# LN80480T050IA4098-TCF

## 5.0 inch, 800×480, TN screen with normal viewing angle, air bonding CTP

Disclaimer：The product design is subject to alternation and improvement without prior notice.

# Table of Contents

# 1 General Feature

## 1.1 LCD Parameters

| Feature | | Description | Unit |
|---|---|---|---|
| Display Spec. | Size | 5.0 | inch |
| | Resolution | 800(H)*480(V) | pixels |
| | Pixel Configuration | RGB Vertical stripe | - |
| | Pixel Pitch | 0.135(W)*0.135(H) | mm |
| | Viewing Direction | 6 o'clock | - |
| Mechanical Characteristics | Outside Dimension | 120.7(W)*75.8(H)*3.0(D) | mm |
| | Active Area | 108.0(W)*64.8(H) | mm |
| | Luminance | 300 | cd/m² |
| | LED Numbers | 12 LEDS | - |
| | Pin Order | From left to right 40PIN_0.5mm | - |
| Electrical Characteristics | Interface | RGB_24bit | - |
| | Color Depth | 16.7M | colors |
| | Driver Condition | 3.3(Type) | V |
| | Driver IC | ILI6122/ILI6137A-00T004/EK9713CA+ ILI5960/EK73002AB2 | - |
| Temperature Range | Operating Temp. | -20~70 | ℃ |
| | Storage Temp. | -30~80 | ℃ |

## 1.2 Touch Parameters

| Feature | Description |
|---|---|
| Type | CTP (Capacitive touch panel) |
| Structure | G+G |
| Control Type | GT911 |
| Outline Size(mm) | 119.25(L)*77.03(W)*1.98(T) |
| View Area(mm) | 108.60(L)*65.40W) |
| Surface Hardness | 6H |
| Light Transmittance | ≧85% |
| Operating Temperature | -20~70℃ |
| Storage Temperature | -30~80℃ |

**Note：Requirements on Environmental Protection: RoHS**

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# 2 Mechanical Drawing



NOTES:
1. DISPLAY TYPE : 16. 7M COLOR TFT-LCD, TRANSMISSIVE, NORMALLY WHITE;
2. OPERATING TEMP:-20℃~70℃;
3. STORAGE TEMP:-30℃~80℃;
4. Backlight:12 Chip-White LEDs if=40mA;
   Module BRIGHTNESS:400cd/m2(typ)
5. GENERAL TOLERANCE:±0. 2mm
   Mark "*" as the key size, in line with "ROHS" standard

DWIN Technology

LCM OUTLINE DIMENSION

MODULE NO: LN80480T050IA4098-TCF

| | | | |
|---|---|---|---|
| VER | A | REV | 0 |
| D/N | | PAGE | |
| TITL | | | |
| SCALE | NTS | UNIT | MM |

PREPARED / CHECK / APPROVED
DATE / DATE / DATE

**PIN DEFIND**

| PIN Logic | | PIN | Assignment |
|---|---|---|---|
| 1 | RST | 1 | pin |
| 2 | INT | 2 | VLED- |
| 3 | VDD | 3 | VLED+ |
| 4 | SDA | 4 | GND |
| 5 | SCL | 5 | DVDD |
| 6 | GND | 6 | R0 |

| | | | |
|---|---|---|---|
| 40 | NC/YU | 7 | R1 |
| 39 | NC/XL | 8 | R2 |
| 38 | NC/YD | 9 | R3 |
| 37 | NC/XR | 10 | R4 |
| 36 | GND | 11 | R5 |
| 35 | NC | 12 | R6 |
| 34 | DE | 13 | R7 |
| 33 | VSYNC | 14 | G0 |
| 32 | HSYNC | 15 | G1 |
| 31 | D1SP | 16 | G2 |
| 30 | PCLK | 17 | G3 |
| 29 | GND | 18 | G4 |
| 28 | B7 | 19 | G5 |
| 27 | B6 | 20 | G6 |
| 26 | B5 | 21 | G7 |
| 25 | B4 | 22 | B0 |
| 24 | B3 | 23 | B1 |
| | | | B2 |

component area(paste high temperature tape)

component area

silk screen black

Single Area

front protective film

5" 800*RGB*480

bend area

steel sheet stiffener GND (T=0.20mm)
paste conductive double-sided adhesive(T=0.05mm)

Single Area

Total Thickness:5.03±0.3

77.03±0.05(LENS OD)
75.8±0. 20 (OUTLINE)
67. 4±0. 15 (OPEN BEZEL)
66. 8±0. 20 (UP POL)
65.40±0.20(Window)
64. 80±0. 15 (A. A)
(35. 76)

120. 7±0. 20 (OUTLINE)
119.25±0.05(LENS OD)
110. 7±0. 15 (OPEN BEZEL)
109. 8±0. 20 (UP POL)
108.60±0.20Window
108. 00. 0±0. 15 (A. A)
(60. 3)

49. 26±1. 0
84.32±0.50
55.48±0.50
3.50±0.30
0.30±0.05
1.50 Max
20.00±0.20

1.00±0.20
8.02±0.20

2. 01
2. 36
3. 36
6. 3
5. 0
5. 4
6.31

20. 5
24. 12
2*1.00±0.10
W:6*0.70±0.05
P:5*1.0=5.00±0.10

PIN1
PIN6

7.00±0.10
20.00±0.50
19.48±0.30
16.00
6.00±0.50
20. 5

1.80±0.10
1.10±0.05
3.0±0.15

# 3 Input/Output Terminals

## 3.1 LCD Input/Output Terminals

| Pin NO. | Symbol | Function | Remark |
|---------|--------|----------|--------|
| 1 | VLED- | Power for LED backlight cathode | |
| 2 | VLED+ | Power for LED backlight anode | |
| 3 | GND | Power ground | |
| 4 | DVDD | Power voltage | |
| 5 | R0 | Red Data(LSB) | |
| 6 | R1 | Red Data | |
| 7 | R2 | Red Data | |
| 8 | R3 | Red Data | |
| 9 | R4 | Red Data | |
| 10 | R5 | Red Data | |
| 11 | R6 | Red Data | |
| 12 | R7 | Red Data(MSB) | |
| 13 | G0 | Green Data(LSB) | |
| 14 | G1 | Green Data | |
| 15 | G2 | Green Data | |
| 16 | G3 | Green Data | |
| 17 | G4 | Green Data | |
| 18 | G5 | Green Data | |
| 19 | G6 | Green Data | |
| 20 | G7 | Green Data(MSB) | |
| 21 | B0 | Blue Data(LSB) | |
| 22 | B1 | Blue Data | |
| 23 | B2 | Blue Data | |
| 24 | B3 | Blue Data | |
| 25 | B4 | Blue Data | |
| 26 | B5 | Blue Data | |
| 27 | B6 | Blue Data | |
| 28 | B7 | Blue Data(MSB) | |
| 29 | GND | Power ground | |
| 30 | PCLK | Pixel clock | |
| 31 | DISP | Standby mode, Normally pulled high STBYB="1",normal operation; STBYB="0",timing control, source driver will turn off, all output are High-Z | |
| 32 | HSYNC | Horizontal sync input in digital parallel RGB. Negative polarity | |
| 33 | VSYNC | Vertical sync input in digital parallel RGB. Negative polarity | |
| 34 | DEN | Input data enable control. When DE mode, active High to enable data input (normally pull low) | |
| 35 | NC | Not connection | |
| 36 | GND | Power ground | |
| 37 | NC/XR | Right electrode - differential analog | |
| 38 | NC/YD | Bottom electrode - differential analog | |
| 39 | NC/XL | Left electrode - differential analog | |
| 40 | NC/YU | Top electrode - differential analog | |

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## 3.2 TP Input/Output Terminals

| Pin NO. | Logic | Remark |
|---------|-------|--------|
| 1 | RST | |
| 2 | INT | |
| 3 | VDD | |
| 4 | SDA | |
| 5 | SCL | |
| 6 | GND | |

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# 4 Electrical Characteristics

## 4.1 Driving TFT LCD Panel

| Item | Symbol | Min | Typ. | Max | Unit | Remark |
|------|--------|-----|------|-----|------|--------|
| Digital Power Voltage | VDD | 3.0 | 3.3 | 3.6 | V | |

## 4.2 LED Backlight Specification

| Item | Symbol | Min. | Typ. | Max. | Unit | Remark |
|------|--------|------|------|------|------|--------|
| Voltage for LED Backlight | VL | 16.8 | 18.0 | 19.8 | V | |
| Current for LED Backlight | IL | - | 40 | - | mA | |
| Luminance(with LCD) | Lv | 250 | 300 | - | cd/m² | |
| Uniformity(with L/G) | Avg | 75 | 80 | - | % | |
| LED Life-Time | Hr | - | 30000 | - | Hour | |

Note: 12 LEDs (6 LEDs Serial, 2 ways Parallel)
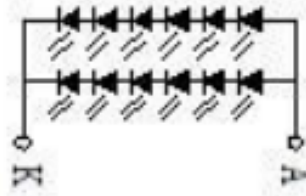
# 5 Timing Characteristics

## 5.1 HV Mode

| Parameter | Symbol | Value | | | Unit |
|---|---|---|---|---|---|
| | | Min. | Typ. | Max. | |
| Horizontal Display Area | thd | | 800 | | DCLK |
| DLCK Frequency | Fclk | 26.4 | 33.3 | 46.1 | MHZ |
| HSD Period | Th | 862 | 1056 | 1200 | DCLK |
| INNOLUX Pulse Width | thpw | 1 | 36 | 40 | DCLK |
| INNOLUX Back Porch | thbp | | 48 | | DCLK |
| INNOLUX Front Porch | tfbp | 16 | 210 | 354 | DCLK |
| Vertical Display Area | tvd | | 480 | | H |
| VSD Period | tv | 510 | 525 | 650 | H |
| VSD Pulse Width | Tvpw | 1 | 4 | 20 | H |
| VSD Back Porch | Tvbp | | 12 | | H |
| VSD Front Porch | tvfp | 7 | 22 | 147 | H |

## 5.2 Mode DC Electrical Characteristics

| Parameter | Symbol | Conditions | Specification | | | UNIT |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| Logic high level input voltage | $V_{IHLPCD}$ | LP-CD | 450 | - | 1350 | mV |
| Logic low level input voltage | $V_{ILLPCD}$ | LP-CD | 0 | - | 200 | mV |
| Logic high level input voltage | $V_{IHLPRX}$ | LP-RX (CLK, D0, D1) | 880 | - | 1350 | mV |
| Logic low level input voltage | $V_{ILLPRX}$ | LP-RX (CLK, D0, D1) | 0 | - | 550 | mV |
| Logic low level input voltage | $V_{ILLPRXULP}$ | LP-RX (CLK ULP mode) | 0 | - | 300 | mV |
| Logic high level output voltage | $V_{OHLPTX}$ | LP-TX (D0) | 1.1 | - | 1.3 | V |
| Logic low level output voltage | $V_{OLLPTX}$ | LP-TX (D0) | -50 | - | 50 | mV |
| Logic high level input current | $I_{IH}$ | LP-CD, LP-RX | - | - | 10 | µA |
| Logic low level input current | $I_{IL}$ | LP-CD, LP-RX | -10 | - | - | µA |
| Input pulse rejection | SGD | DSI-CLK+/-, DSI-Dn+/- (Note 3) | - | - | 300 | Vps |

Spike/glitch rejection-DSI

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## 5.3 Up-down Time Sequence

In order to prevent IC from power on reset fail, the rising time (TPOR) of the digital power supply VDD should be maintained within the given specifications. Refer to "AC Characteristics" for more detail on timing.

This is another paragraph of sub-function description.
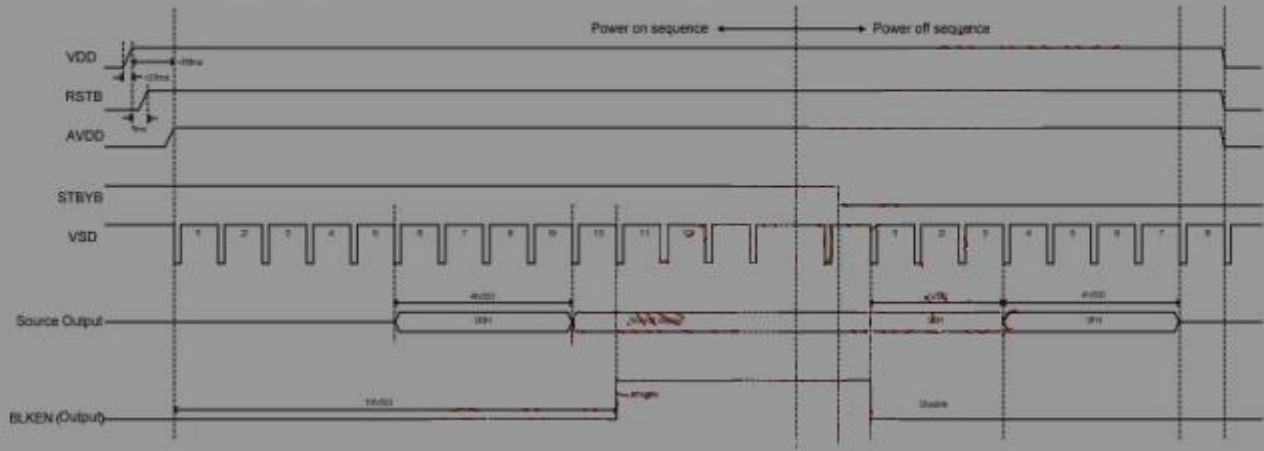
Power-On/Off Timing Sequence
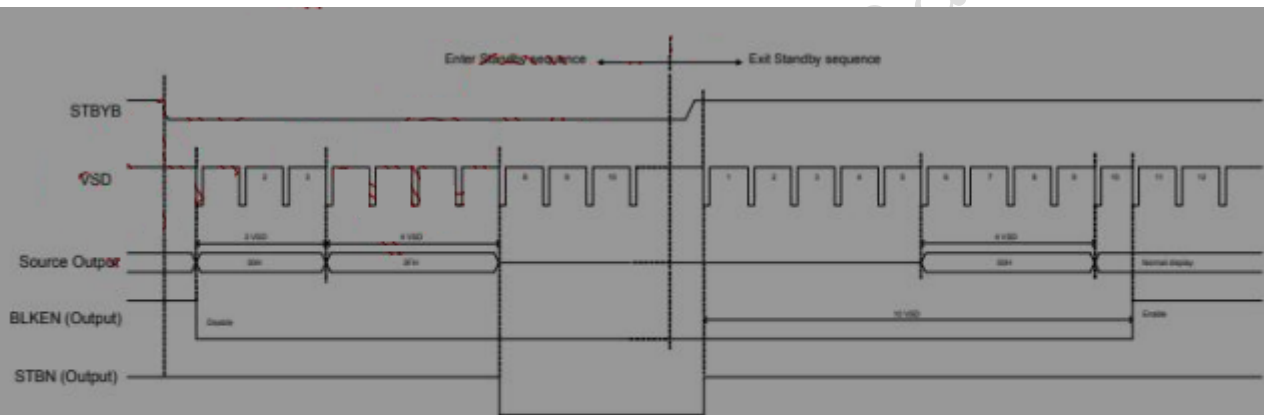
Enter and Exit Standby Mode Sequence

## 5.4 AC Characteristics

(VSS=VSSI=DVSS=0V, VDDI=1.65V to 3.6V, VDD=2.5V to 3.6V, Ta = -30 to 70°C)

| Signal | Symbol | Parameter | MIN | TYP | MAX | Unit | Description |
|--------|--------|-----------|-----|-----|-----|------|-------------|
| DSI-CLK+/- | 2xUI$_{INST}$ | Double UI instantaneous | 4 | - | 8 | ns | 4 Lane (Note 2) |
|  |  |  | 3 | - | 8 | ns | 3 Lane (Note 2) |
|  |  |  | 2.352 | - | 8 | ns | 2 Lane (Note 3) |
| DSI-CLK+/- | UI$_{INSTA}$ UI$_{INSTB}$ | UI instantaneous halfs (UI = UI$_{INSTA}$ = UI$_{INSTB}$) | 2 | - | 4 | ns | 4 Lane (Note 2) |
|  |  |  | 1.5 | - | 4 | ns | 3 Lane (Note 2) |
|  |  |  | 1.176 | - | 4 | ns | 2 Lane (Note 3) |
| DSI-Dn+/- | t$_{DS}$ | Data to clock setup time | 0.15xUI | - | - | ps |  |
| DSI-Dn+/- | t$_{DH}$ | Data to clock hold time | 0.15xUI | - | - | ps |  |
| DSI-CLK+/- | t$_{DRTCLK}$ | Differential rise time for clock | 150 | - | 0.3xUI | ps |  |
| DSI-Dn+/- | t$_{DRTDATA}$ | Differential rise time for data | 150 | - | 0.3xUI | ps |  |
| DSI-CLK+/- | t$_{DFTCLK}$ | Differential fall time for clock | 150 | - | 0.3xUI | ps |  |
| DSI-Dn+/- | t$_{DFTDATA}$ | Differential fall time for data | 150 | - | 0.3xUI | ps |  |
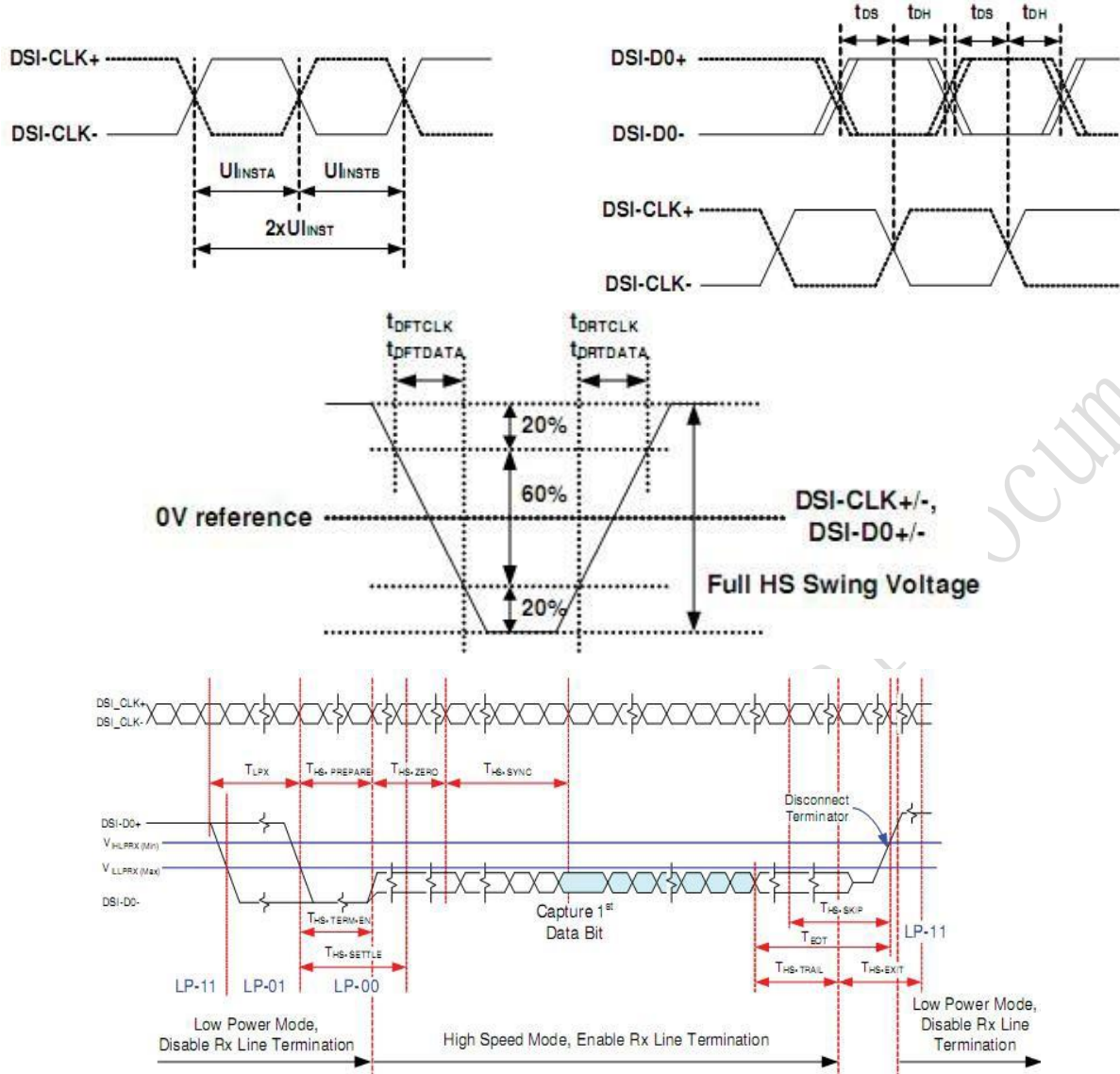
## 5.5 Clock Lanes-high Speed Mode to/from Low Power Mode Timing
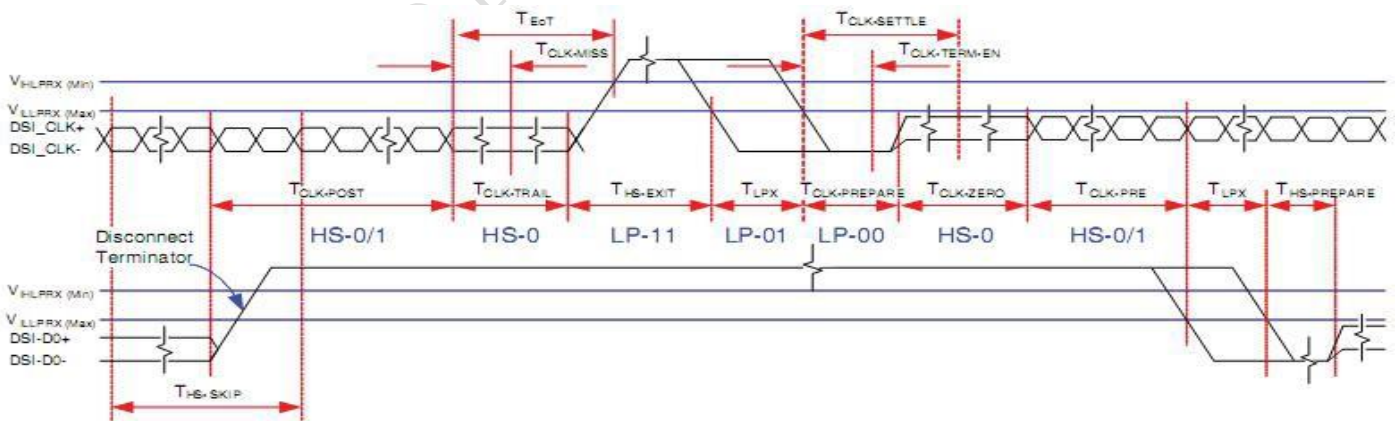
# 6 Optical Characteristics

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Remark |
|---|---|---|---|---|---|---|---|
| Viewing Angle | Top | CR≧10 | - | 50 | - | Deg. | Note 2 |
| | Bottom | | - | 70 | - | | |
| | Left | | - | 70 | - | | |
| | Right | | - | 70 | - | | |
| Contrast Ratio | CR | θ=0° | 400 | 500 | - | | |
| Response Time | $T_r$+$T_f$ | θ=0° | - | 35 | 50 | ms | Note 4 |
| Color Chromaticity (CIE1931) | Wx | θ=0° | 0.260 | 0.290 | 0.320 | | Note 5 |
| | Wy | | 0.290 | 0.320 | 0.350 | | |
| | Rx | | - | - | - | | |
| | Ry | | - | - | - | | |
| | Gx | | - | - | - | | |
| | Gy | | - | - | - | | |
| | Bx | | - | - | - | | |
| | By | | - | - | - | | |
| Color Gamut | NTSC | | - | 55 | - | % | |

Test conditions:

IF= 40 mA, and the ambient temperature is 25℃.

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 LCD.
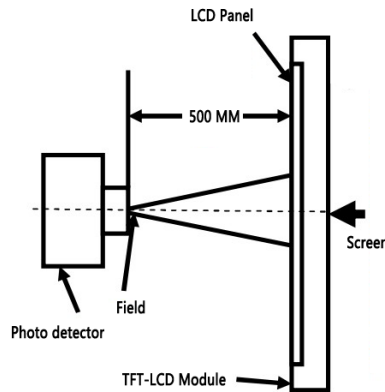


Note 2: Definition of viewing angle range and measurement system.

The viewing angle is measured at the center point of the LCD by BM-7A.
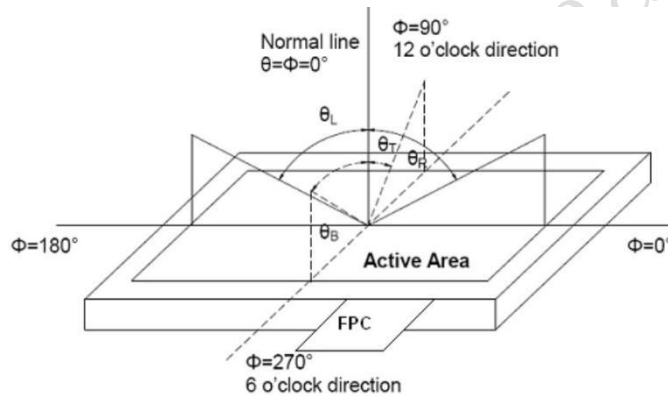


Note 3: Definition of color temperature.

When the radiation of the light source is exactly the same in the visible region and the absolute blackbody, the temperature of the blackbody is called the color temperature of the light source. Color temperature is an index to measure the degree of light source color (cold color, warm color). Warm color < 3300K, intermediate color 3300 ~ 5000K, cold color > 5000K.

Note 4: Definition of response time.

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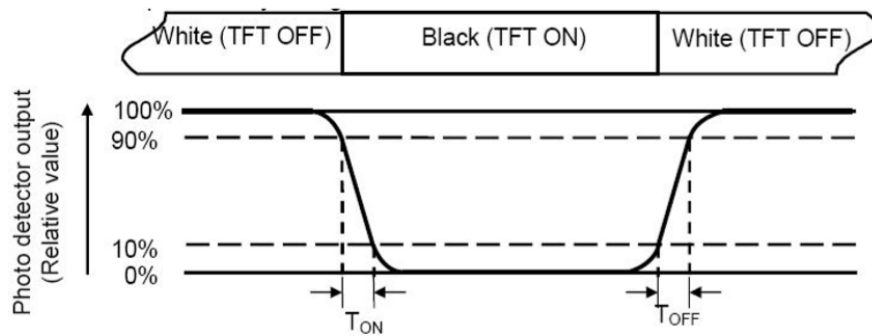


Note 5: Definition of color chromaticity (CIE1931).
Color coordinates measured at center point of LCD.

Note 6: Definition of luminance.
Measure the luminance of white state at center point.

# 7 Environmental Reliability Test

| NO | Test Item | Condition | Remarks |
|----|-----------|-----------|---------|
| 1 | High Temperature Operation | Ta=+70℃，96hours | IEC60068-2-1:2007 GB2423.2-2008 |
| 2 | Low Temperature Operation | Ta=-20℃，96hours | IEC60068-2-1:2007 GB2423.1-2008 |
| 3 | High Temperature Storage | Ta=+80℃，96hours | IEC60068-2-1:2007 GB2423.2-2008 |
| 4 | Low Temperature Storage | Ta=-30℃，96hours | IEC60068-2-1:2007 GB2423.1-2008 |
| 5 | Storage at High Temperature and Humidity | Ta=+60℃，90% RH max，96hours | IEC60068-2-78 :2001 GB/T2423.3-2006 |
| 6 | Thermal Shock (non-operation) | -20℃ 30 min~+60℃ 30 min, after 10cycle, Restore 2H at 25℃ Power off | Start with cold temperature, End with high temperature, IEC60068-2-14:1984, GB 2423.22-2002 |
| 7 | ESD(non-operation) | 150pF,330Ω,Contact:±4KV,Air:±8KV Measure point: LCD glass and metal bezel | IEC61000-4-2:2001 GB/T 17626.2-2006 |
| 8 | Vibration Test | 10Hz~45Hz, 100m/s2, 120min | IEC60068-2-6:1982 GB/T 2423.10-1995 |
| 9 | Mechanical Shock (Non OP) | Half-sinewave,300m/s2,11ms | IEC60068-2-27:1987 GB/T 2423.5-1995 |
| 10 | Package Drop Test | 800mm, concrete floor,1corner, 3edges, 6 sides each time | IEC60068-2-32:1990 GB/T 2423.8-1995 |

# 8 Packing Capacity & Dimension

| Dimension | |
| --- | --- |
| **Dimension(mm)** | 120.7(W)*77.03(H)*5.03(D) |
| **Net Weight** | - |
| **Packing Capacity** | |

| Size | LCD Size and Resolution | Layer | Quantity (Pcs) |
| --- | --- | --- | --- |
| 220mm(L)x160mm(W)x47mm(H) | 5.0 inch 800*480 | 1 | 1 |
| 450mm(L)x350mm(W)x300mm(H) | 5.0 inch 800*480 | 2 | 120 |

Packing instruction：

The LCD+TP is placed in the grid, covered with a PE static bag and compactly assembled, the upper and the lower layers of the grid are protected by buffer spaces.

The LCD covered with a PE static bag and compactly assembled

placed in the grid

The upper and the lower layers of the grid are protected by buffer spaces

Packed

# 9 Appearance Inspection

9.1 General rules for inspection

9.1.1 Anti-static wearables (anti-static wristbands, gloves) must be worn during the inspection.

9.1.2 Do not use bare hands to touch the position of the device, golden fingers, and the surface of the screen to prevent the sweat from human hands from causing oxidation and affecting the appearance.

9.1.3 It is forbidden to stack products out of specification and handle them with care to avoid damage to components.

9.1.4 The repaired products need to be inspected to prevent rosin and tin slag from exceeding the specifications.

9.1.5 When technical documents and process documents have specific requirements for products, the technical documents and process documents shall be the main requirements.

9.2 Inspection conditions

9.2.1 The conditions of display function check

Angle: ±5°;

Inspection method: visual inspection. The inspection object is 30-40cm away from the light source, and the eye is 30-40cm away from the inspection object;
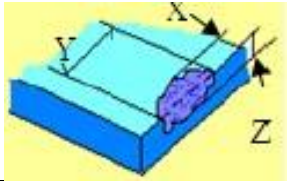
Illumination: 300-500Lux;

Inspection time: 5-10S.

9.2.2 Visual inspection conditions

Angle: ±45°;
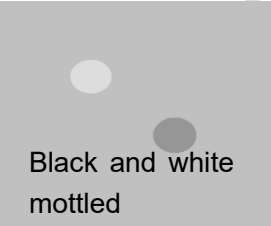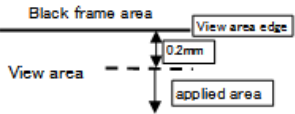
Inspection method: visual inspection. The inspection object is 30-40cm away from the light source, and the eye is 30-40cm away from the inspection object;

Illumination: 800-1500Lux;

Inspection time: 5-10S.
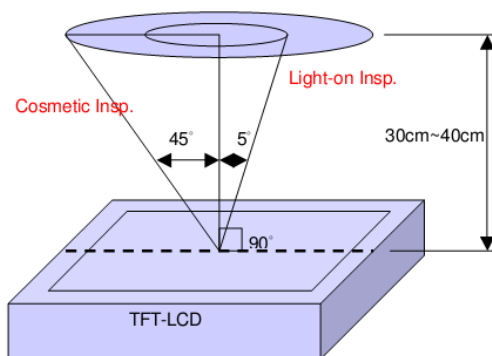
## 9.3 Inspection standard

| Type | Test Items | Judgement Standard | Defect Category |
|---|---|---|---|
| Display state | Dead pixels | No dead pixels | |
| | mura | From different angles, the brightness is required to be uniform. Under the 64-level grayscale or pure black interface, there should be no uneven display brightness within the viewing angle range of 45° through 6% ND FILTER. Y series (TV film) LCD screen does not have specific requirements, and the picture inspection does not affect the display as qualified.<br><br>Uneven brightness    Black and white mottled | Slight defect |
| | Light leakage | Under the 64-level grayscale or pure black interface, there should be no obvious light leakage within the viewing angle range of 45° by visual inspection or through 6% ND FILTER. Y series (TV LCD screen) series can be without obvious visual defects. | Slight defect |
| | Linear foreign bodies | 1. W≤0.05, L≤2mm, negligible;<br>2. 0.05mm＜W≤0.1mm, L≤2mm, N≤3;<br>3. W＞0.1mm, L＞2mm, not allowed. | Slight defect |
| | Bubble in OCA | 1. D＜0.20mm, negligible;<br>2. 0.20mm＜D≤0.30mm，N≤4 and，DS＞10mm;<br>3. 0.30mm＜D≤0.35mm，N≤3 and，DS＞10mm;<br>4. 0.35mm＜D, fault.<br>(Guarantee area: within 0.2mm outside VA)<br><br>Black frame area — View area edge — 0.2mm — View area — applied area | Slight defect |
| Screen surface | Within the effective area | Spotted:<br>1. D≤0.2mm and it is not a piece, it is not counted;<br>2. 0.2mm＜D≤0.5mm, N≤3;<br>3. D>0.5mm, L>0.5mm, W>0.5mm are not allowed;<br>(The spotted foreign objects shall not exceed the point-line gauge D=0.5, and the black dot coverage shall be checked, and the spotted foreign objects shall be judged within the range of D=0.5)<br><br>Linear:<br>1. W≤0.05, L≤2mm, ignored;<br>2. 0.05＜W≤0.1mm, L≤2mm, N≤3;<br>3. W>0.1mm, L>2mm, not allowed. | Slight defect |
| | Outside the effective area Foreign objects Scratches Air bubbles | Foreign objects are not checked, and bubbles are not allowed to D>1mm; Non-inductive scratches of no more than 0.1×8mm are allowed. | Slight defect |

| | | | | |
|---|---|---|---|---|
| | Crack | Not allowed. | | Slight defect |
| | Notch | 1. Does not affect the appearance from the front;<br>2. Does not affect the relevant alignment;<br>3. X≤1mm, Y≤1mm, N≤2. | | Slight defect |
| | Glass side Foreign objects Dirty | 1. The foreign body on the side is not controlled;<br>2. The paint pen marks on the side are not controlled;<br>3. Side oily note printing is not allowed. | | Slight defect |
| FPC | Cracks Goldfinger crease | Not allowed. | | Heavy deficit |
| | Crease | Slight creases are not controlled;<br>The crease is whitish and has lines, which is not allowed. | | Heavy deficit |
| | Top wound, stab wound | No damage to the line, D≤0.2mm;<br>Damage to the line is not allowed. | | Heavy deficit |
| | Scratch | Slight scratches on the surface are not controlled;<br>Damage to the line is not allowed. | | Heavy deficit |
| | Goldfinger scratch | W≤0.05mm, no control;<br>W＞0.05mm, not allowed;<br>Test probe tip marks are not controlled. | | Heavy deficit |
| | Component | Under-soldering, over-soldering and false soldering are not allowed. | | Heavy deficit |

# 10 Precautions for Use of LCD Modules

10.1 Handling Precautions

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

10.1.2 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.

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

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

10.1.5 If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, Can only use LCD dedicated cleaner, the following organic solvent can not be used:

- Isopropyl alcohol
- Ethyl alcohol
- Ketone
- Aromatic solvents

10.1.6 Do not attempt to disassemble the LCD Module.

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

10.1.8 To prevent destruction of the elements by static electricity, be careful to maintain an

10.1.9 optimum work environment.

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

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

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

10.1.9.4 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.

10.2 Storage precautions

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

10.2.2 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%.

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

10.3 Transportation Precautions

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

# 11 Laminated Screen Introduction

11.1 Laminated screen classification

The laminated screen is mainly composed of cover glass, TP and LCD. The lamination methods can be either frame lamination or full lamination. The frame lamination process fixes TP with the four sides of LCD by 3M adhesive, which is one of the most common lamination methods. Full lamination is to seamlessly bond LCD and TP by optical adhesive. Compared to frame lamination, full lamination features by moisture-proof, dust-proof, high stability, high quality display, and can achieve the visible display under strong light.

11.2 ODM service

DWIN technology has built the Huan DWIN Science Park with a construction area of 250000 square meters (In addition, another 148000 square meters are under construction), integrating industrial chain of LCM, SMT, CTP, RTP, mold injection, and Sheet metal punching. DWIN can guarantee the production of LCM, CTP and RTP with first-class technology, highly automated and intelligent manufacturing equipment.

The production capacity of LCM lines is 2.5 million. The LCM lines support the production of LCM with high luminance(1200 nit), wide operating temperature(-40~85℃), anti-electromagnetic interference, sunlight readability and HDMI interface .

The production capacity of RTP lines is 5 hundred thousand. The RTP lines support the production of customized 4-wire RTP and 5-wire RTP, anti-UV material and AG material.

The production capacity of CTP lines is 1 million. The CTP lines support the production of customized CTP, including 1.3~21.5 inches (unconventional size), circular CTP, the shape, color and logo of cover plate, anti-UV, anti- fingerprint and AG material. They can also support the customization of various kinds of technologies, such as OCA lamination, ultrathin GFF, optical bonding, 2.5D and sunlight readability.

SMT lines

CTP lines

LCM lines

RTP lines

IQC lines

Final inspection lines

Laboratories

# Record of Revision

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|-----|------|-------------|--------|
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Thank you all for continuous support of DWIN, and your approval is the driving force of our progress!