

# NHD-5.7-640480WF-CTXL#

## TFT (Thin-Film-Transistor) Color Liquid Crystal Display Module

|         |                              |
|---------|------------------------------|
| NHD-    | Newhaven Display             |
| 5.7-    | 5.7" Diagonal                |
| 640480- | 640xRGBx480 Pixels           |
| WF-     | Model                        |
| C-      | Built-in driver + Controller |
| T-      | White LED Backlight          |
| X-      | TFT                          |
| L-      | 6:00 Optimal View, Wide Temp |
| #       | <b>RoHS Compliant</b>        |

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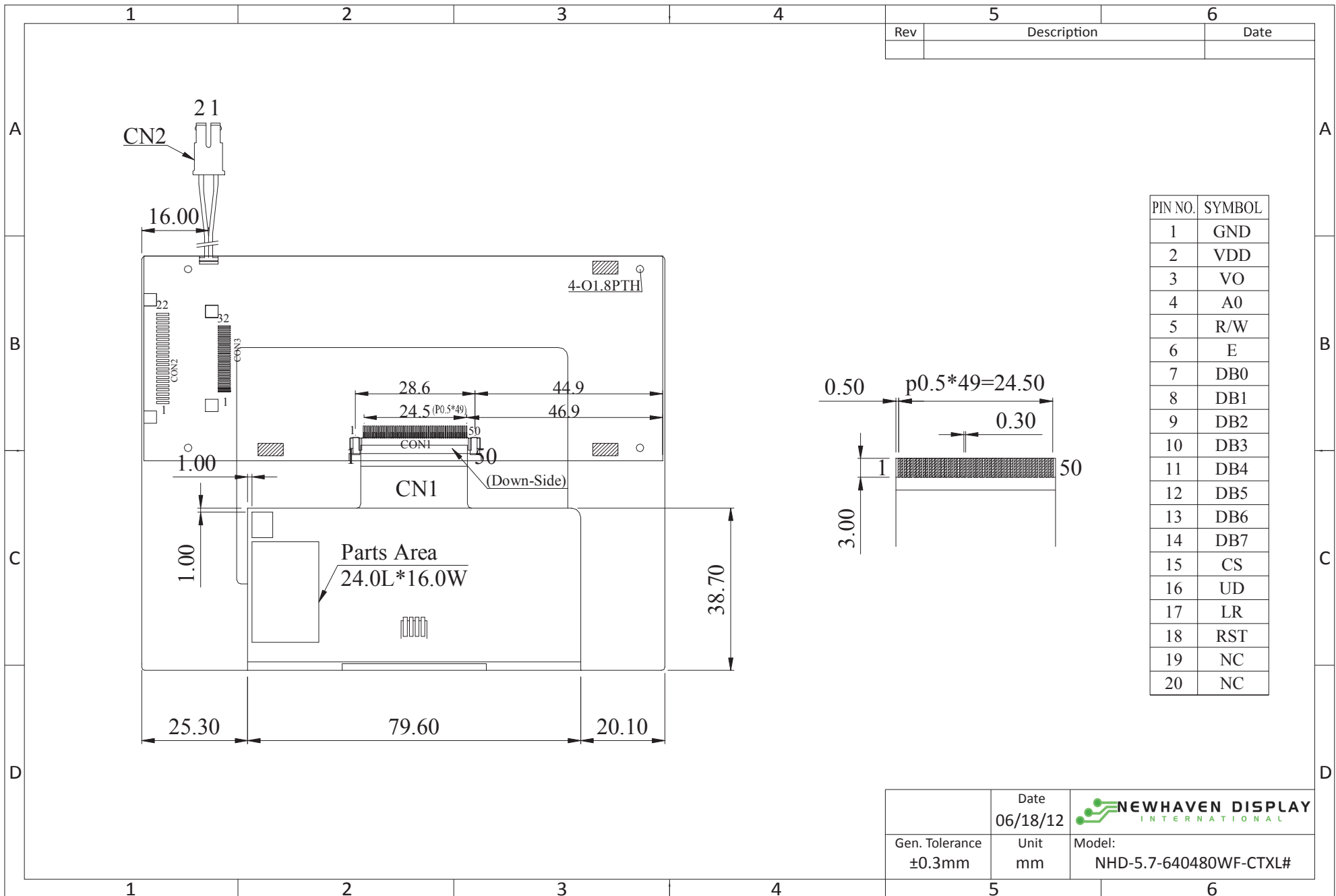
## Document Revision History

| Revision | Date      | Description                     | Changed by |
|----------|-----------|---------------------------------|------------|
| 0        | 3/9/2009  | Initial Release                 | CL         |
| 1        | 6/18/2012 | Pin description updated         | AK         |
| 2        | 4/25/17   | Optical Characteristics Updated | TM         |

## Functions and Features

- 640xRGBx480 resolution
- LED backlight
- 8-bit parallel interface
- SSD1963 Controller





## Pin Description

Note: CON2 has a 20-pin, 1.0mm pitch, Top-Contact FFC Connector. Pins 21 and 22 are not connected.

### CON2:

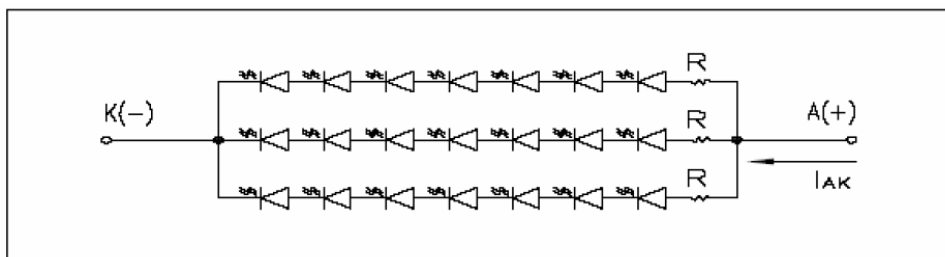
| Pin No. | Symbol    | External Connection | Function Description                         |
|---------|-----------|---------------------|--|
| 1       | GND       | Power Supply        | Ground                                       |
| 2       | VCC       | Power Supply        | Power supply for LCD and logic (3.3V)        |
| 3       | NC        | -                   | No Connect                                   |
| 4       | D/C#      | MPU                 | Register Select signal – 0: Command, 1: Data |
| 5       | WR#       | MPU                 | Active LOW Write signal, 8080 MPU interface  |
| 6       | RD#       | MPU                 | Active LOW Read signal, 8080 MPU interface   |
| 7-14    | [DB0-DB7] | MPU                 | Bi-directional data bus lines                |
| 15      | CS#       | MPU                 | Active LOW Chip Select signal                |
| 16      | U/D       | MPU                 | Scan direction 1: Up, 0: Down                |
| 17      | R/L       | MPU                 | Scan direction 1: Right, 0: Left             |
| 18      | RES#      | MPU                 | Active LOW Reset signal                      |
| 19      | NC        | -                   | No Connect                                   |
| 20      | NC        | -                   | No Connect                                   |

**Recommended LCD connector:** 1.0mm pitch 20-Conductor FFC. Molex p/n 52746-2070

### Backlight:

| Pin No. | Symbol | External Connection | Function Description     |
|---------|--------|---------------------|--------------------------|
| 1       | VCC    | Power Supply        | LED Anode (60mA @ 23.1V) |
| 2       | VCC    | Power Supply        | LED Cathode              |

**Backlight connector:** JST p/n: BHSR-02VS-1 **Mates with:** JST p/n: SM 02B-BHSS-1



## Controller Information

Built-in SSD1963 controller.

Please download specification at [http://www.newhavendisplay.com/app\\_notes/SSD1963.pdf](http://www.newhavendisplay.com/app_notes/SSD1963.pdf)

## 8080 Mode Interface:

The 8080 mode MPU interface consists of CS#, D/C, RD#, WR#, and DB[7:0]. This interface uses WR# to define a write cycle and RD# to define a 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#. See the SSD1963 datasheet for detailed timing diagrams.

## Command Instructions:

See the SSD1963 datasheet for the Instruction Table and Command Descriptions.

## Pixel Data Format:

| Interface | Cycle           | D[7] | D[6] | D[5] | D[4] | D[3] | D[2] | D[1] | D[0] |
|-----------|-----------------|------|------|------|------|------|------|------|------|
| 8 bits    | 1 <sup>st</sup> | R7   | R6   | R5   | R4   | R3   | R2   | R1   | R0   |
|           | 2 <sup>nd</sup> | G7   | G6   | G5   | G4   | G3   | G2   | G1   | G0   |
|           | 3 <sup>rd</sup> | B7   | B6   | B5   | B4   | B3   | B2   | B1   | B0   |

## Electrical Characteristics

| Item                        | Symbol | Condition    | Min.   | Typ.   | Max. | Unit |
|-----------------------------|--------|--------------|--------|--------|------|------|
| Operating Temperature Range | Top    | Absolute Max | -20    | -      | +70  | °C   |
| Storage Temperature Range   | Tst    | Absolute Max | -30    | -      | +80  | °C   |
| Supply Voltage              | VCC    | -            | 3.0    | 3.3    | 3.6  | V    |
| Supply Current              | ICC    | VCC=3.3      | -      | 190    | 250  | mA   |
|                             |        |              |        |        |      |      |
| Backlight Supply Current    | IB     | -            | -      | 60     | -    | mA   |
| Backlight Supply Voltage    | VBL    | -            | -      | 23.1   | 24.5 | V    |
| Backlight Lifetime          |        | -            | 10,000 | 25,000 | -    | Hr   |

## Optical Characteristics

| Item                   | Symbol | Condition | Min. | Typ. | Max. | Unit              |
|------------------------|--------|-----------|------|------|------|-------------------|
| Viewing Angle – Top    |        | Cr ≥ 10   | -    | 40   | -    | °                 |
| Viewing Angle – Bottom |        | Cr ≥ 10   | -    | 60   | -    | °                 |
| Viewing Angle – Left   |        | Cr ≥ 10   | -    | 60   | -    | °                 |
| Viewing Angle – Right  |        | Cr ≥ 10   | -    | 60   | -    | °                 |
| Contrast Ratio         | Cr     | -         | 150  | 250  | -    |                   |
| Luminance              | YL     | -         | 250  | 300  | -    | cd/m <sup>2</sup> |
| Response Time (rise)   | Tr     | -         | -    | 25   | 40   | ms                |
| Response Time (fall)   | Tr     | -         | -    | 25   | 40   | ms                |

## Quality Information

| Test Item                             | Content of Test   | Test Condition  | Note |
|---------------------------------------|---|---|------|
| High Temperature storage              | Endurance test applying the high storage temperature for a long time.   | +80°C , 200hrs  | 2    |
| Low Temperature storage               | Endurance test applying the low storage temperature for a long time.  | -30°C , 200hrs  | 1,2  |
| High Temperature Operation            | Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.                    | +70°C 200hrs  | 2    |
| Low Temperature Operation             | Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.                     | -20°C , 200hrs  | 1,2  |
| High Temperature / Humidity Operation | Endurance test applying the electric stress (voltage & current) and the high thermal with high humidity stress for a long time. | +60°C , 90% RH , 96hrs  | 1,2  |
| Thermal Shock resistance              | Endurance test applying the electric stress (voltage & current) during a cycle of low and high thermal stress.                  | -20°C,30min -> 25°C,5min -> 70°C,30min = 1 cycle<br>10 cycles                       |      |
| Vibration test                        | Endurance test applying vibration to simulate transportation and use.   | 10-55Hz , 15mm amplitude.<br>60 sec in each of 3 directions X,Y,Z<br>For 15 minutes | 3    |
| Static electricity test               | Endurance test applying electric static discharge.  | VS=800V, RS=1.5kΩ, CS=100pF<br>One time   |      |

**Note 1:** No condensation to be observed.

**Note 2:** Conducted after 4 hours of storage at 25°C, 0%RH.

**Note 3:** Test performed on product itself, not inside a container.

## Precautions for using LCDs/LCMs

See Precautions at [www.newhavendisplay.com/specs/precautions.pdf](http://www.newhavendisplay.com/specs/precautions.pdf)

## Warranty Information and Terms & Conditions

[http://www.newhavendisplay.com/index.php?main\\_page=terms](http://www.newhavendisplay.com/index.php?main_page=terms)