Shenzhen Tianxianwei Technology Co., Ltd.**

**Contact: Han Bing**

**Phone: 13823639945/0755-82597676**

**Email:hanbing@txwlcd.com**

**Website:http://www.txwlcd.cn**

**Address: 4th Floor, Building E, Hengqiangustrial Park, Jian'an Road, Shajing Street, Bao'an Ind District, Shenzhen**

# 1. Introduction

## 1.1 Scope of application

This specification applies to the LCD module that is supplied by Tian Xian Wei Technology CO., LTD.
LCD specification: Dots 1920xRGBx1080.
All material & processing of the LCD module should be Lead Free.

## 1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL+CTP;
ALL O'CLOCK Type LCD
1920dot-segment and1080 dot-common outputs;
16.7M Color can be selected by software;
White LED back light;
2lane EDP interface

TXWEI

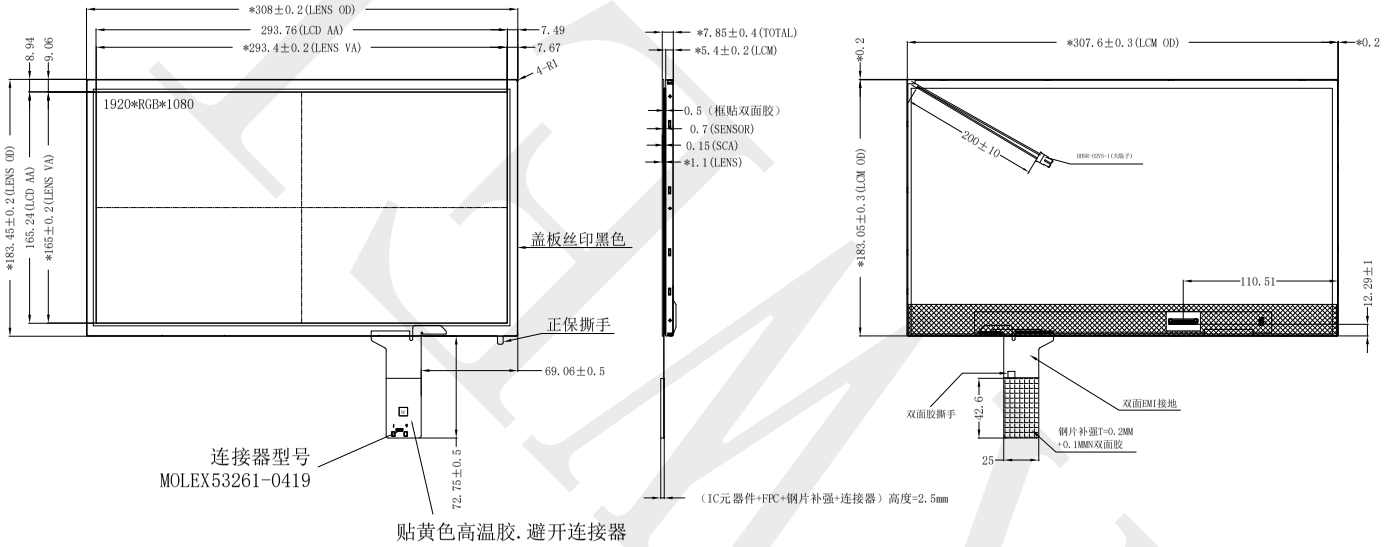
## 2. LCM General specification

| ITEM | Sandard value | Unit |
|---|---|---|
| LCD Type | Normally Black | -- |
| Drive element | TFT active matrix | -- |
| Number of pixels | 1920*3RGB(H)X1080(V) | Dots |
| Pixel arrangement | R,G,B vertical stripe | -- |
| Pixel Pitch (W*H) | 0.153 (H) × 0.153 (V) | mm |
| Active area | 293.40(H) x 165.00(V) | mm |
| Viewing direction | ALL O'CLOCK | - |
| TFT Driver IC | RM97030 | |
| TFT interface | 2lane EDP interface | - |
| Approx. Weight | TBD | g |
| LCM Size(W*H*T) | 307.60(W)x183.05(H) x 5.40(T) | mm |
| LCM+CTP Size(W*H*T) | 308.00(W)x183.45(H) x 7.85(T) | mm |
| Touch structure | G+G | |
| Touch Driver IC | ILITEK2511(TX23*RX41) | - |
| Touch Interface | USB | |

深圳市天显威科技有限公司
Shenzhen Tianxianwei technology co., LTD
Product Specification

TXWEI

| REV | DESCRIPTION | DRG DATE | DRAWN BY |
|---|---|---|---|
| 00 | First Design | 2025.04.29 | |




| PIN NUMBER | NAME |
|---|---|
| 1 | NC |
| 2 | H_GND |
| 3 | Lane1_N |
| 4 | Lane1_P |
| 5 | H_GND |
| 6 | Lane0_N |
| 7 | Lane0_P |
| 8 | H_GND |
| 9 | AUX_CH_P |
| 10 | AUX_CH_N |
| 11 | H_GND |
| 12 | VDD |
| 13 | VDD |
| 14 | LCD_TEST |
| 15 | LCD_GND |
| 16 | LCD_GND |
| 17 | HPD |
| 18 | BL_GND |
| 19 | BL_GND |
| 20 | BL_GND |
| 21 | BL_GND |
| 22 | BL_ENABLE |
| 23 | BL_PWM_DIM |
| 24 | NC |
| 25 | NC |
| 26 | BL_PWR |
| 27 | BL_PWR |
| 28 | BL_PWR |
| 29 | BL_PWR |
| 30 | NC |

NOTES:
1. DISPLAY TYPE: 13.3″, 1920*1080 TFT LCD
2. DISPLAY MODE: transmissive Normally Black
3. VIEWING DIRECTION: ALL
4. DRIVER IC:RM97030
5. LCM (White 9 AVG 1/9) :
   Brightness: 1000cd/m² (TYP)
   Uniformity:70%(MIN)
6. BACK LIGHT: If=420mA(TYP),Vf=24.3V~29.7V
7. OPERATING TEMP: -20° C TO 70° C,STORAGE TEMP: -30° C TO 80° C
8. * Critical Parameter,( ) ref Parameter,[ ] cpk Parameter
   Unspecified Tolerances:±0.20mm
9. SUGGESTION:TP window size unilateral increase 0.3~0.5mm than LCM A.A
10. REQUIREMENTS ENVIRONMENTAL PROTECTION: RoHS

技术参数：
1. 产品结构：G+G
IC:ILITEK2511(TX23*RX41)；
2. 工作电压：5 V
3. 透光率：≥85%
4. 表面硬度：6H
5. 工作环境：-20℃~+70℃，≤90%RH
6. 储存环境：-30℃~+80℃，≤90%RH
7. 未注尺寸公差按±0.2mm

USB Interface

| PIN# | Signal |
|---|---|
| 1 | VDD |
| 2 | D- |
| 3 | D+ |
| 4 | GND |

| | | | | | |
|---|---|---|---|---|---|
| TXWEI | 深圳市天显威科技有限公司 Shenzhen Tian xian wei Technology Co., Ltd. | | | Mobile: | 0755-82597676 |
| PART NO.: | TXW133016A0-LZ | | | MODULE NO.: | 00 |
| DRAWN BY: | LIU | DATE: | 2025.04.29 | PROJECTION: | |
| CHECKED BY: | | DATE: | | SCALE:N.T.S | UNIT: mm |
| APPROVED BY: | | DATE: | | SHEET: 1 OF 1 | |

## 3.Absolute Maximum Rating

| Characteristics | Symbol | Min. | Max. | Unit |
|---|---|---|---|---|
| LCM Operating Temperature | $T_{OPR}$ | -20 | +70 | °C |
| LCM Storage Temperature | $T_{STG}$ | -30 | +80 | °C |
| TP Operating Temperature & Humidity (20% ~ 90%RH) | $T_{OPR}$ | -20 | +70 | °C |
| TP SStorage Temperature & Humidity (20% ~ 90%RH) | $T_{STG}$ | -30 | +80 | °C |
| Humidity | RH | - | 90 | % |

## 4.Electrical Characteristics

### 4.1 TFT-LCD panel driving

| Characteristics | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Supply Voltage for(DC/DC) | VDD | 3.0 | 3.3 | 3.3 | V |

### 4.2 Back-Light Unit Characeristics

| Characteristics | Symbol | Min. | Type | Max. | Unit | Notes |
|---|---|---|---|---|---|---|
| Forward Voltage | $V_F$ | 24.3 | -- | 29.7 | V | -- |
| Forward current | $I_F$ | -- | 420 | -- | mA | -- |
| Luminance(With LCD+CTP) | Lv | -- | 1000 | -- | $cd/m^2$ | -- |
| LED life time | N/A | -- | 30,000 | -- | Hr | Note 1 |

# 5. Module Function Description

**LCM PIN Description:**

| PIN NO | Symbol | Function |
|---|---|---|
| 1 | NC | No Connect |
| 2 | H_GND | High Speed Ground |
| 3 | Lane1_N (2 Lane) | Comp Signal Link Lane 1 |
| 4 | Lane1_P (2 Lane) | True Signal Link Lane 1 |
| 5 | H_GND | High Speed Ground |
| 6 | Lane0_N | Comp Signal Link Lane 0 |
| 7 | Lane0_P | True Signal Link Lane 0 |
| 8 | H_GND | High Speed Ground |
| 9 | AUX_CH_P | True Signal Auxiliary Ch. |
| 10 | AUX_CH_N | Comp Signal Auxiliary Ch. |
| 11 | H_GND | High Speed Ground |
| 12 | LCD_VCC | LCD logic and driver power(3.3V) |
| 13 | LCD_VCC | LCD logic and driver power(3.3V) |
| 14 | LCD_Self_Test | LCD Panel Self Test , NC( No Connect, reverse for AUO test only) |
| 15 | LCD GND | LCD logic and driver ground |
| 16 | LCD GND | LCD logic and driver ground |
| 17 | HPD | HPD signal pin |
| 18 | BL_GND | Backlight_ground |
| 19 | BL_GND | Backlight_ground |
| 20 | BL_GND | Backlight_ground |
| 21 | BL_GND | Backlight_ground |
| 22 | BL_Enable | Backlight On / Off |
| 23 | BL PWM DIM | System PWM signal Input |
| 24 | NC | Reverse for AUO test only |
| 25 | NC | Reverse for AUO test only |
| 26 | BL_PWR | Backlight power (12V) |
| 27 | BL_PWR | Backlight power (12V) |
| 28 | BL_PWR | Backlight power (12V) |
| 29 | BL_PWR | Backlight power (12V) |
| 30 | NC | No Connect |

**USB PIN Description:**

| Pin No. | Symbol | CTP Functional | Notes |
|---|---|---|---|
| 1 | VDD | USB Power Voltage 5V | |
| 2 | D- | Negative data cable | |
| 3 | D+ | Positive data cable | |
| 4 | GND | Power Ground | |

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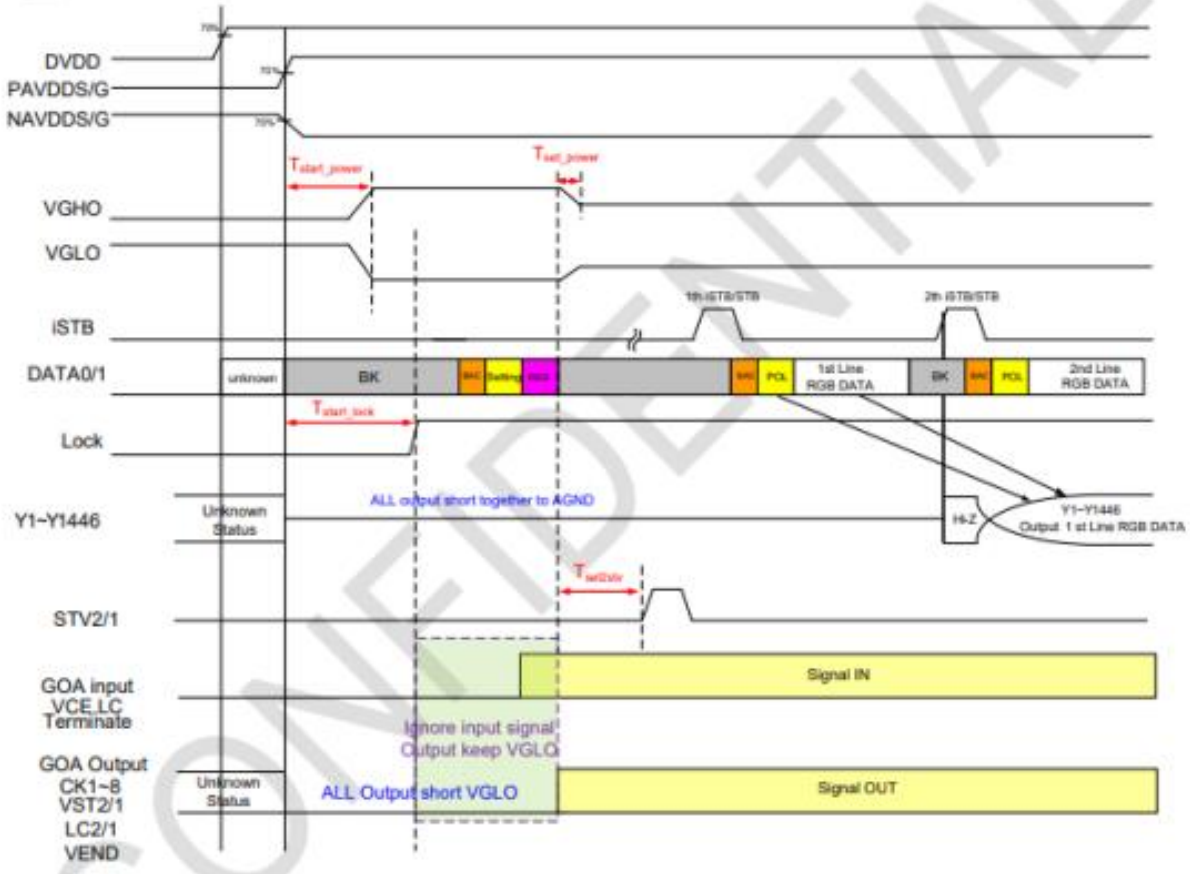
## 6. Timing Characteristics

### Input Timing Characteristics

| ITEM | Symbol | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| Clock frequency | $F_{DCLK}$ | | 141 | | MHz |
| Horizontal period area | $T_H$ | | 2136 | | DCLK |
| Horizontal display area | $T_{HD}$ | | 1920 | | DCLK |
| Horizontal blanking area | $T_{HB}$ | | 184 | | DCLK |
| Vertical period area | $T_V$ | | 1133 | | $T_H$ |
| Vertical display area | $T_{VD}$ | | 1080 | | $T_H$ |
| Vertical blanking area | $T_{VB}$ | | 36 | | $T_H$ |
| Frame rate | $F_R$ | | 60 | | Hz |

### Power on/off Timing



## I/O AC CHARACTERISTICS

| Parameter | Test Conditions | Min | Typ[2] | Max | Unit |
|---|---|---|---|---|---|
| Supply ramp up time: | | | | | |
| $t_{2.5}$ 2.5V/3.3V supply ramp up time | 10% to 90% of the 2.5V/3.3V supply voltage | | | 10 | ms |
| $t_{1.2}$ 1.2V supply ramp up time | 10% to 90% of the 1.2V supply voltage | | | 10 | ms |
| Power ramp delay | | | | | |
| $\Delta t_{POWER}$ Delay time from 2.5V/3.3V supply to 1.2V supply | 90% of 2.5V/3.3V supply to 90% of 1.2V supply | -10 | | 10 | ms |
| $\Delta t_{POWER-RST\#}$ Delay from 1.2V power ready & 2.5V/3.3V power ready to RST# pin de-assertion | 90% of 1.2V supply & 90% of 2.5V/3.3V supply (all power supplies ready) to 20% of the RST# de-assertion (rising edge) | 5 | | | ms |
| CMOS output pins: GPIOx | $C_L$ = 10 pF | | | | |
| tr Output rise time | | | | 6 | ns |
| tf Output fall time | | | | 6 | ns |
| Master I2C pins: MSCL, MSDA | | | | | |
| $t_{RISE}$ Master I2C bus 10% to 90% rise time | | | | 300 | ns |

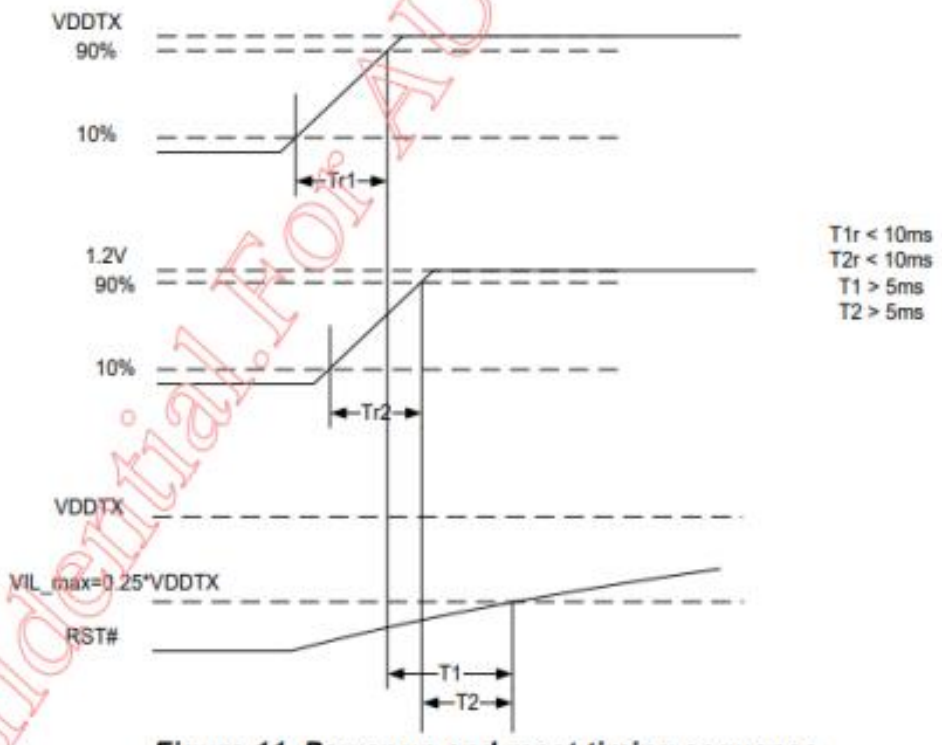



*Figure 11. Power up and reset timing sequence*

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## Electrical Characteristics

The following items are measured under stable condition and suggested application circuits.

### DC Electrical Characteristics

**NORMAL OPERATING CONDITIONS AND POWER CONSUMPTIONS**

| Parameter | Min | Typ[2] | Max | Unit |
|---|---|---|---|---|
| Supply Voltage: | | | | |
| 2.5V Supply Voltage | 2.25 | 2.5 | 2.75 | V |
| 3.3V Supply Voltage | 3.0 | 3.3 | 3.6 | V |
| 1.8V Supply Voltage | 1.7 | 1.8 | 1.9 | V |
| 1.2V Supply Voltage | 1.09 | 1.2 | 1.28 | V |

**I/O DC CHARACTERISTICS**

| Parameter | Test Conditions | Min | Typ[2] | Max | Unit |
|---|---|---|---|---|---|
| I2C pins: xSCL, xSDA | | | | | |
| $V_{OH}$ High-level output voltage | External 1.5 kΩ pull-up to VCC | | VCC | | V |
| $V_{OL}$ Low-level output voltage | 2.5V or 3.3V<br>$I_{OL}$ = 8 mA | | | 0.4 | V |
| LCD control pins: | | | | | |
| $V_{OH}$ High-level output voltage | $I_{OL}$ = 4 mA, $I_{OH}$ = -4 mA | 0.8VCC | | | V |
| $V_{OL}$ Low-level output voltage | | | | 0.15VCC | V |
| General I/O pins | | | | | |
| $V_{IH}$ LVCMOS input High-level voltage | | 0.7VCC | | | V |
| $V_{IL}$ LVCMOS input Low-level voltage | | | | 0.25VCC | V |
| $V_{OH}$ High-level output voltage | $I_{OL}$ = 4 mA, $I_{OH}$ = -4 mA | 0.8VCC | | | V |
| $V_{OL}$ Low-level output voltage | | | | 0.15VCC | V |

Internal Use Only.

## 7.Optical Characteristics

All optical specification is measured under typical condition (Note 1, 2)

| Item | | Symbol | Condition | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|---|---|
| Response Time | | Tr+Tf | θ=0° | -- | 25 | 35 | ms | Note 3 |
| Contrast ratio | | CR | θ=0° | 600 | 800 | -- | -- | Note 4 |
| NTSC | | % | θ=0° | -- | 72% | -- | % | C-light |
| Viewing Angle | Top | | CR ≧10 | 80 | 85 | -- | deg. | Note 5 |
| | Bottom | | | | | -- | | |
| | Left | | | | | -- | | |
| | Right | | | | | -- | | |
| Chromaticity | White | X | θ=0° | 0.275 | 0.325 | 0.375 | | @C-Light Note 6 |
| | | Y | θ=0° | 0.316 | 0.366 | 0.416 | | |
| | Red | X | θ=0° | 0.612 | 0.662 | 0.712 | | |
| | | Y | θ=0° | 0.274 | 0.324 | 0.374 | | |
| | Green | X | θ=0° | 0.217 | 0.267 | 0.317 | | |
| | | Y | θ=0° | 0.548 | 0.598 | 0.648 | | |
| | Blue | X | θ=0° | 0.085 | 0.135 | 0.185 | | |
| | | Y | θ=0° | 0.041 | 0.091 | 0.141 | | |

Remark: ***Above table, all Values are simulated only. AUO will amend the data, when the actual Products output***

Note 1: Measurement should be performed in the dark room, optical ambient temperature =25℃

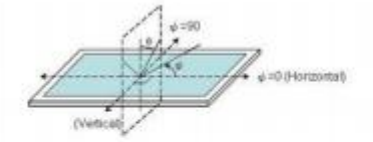
Note 2: To be measured on the center area of panel with a field angle of 1° by Topcon luminance meter BM-5, or SR3 or DMS-803 after 10 minutes operation.

Note 3: The Optical features are based on emissive spectrum of the reference light source by CIE1931C-light. The LCD spectrum of transmission must be verified with the reference light-source to achieve the specified optical characteristics.

Note 4: Contrast ratio is calculated with the following formula.

Contrast ratio = Photo detector output when LCD is at " White" state Photo detector output when LCD is at " Black" state

Note 5. Definition of viewing angle: refer to figure as below (FPC direction is at ψ=90).



Note 6. The viewing angles are measured at the center area of the panel when all the input terminals of LCD panel are electrically opened.

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## 8. Reliability Test Item

| No. | Test Item | Test Condition | Notes |
|---|---|---|---|
| 1 | High Temp. Storage | +80°C / 96H | 1. Functional test isOK. Missing Segment,short, unclear segment non-display,display abnormally and liquid crystal leakare un-allowed.<br>2. No low temperature bubbles,end seal loose andfall, frame rainbow. |
| 2 | Low Temp. Storage | -30°C / 96H | |
| 3 | High Tempe. Operating | +70°C / 96H | |
| 4 | Low Tempe. Operating | -20°C / 96H | |
| 5 | High Temperature /Humidity storage | 60°C x 90%RH /96H | |
| 6 | Thermal and cold shock | Static state，-20℃（30min）~70℃（30min），10 cycles | |

## 9. Packing Method----TBD

- END -

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