Next Vision Display
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# NEXT VISION DISPLAY

## SPECIFICATION

**CUSTOMER :** _____

**MODULE NO.:** NT070-C002WS

| | |
|---|---|
| Version | 0 |
| Engineer | |
| Date | 2022/11/10 |

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| Customer: |
|---|
| Approved by |

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# Summary

TFT 7.0”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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# General Specifications

| Item | Dimension | Unit |
|---|---|---|
| Size | 7.0 | inch |
| Dot Matrix | 800 x RGB x 480 (TFT) | dots |
| Module dimension | 165 x 100.0x 13.7 | mm |
| Active area | 154.08 x 85.92 | mm |
| Pixel Pitch | 0.1926 X 0.179 | mm |
| LCD type | TFT, Normally White, Transmissive | |
| Controller IC | SSD1963 | |
| Interface | Digital 8080 family MPU 8bit/16bit | |
| View Direction | 12 o'clock | |
| Gray Scale Inversion Direction | 6 o'clock | |
| Aspect Ratio | 16:9 | |
| Backlight Type | LED ,Normally White | |
| Color arrangement | RGB-STRIPE | |
| CTP IC | ILI2130 or Equivalent | |
| CTP Interface | I2C | |
| CTP FW Version | 0x07.0x00.0x00.0x00.0x65.0x90.0x00.0x01 | |
| CTP Resolution | 16384*16384 | |
| With /Without TP | With CTP | |
| Surface | Glare | |

*Color tone slight changed by temperature and driving voltage.

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# 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℃

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# Electrical Characteristics

**Operating conditions: (CON2.Pin1=GND, Pin2=VDD)**

| Item | Symbol | Condition | Min | Typ | Max | Unit | Remark |
|---|---|---|---|---|---|---|---|
| Supply Voltage For LCM | VDD | — | 3.0 | 3.1 | 3.3 | V | — |
| Supply Current For LCM | IDD | — | — | 220 | 335 | mA | Note1 |

Note 1 : This value is test for VDD=3.3V , Ta=25℃ only

**Backlight driving conditions (CON2.Pin33,34=VLED-, Pin35,36=VLED+)**

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|
| Operation Current For LED Driver | VLED=5V | 400 | — | 600 | mA | Note 1,2 |
| Power Consumption | VLED=5V | 2000 | — | 3000 | mW | Note 1,2 |
| Supply Voltage For LED Driver | VLED+ | — | 5 | — | V | — |
| LED Life Time | — | — | 50,000 | — | Hr | Note 2,3,4 |

Note 1 : Base on VLED= 5V for the back light driver IC specification
Note 2 : Ta = 25 ℃
Note 3 : Brightness to be decreased to 50% of the initial value
Note 4 : The single LED lamp case

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# 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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# Interface timing

**8080 Mode**

The 8080 mode MCU interface consist of CS#, D/C#, RD#, WR#, Data Bus. This interface use WR# to define a write cycle and RD# for read cycle. If the WR# goes low when the CS# signal is low, the data or command will be latched into the system at the rising edge of WR#. Similarly, the read cycle will start when RD# goes low and end at the rising edge of RD#.

**8080 Mode Write Cycle**

| Symbol | Parameter | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| fMCLK | System Clock Frequency | 1 | - | 110 | MHz |
| tMCLK | System Clock Period | 1/ fMCLK | - | - | ns |
| tPWCSH | Control Pulse High Width Write<br>Read | 13<br>30 | 1.5* **t**MCLK<br>3.5* **t**MCLK | - | ns |
| tPWCSL | Control Pulse Low Width Write (next write cycle)<br>Write (next read cycle)<br>Read | 13<br>80<br>80 | 1.5* **t**MCLK<br>9* **t**MCLK<br>9* **t**MCLK | - | ns |
| tAS | Address Setup Time | 1 | - | - | ns |
| tAH | Address Hold Time | 2 | - | - | ns |
| tDSW | Write Data Setup Time | 4 | | | ns |
| tDHW | Write Data Hold Time | 1 | - | - | ns |
| tPWLW | Write Low Time | 12 | | | ns |
| tDHR | Read Data Hold Time | 1 | - | - | ns |
| tACC | Access Time | 32 | | | ns |
| tPWLR | Read Low Time | 36 | - | - | ns |
| tR | Rise Time | - | | 0.5 | ns |
| tF | Fall Time | - | - | 0.5 | ns |
| tCS | Chip select setup time | 2 | | - | ns |
| tCSH | Chip select hold time to read signal | 3 | - | - | ns |

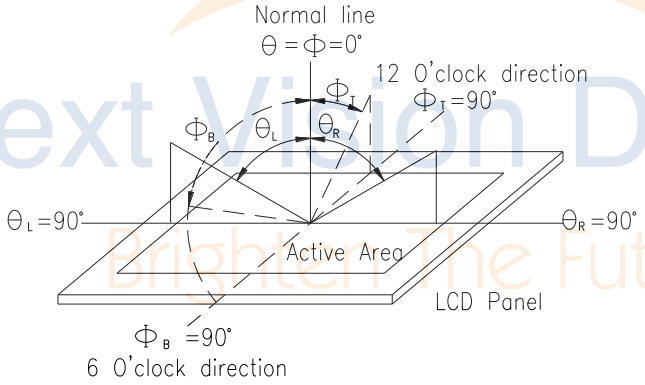
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# Optical Characteristics

| 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 | | - | - | 250 | 350 | - | $cd/m^2$ | Center of display |
| Uniformity | | (U) | - | 70 | - | - | % | Note 5 |

Ta=25±2℃, IL=180mA

Note 1: Definition of viewing angle range

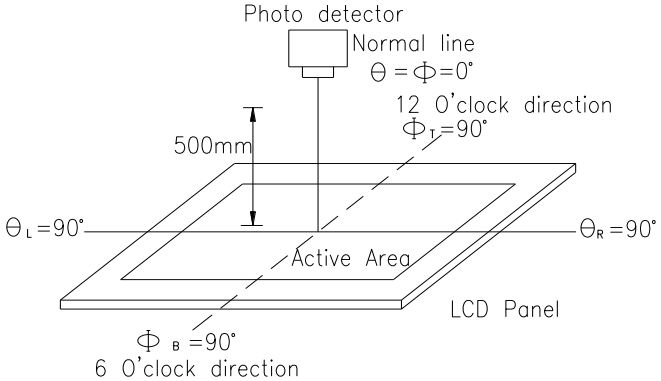



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Fig. 8.1. Definition of viewing angle

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.



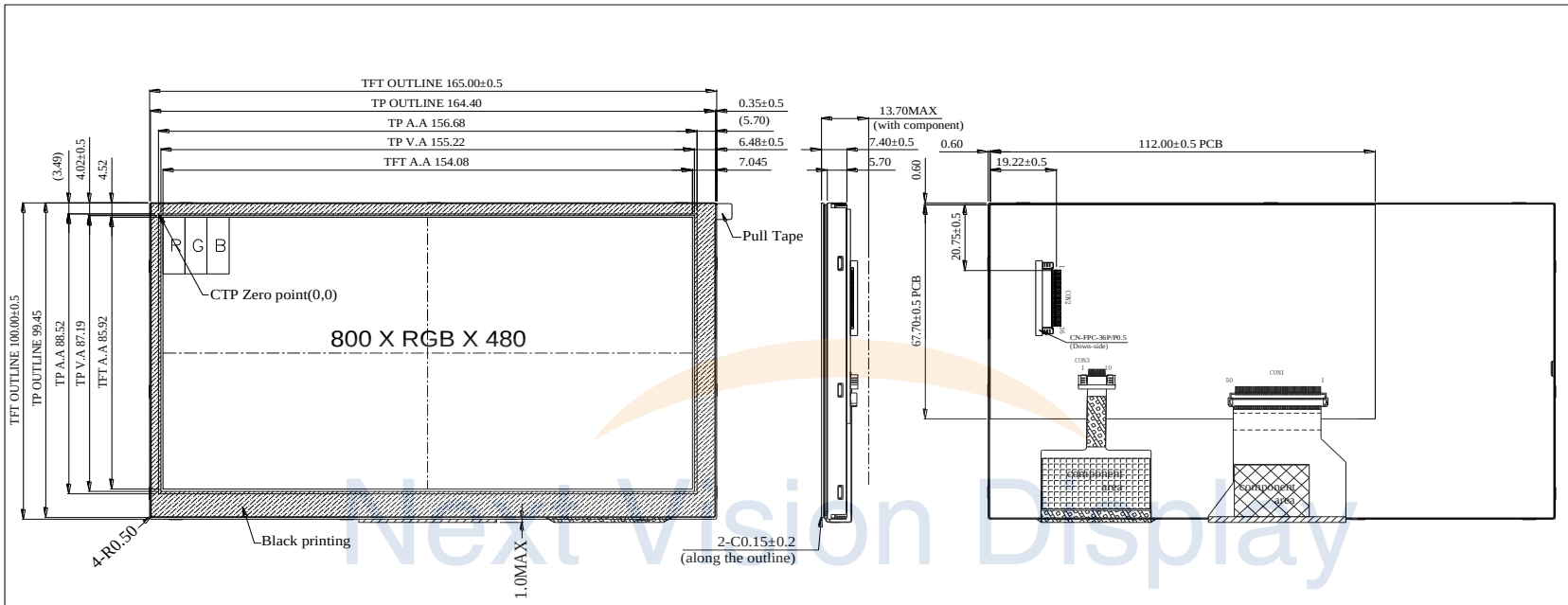
# Interface

## LCM PIN Definition (CON2)

| Pin | Symbol | Function | Remark |
|---|---|---|---|
| 1 | GND | System ground pin of the IC .Connect to system ground. | |
| 2 | VDD | Power Supply : +3.3V | |
| 3 | BLE | Backlight control signal , H: On \ L: Off | |
| 4 | D/C | Data/Command select | |
| 5 | WR | Write strobe signal | |
| 6 | RD | Read strobe signal | |
| 7 | DB0 | Data bus | |
| 8 | DB1 | Data bus | |
| 9 | DB2 | Data bus | |
| 10 | DB3 | Data bus | |
| 11 | DB4 | Data bus | |
| 12 | DB5 | Data bus | |
| 13 | DB6 | Data bus | |
| 14 | DB7 | Data bus | |
| 15 | DB8 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 16 | DB9 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 17 | DB10 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 18 | DB11 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 19 | DB12 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 20 | DB13 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 21 | DB14 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 22 | DB15 | Data bus (When select 8bits Mode, this pin is NC) | Note1 |
| 23 | NC | No connect | |
| 24 | CTP_INT | CTP_ External interrupt to the host | |
| 25 | CS | Chip select | |
| 26 | RST | Hardware reset (RESET) | |
| 27 | L/R | Left / right selection; Default L/R=H | Note 2,3 |
| 28 | U/D | Up/down selection; ; Default U/D=L | Note 2,3 |
| 29 | CTP_SCL | CTP_SPI Slave mode, chip select, active low / I2C clock input | |
| 30 | CTP_SDA | CTP_ SPI Slave mode, data input / I2C data input and output | |

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# Contour Drawing




| Pin | Symbol |
|---|---|
| 1 | GND |
| 2 | VDD |
| 3 | BLE |
| 4 | D/C |
| 5 | WR |
| 6 | RD |
| 7 | DB0 |
| 8 | DB1 |
| 9 | DB2 |
| 10 | DB3 |
| 11 | DB4 |
| 12 | DB5 |
| 13 | DB6 |
| 14 | DB7 |
| 15 | DB8 |
| 16 | DB9 |
| 17 | DB10 |
| 18 | DB11 |
| 19 | DB12 |
| 20 | DB13 |
| 21 | DB14 |
| 22 | DB15 |
| 23 | NC |
| 24 | CTP_INT |
| 25 | CS |
| 26 | RST |
| 27 | L/R |
| 28 | U/D |
| 29 | CTP_SCL |
| 30 | CTP_SDA |
| 31 | CTP_RST |
| 32 | NC |
| 33 | VLED- |
| 34 | VLED- |
| 35 | VLED+ |
| 36 | VLED+ |

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

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