


Product Specification

| | |
|-----------------------|---------------------------|
| PRODUCT NUMBER | E-070-1280X0800-L500 |
| DESCRIPTION | 7" 1280x800 SFT TFT, HDMI |

| | |
|--|---|
| <p>Approved: Product Manager</p>  <p>03/25/2019</p> <hr/> <p>Signature Date</p> | <p>Approved: Doc Control</p>  <p>3/25/2019</p> <hr/> <p>Signature Date</p> |
|--|---|

REVISION HISTORY

| Version | Date | Section | Comments |
|----------------|-------------|----------------|---------------------------------------|
| REV 00 | 03/31/2019 | All | Tentative Specification first issued. |
| REV 01 | 04/09/2019 | 6.1 | Correct Power Pinout Description |

TABLE of CONTENTS

| | |
|---|-----------|
| 1. GENERAL DESCRIPTION | 5 |
| 1.1 OVERVIEW | 5 |
| 1.2 FEATURES | 5 |
| 1.3 APPLICATION | 5 |
| 1.4 GENERAL PANELSPECIFICATIONS | 5 |
| 2. MECHANICAL SPECIFICATIONS..... | 5 |
| 3. ABSOLUTE MAXIMUM RATINGS..... | 6 |
| 3.1 ABSOLUTE RATINGS OF ENVIRONMENT | 6 |
| 4. ELECTRICAL CHARCTERSITICS | 6 |
| 5. MECHANICAL CHARACTERISTICS..... | 7 |
| 5.1 SLDPRT Model available upon request. | 7 |
| 5.2 DRAWING | 8 |
| 6. CONNECTORS..... | 9 |
| 6.1 J1 – POWER..... | 9 |
| 6.2 J3 – HDMI A..... | 9 |
| 7. OPTICAL CHARACTERISTICS..... | 10 |
| 7.1 TEST CONDITIONS..... | 10 |
| 8. ENVIRONMENTAL / RELIABILITY TEST CRITERIA | 13 |
| 9. FCC DECLARATION..... | 14 |
| 10. UL MATERIAL DECLARATION..... | 14 |
| 11. PRECAUTIONS..... | 14 |

| | | |
|-------------|---|-----------|
| 11.1 | ASSEMBLY AND HANDLING PRECAUTIONS..... | 14 |
| 11.2 | SAFETY PRECAUTIONS..... | 14 |

1. GENERAL DESCRIPTION

1.1 OVERVIEW

E-070-1280X0800-L500 is a 7.0" SFTTFT module with LED Backlight, HDMI display interface.

This module supports 1280x800 WSVGA mode.

1.2 FEATURES

- WSVGA (1280 x 800 pixels) resolution
- HDMI Display Interface
- Wide operating temperature.
- Single 5 Volt Operation
- Industrial mounting via ABS carrier and 3M VHB gasket.
- "Industrial by Design" Long Product Availability.
- RoHS compliance
- SOLIDWORKS® model available with PixelNext NDA on file.

1.3 APPLICATION

- Medical Displays, Marine, Instrument, Point of Sale, Broadcast, Audio, Factory HMI, etc.

1.4 GENERAL PANEL SPECIFICATIONS

| Item | Specification | Unit | Note |
|--------------------------|--|-------|---------|
| Active Area | 149.76 (H) x 93.60 (V) (7.0" diagonal) | mm | (1) |
| Bezel Opening Area | 150.76 (H) x 94.60 (V) | mm | |
| Technology Type | SFTTFT | - | - |
| Pixel Number | 1280 x 800 | pixel | - |
| Pixel Pitch | 0.117 (H) x 0.117 (V) | mm | - |
| Pixel Arrangement | RGB vertical Stripe | - | - |
| Display Colors | 16,194,277 / 262,144 | color | - |
| Display Mode | Normally Black | - | - |
| Surface Treatment | (7H), Glare | - | - |
| Module Power Consumption | TBD | W | Typical |

2. MECHANICAL SPECIFICATIONS

| Item | Typ. | Unit | Note |
|-------------|---------------|-------|------|
| Module Size | Horizontal(H) | 170.1 | (1) |
| | Vertical(V) | 113.7 | |
| | Depth(D) | 16.0 | |
| Weight | TBD | g | |

Note (1) Please refer to the attached drawings for more information of front and back

outline dimensions.

3. ABSOLUTE MAXIMUM RATINGS

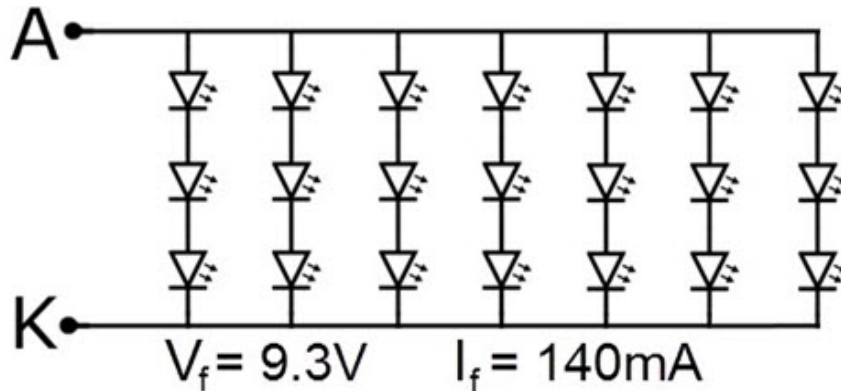
3.1 ABSOLUTE RATINGS OF ENVIRONMENT

| Item | Symbol | Value | | Unit | Note |
|-------------------------------|----------|-------|------|-------------|------------------------|
| | | Min. | Max. | | |
| Power Input Voltage | V_{CC} | 4.85 | 5.15 | V_{DC} | at $25 \pm 5^{\circ}C$ |
| Operating Ambient Temperature | T_{OP} | -20 | +70 | $^{\circ}C$ | |
| Storage Temperature | T_{ST} | -30 | +80 | $^{\circ}C$ | |

Notes:

1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature. The phenomenon is reversible.
3. $T_a \leq 40^{\circ}C$: 85% RH MAX $T_a \geq 40^{\circ}C$:
4. Absolute humidity must be lower than the humidity of 85% at $40^{\circ}C$.
5. Maximum wet-bulb temperature is $46^{\circ}C$.
6. Condensation of dew must be avoided as electrical current leaks will occur, causing degradation of performance specifications

4. ELECTRICAL CHARCTERSITICS

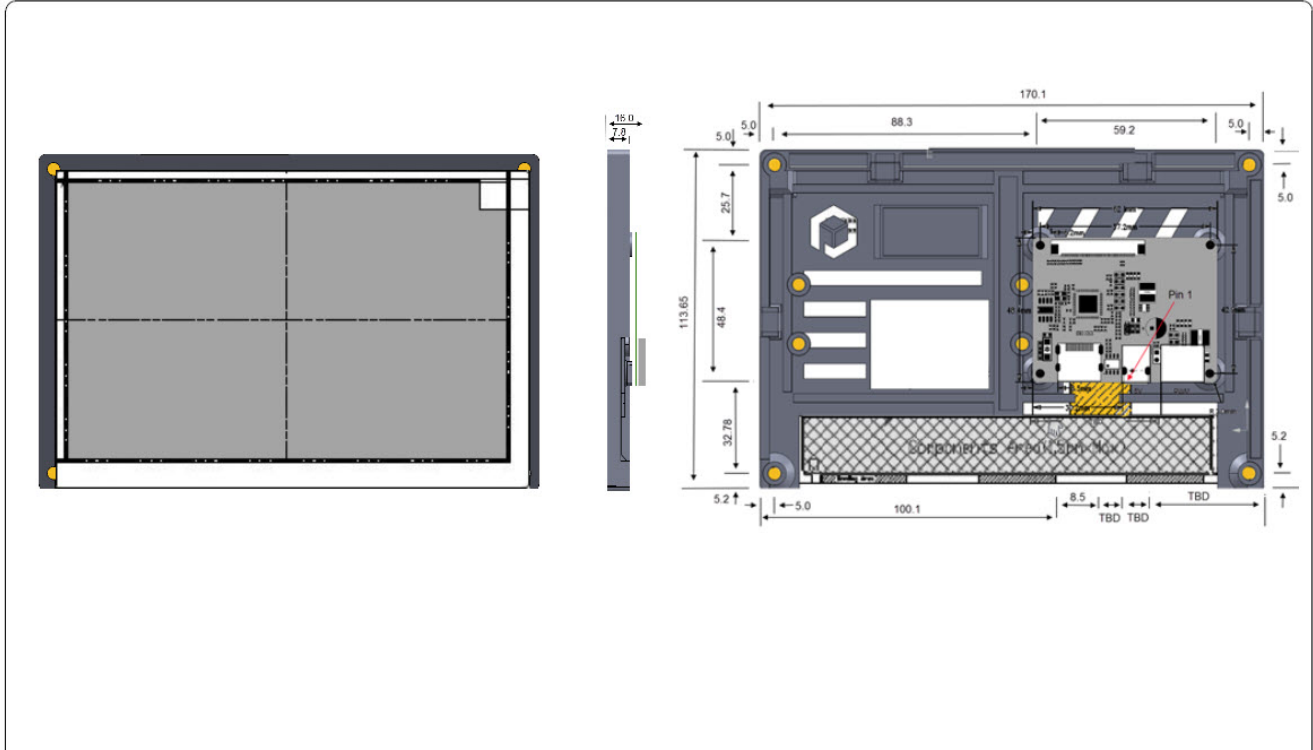


5. MECHANICAL CHARACTERISTICS

5.1 SLDPRT Model available upon request.



5.2 DRAWING



| | | | | | | | |
|--|---------------------------|---------------------------------|-------------|---------------|------------------------|---|------------|
| PROPRIETARY AND CONFIDENTIAL | | UNLESS OTHERWISE SPECIFIED | | | | | |
| This document is proprietary and confidential. No part of this document may be reproduced as a whole or in part or disclosed in any manner to a third party without the prior written consent of PixelNext, Inc. | | Integers/Fractions +1.5mm | | 01 | Power Connector Update | GH | 04-09-2019 |
| | | .X +/- 0.75 | | | | | |
| | | UNITS: MM | | REVISIONS | | | |
| TITLE | 82-061-00 7 inch 1280x800 | DRAWING NO. 82-061-00 2D | | PROJECT NO. | 04-09-19 | PixelNext Inc | |
| DESCRIPTION | 7" HDMI no PCT 1280x800 | Not to Scale SCALE AT SIZE A | GH DRAWN | SH CHECKED | 01 REVISION | 9111 Cross Park Dr D200 Knoxville, TN 37923 www.embeddedhmi.com | |

6. CONNECTORS

6.1 J1 – POWER

| Pin | Name | Description |
|-----|------------|-----------------------------|
| 1 | GND | Ground |
| 2 | 5V | Power – (Rated at 5V DC 2A) |

TE Connectivity 5V Connector - 2-1445098-2

6.2 J3 – HDMI A

| Pin | Name | Description |
|-----|---------------------------|------------------------------------|
| 1 | TMDS Data2+ | Digital Input Channel 2 True |
| 2 | TMDS Data2 Shield | Ground |
| 3 | TMDS Data2- | Digital Input Channel 2 Complement |
| 4 | TMDS Data1+ | Digital Input Channel 1 True |
| 5 | TMDS Data1 Shield | Ground |
| 6 | TMDS Data1- | Digital Input Channel 1 Complement |
| 7 | TMDS Data0+ | Digital Input Channel 0 True |
| 8 | TMDS Data0 Shield | Ground |
| 9 | TMDS Data0- | Digital Input Channel 0 Complement |
| 10 | TMDS Clock+ | |
| 11 | TMDS Clock Shield | Ground |
| 12 | TMDS Clock- | |
| 13 | CEC | Control |
| 14 | Reserved/HEC Data- | No Connection |
| 15 | SCL | DDC clock |
| 16 | SDA | DDC data |
| 17 | DDC/HEC/CEC Ground | Ground |
| 18 | +5 V Power | power EDID/DDC |
| 19 | Hot Plug Detect/HEC Data+ | |

7. OPTICAL CHARACTERISTICS

7.1 TEST CONDITIONS

| Item | Symbol | Value | Un |
|---------------------|----------------|-------|----|
| Ambient Temperature | Ta | 25±2 | °C |
| Ambient Humidity | Ha | 50±10 | % |
| Converter Voltage | V _i | 12 | V |
| Converter Duty | | 100% | |

7.2 OPTICAL SPECIFICATIONS

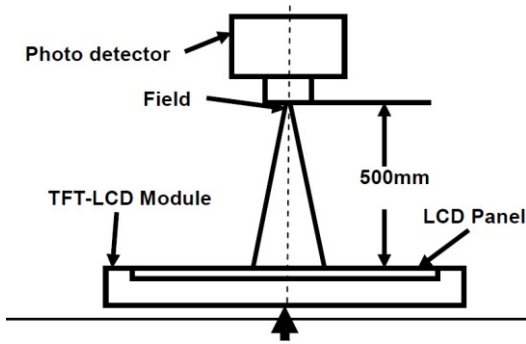
| Item | Symbol | Condition | Min | Typ | Max | Unit | Remark | |
|----------------|----------------|------------------|--------|-------|-----|-------------------|----------|-------|
| Contrast Ratio | CR | θ=0° | 600 | 800 | – | | Note 8 | |
| Response Time | Tr(on)+Tf(off) | 25°C | – | 35 | 40 | ms | Note1,5 | |
| Viewing Angles | θT | CR≥10 | 70 | 80 | – | Degree | Note 2 | |
| | θB | | 70 | 80 | – | | | |
| | θL | | 70 | 80 | – | | | |
| | θR | | 70 | 80 | – | | | |
| Chromaticity | White | Brightness is on | Typ | 0.306 | Typ | | Note 1,5 | |
| | | | | Y | | | | 0.329 |
| | Red | | | X | | | | 0.57 |
| | | | | Y | | | | 0.33 |
| | Green | | | X | | | | 0.35 |
| | | | | Y | | | | 0.592 |
| Blue | X | 0.155 | | | | | | |
| | Y | 0.101 | | | | | | |
| Luminance | L | | – | 400 | – | cd/m ² | Note 1,6 | |
| Uniformity | U | | 75 | 75 | – | % | Note 1,7 | |
| Lifetime | | | 10,000 | – | – | Hours | Note 9 | |

Test Conditions:

1. IF= 20mA (one channel), the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.

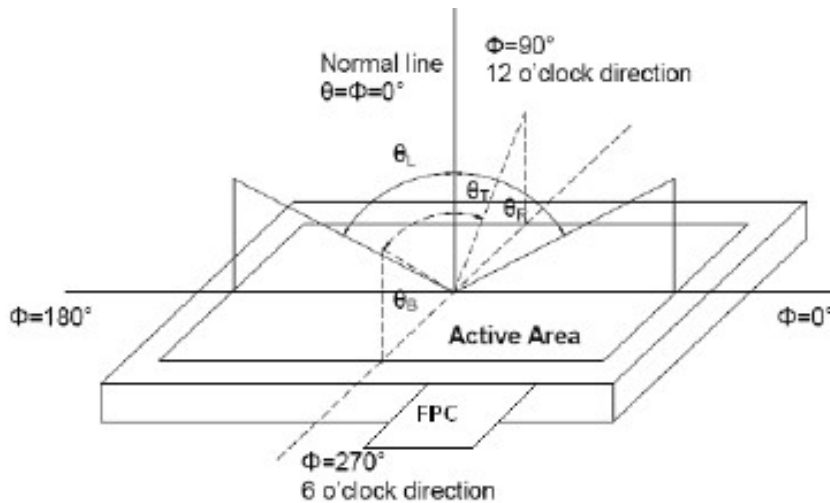
The optical characteristics should be measured in dark room. After 10 Minutes operation, the optical properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



| Item | Photo Detector | Field |
|----------------|----------------|-------|
| Contrast Ratio | SR-3A | 1° |
| Contrast Ratio | | |
| Contrast Ratio | | |
| Contrast Ratio | | |
| Contrast Ratio | BM-7A | 2° |

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

viewing angle is measured at the center point of the LCD by CONOSCOPE(ergo-80)

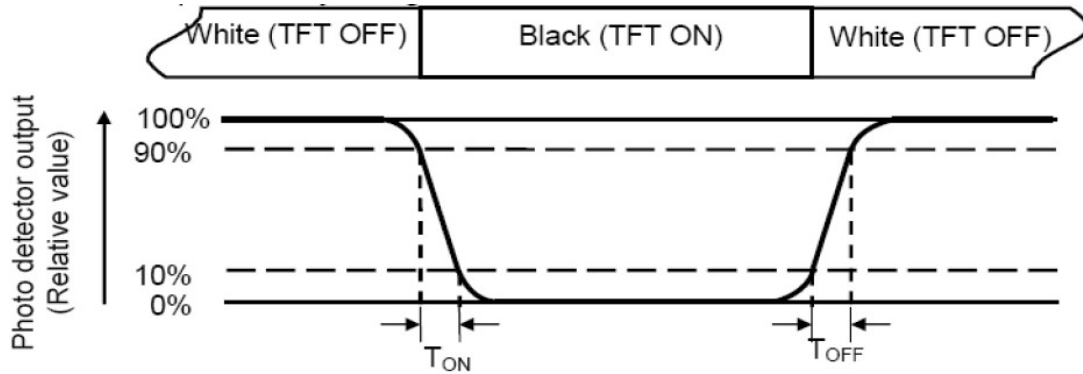


Note 3: Definition of contrast ratio

Contrast Ratio (CR)= Luminance measured when LCD is on “White” state/Luminance measured when LCD is on “Black” state

“White state “: The state is that the LCD should be driven by V_{white} (V_{white} : To be determined). “Black state: The state is that the LCD should be driven by V_{black} (V_{black} : To be determined).

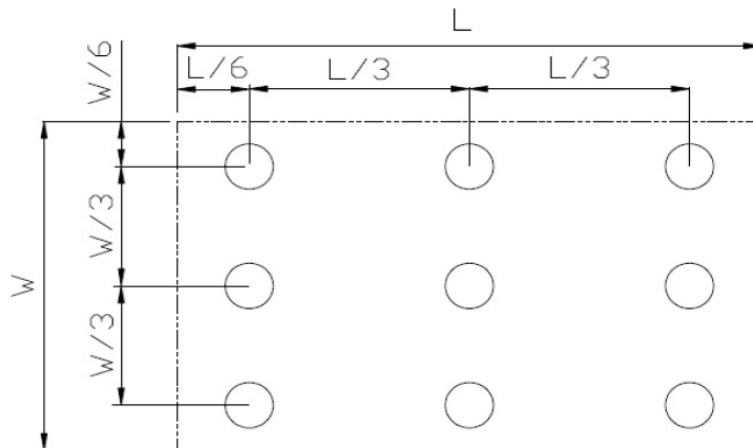
The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



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

Note 6: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas. Every measuring point is placed at the center of each measuring area. L_{max} : The measured Maximum luminance of all measurement position. L_{min} : The measured Minimum luminance of all.



Note 7: Definition of Response time

Note 8: Definition of Luminance: Measure the luminance of white state at center point. Left/right 0° Top/bottom 5°

Note 9: If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data.

8. Environmental / RELIABILITY TEST CRITERIA

| No | Test Item | Condition | Judgment criteria |
|----|-----------------------------------|---|---|
| 1 | High Temp Operation | Ts=+70°C, 96hrs | Per table in below |
| 2 | Low Temp Operation | Ta=-20°C, 96hrs | Per table in below |
| 3 | High Temp Storage | Ta=+80°C, 96hrs | Per table in below |
| 4 | Low Temp Storage | Ta=-30°C, 96hrs | Per table in below |
| 5 | High Temp & High Humidity Storage | Ta=+60°C, 90% RH 96 hours | Per table in below (polarizer discoloration is excluded) |
| 6 | Thermal Shock (Non-operation) | -30°C 30 min~+80°C 30 min, Change time:5min, 5Cycles | Per table in below |
| 7 | ESD (Operation) | Air discharge:+/-8KV, Contact discharge:4KV | Per table in below |
| 8 | Vibration (Non-operation) | 10Hz~150Hz, 100m/s ² , 120min | Per table in below |
| 9 | Shock (Non-operation) | Half- sine wave,300m/s ² ,11ms | Per table in below |
| 10 | Package Drop Test | Height:80 cm, 1 corner, 3 edges, 6 surfaces | Per table in below |

| INSPECTION | CRITERION(after test) |
|------------------------|---|
| Appearance | No Crack on the FPC, on the LCD Panel |
| Alignment of LCD Panel | No Bubbles in the LCD Panel No other Defects of Alignment in Active area |
| Electrical current | Within device specifications |
| Function / Display | No Broken Circuit, No Short Circuit or No Black line No Other Defects of Display |

9. FCC Declaration

In Compliance: EMC Certificate of Test F2LQ10670C-01E.
FCC CFR 47, Part 15, subpart B:2017, Class A.
Complete test report available under NDA.

10. UL Material Declaration

- (1) 80-025-00 LVDS Display Manufacturer, Tianma (UL-NWGQ2.E333987) TM070JDHG30-00
- (2) 70-010-00 PCT Touch Screen – Inert Borosilicate Glass – Manufacturer Beijing Jinke Xingtai Co. Ltd
- (3) 90-029-00 Module Carrier – Firewire® FR-ABS is made using a premium UL94 V-0 rated ABS.
- (4) 61-017-00 HDMI to LVDS Controller PCBA – Manufacturer Shenzhen Jinjiaxing Electronic CO LTD. UL Certificate E353925
- (5) 61-016-00 DSI to LVDS Transition PCBA – Manufacturer Shenzhen Jinjiaxing Electronic CO LTD. UL Certificate E353925
- (6) 20-001-01, 20-002-01 Gaskets – 3M VHB RP25 - UL746C

11. PRECAUTIONS

11.1 ASSEMBLY AND HANDLING PRECAUTIONS

- (1) Do not apply rough force such as bending or twisting to the module during assembly.
- (2) To assemble or install module into user's system can be only in clean working areas.
The dust and oil may cause electrical short or worsen the polarizer.
- (3) It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.
- (4) Always follow the correct power sequence when LCD module is connecting and operating. This can prevent damage to the CMOS LSI chSFTduringlatch-up.
- (5) Do not pull the I/F connector in or out while the module is operating.
- (6) Do not disassemble the module.
- (7) Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
- (8) It is dangerous that moisture come into or contacted the LCD module, because moisture may damage LCD module when it is operating.
- (9) High temperature or humidity may reduce the performance of module. Please store LCD module within the specified storage conditions.
- (10) When ambient temperature is lower than 10°C may reduce the display quality. For example, the response time will become slow.
- (11) Do not keep same pattern in a long period of time. It may cause image sticking on LCD.

11.2 SAFETY PRECAUTIONS

- (1) Do not disassemble the module or touch the backlight array.

- (2) If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.
- (3) After the module's end of life, it is not harmful in case of normal operation and storage.