User Guide

NEWHAVEN DISPLAY INTERNATIONAL

5.0” HDMI TFT Modules

SYSTEM CERTIFICATION ISO 9001 SGS

Pa

RoHS COMPLIANT

Newhaven Display International

2661 Galvin Court • Elgin IL • 60124
Phone: 847.844.8795
Fax: 847.844.8796
www.newhavendisplay.com

Sales:
nhsales@newhavendisplay.com

Technical Support:
nhtech@newhavendisplay.com

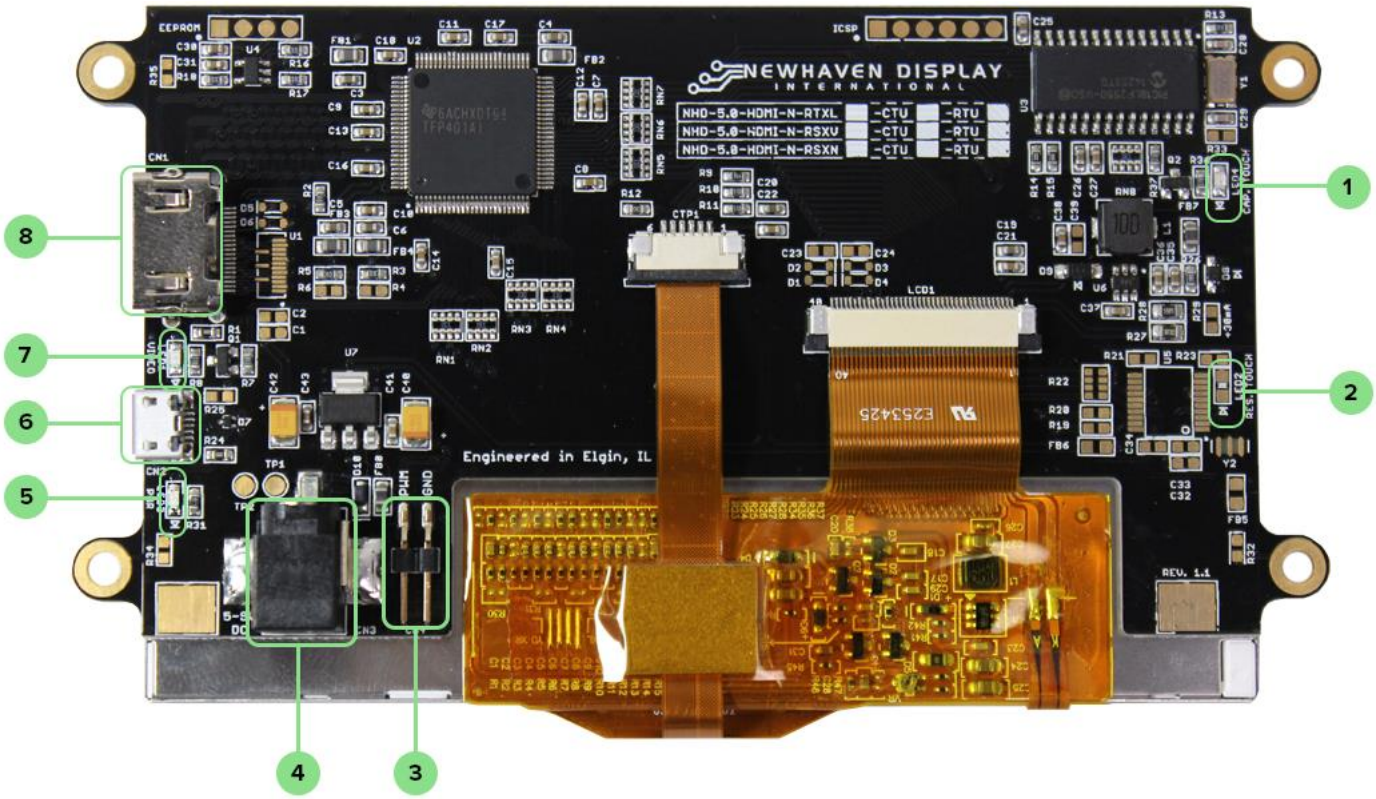
Table of Contents

Overview

The HDMI interface has become the most popular video interface standard to date, and HDMI video sources are easier to come by now than ever before. Whether you need an HDMI TFT display for your Raspberry Pi/BeagleBone Black application, a Windows/Windows Embedded PC monitor, or a touch screen HMI for your Linux or other embedded system, the Newhaven Display HDMI TFT product line offers a solution.

Our HDMI TFT Modules unite our existing high-quality TFT display panels with a custom PCB engineered in the USA by Newhaven Display. Assembled to the display, our PCB provides the user an all-in-one, plug-and-play HDMI + USB Touch solution for virtually any application.

Interface Description

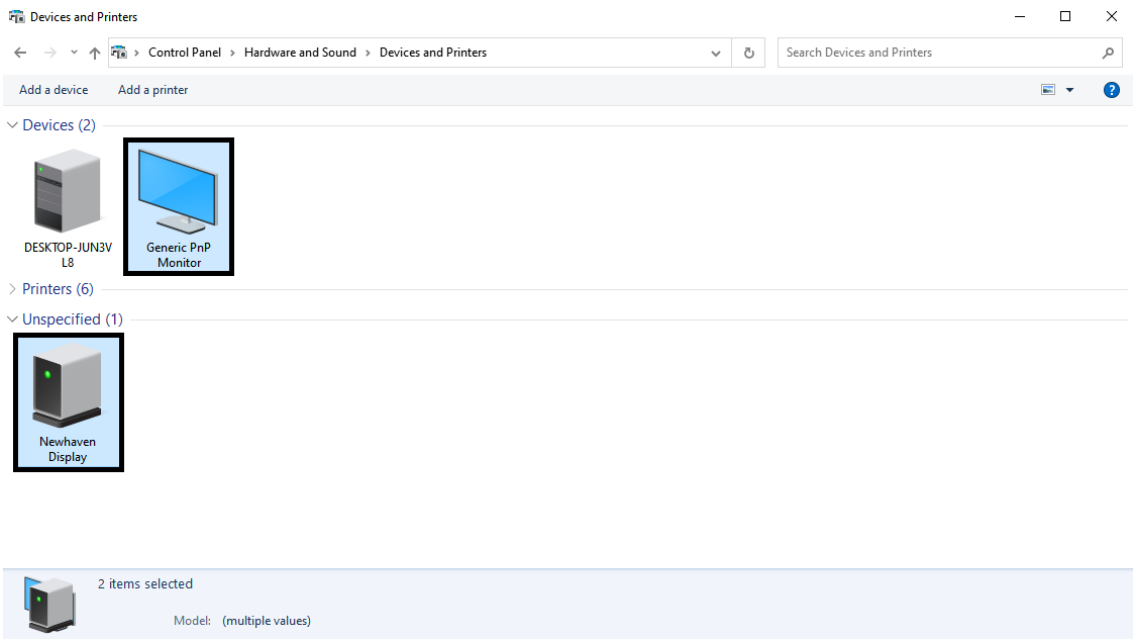


(Capacitive Touch model shown above as reference)

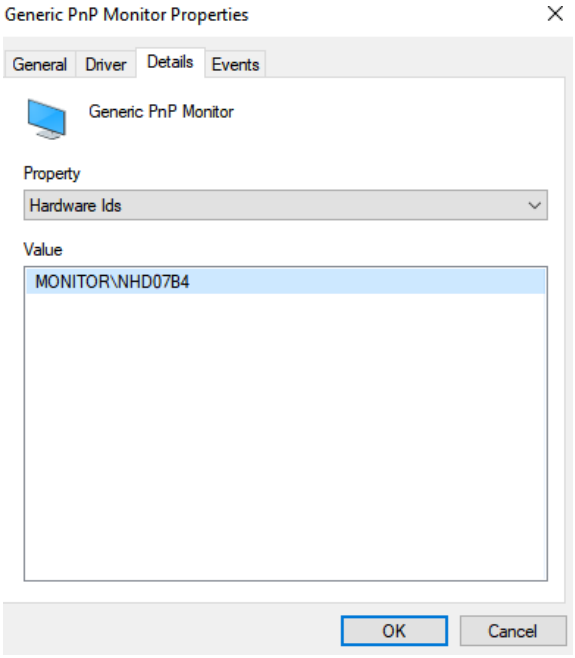
Num.	Description
1)	(LED4) LED Indicator for Touch – *Capacitive Touch models only* This is a Red LED that will illuminate when there is a touch sensed on the CTP.
2)	(LED2) LED Indicator for Touch – *Resistive Touch models only* This is a Red LED that will blink slowly (once per second) if the RTP controller is powered ON, awake, and no touch is detected. This LED will blink rapidly (5 times per second) if the RTP controller detects a touch.
3)	(CN4) Surface Mount Pin Header, 2.54mm pitch, for Backlight PWM The pin labelled 'PWM' is connected directly to the LED driver's CTRL pin (T.I. TPS61165). This is a multifunctional pin which can be used for enable control, PWM, and digital dimming. A PWM frequency in the range of 5kHz – 100kHz must be used.
4)	(CN3) DC Jack (Center-Positive), 2.1mm ID, 5.5mm OD This is used to supply power to the display module. A DC power supply in the range of 5V – 7.5V must be used. (Example Power Supply: L6R12-070, 7.0V/1.3A)
5)	(LED3) LED Indicator for Power This is a Green LED that will illuminate when DC power is supplied to the module.
6)	(CN2) Micro-USB (Type-B) Connector for Touch – *Touch Panel models only* This is to connect the Touch Panel of this module to a USB input to act as a USB-HID device.
7)	(LED1) LED Indicator for Video This is a Blue LED that will illuminate when there is an active video signal detected.
8)	(CN1) HDMI (Type-A) Connector This is a full-size HDMI connector meant to connect the HDMI source signal (Video only) to this module. The on-board T.I. TFP401A HDMI/DVI Receiver does not scale video resolutions. Therefore, the output resolution of the source must be 800x480 (WVGA). In most applications, this is automatically detected by the HDMI source.

Connecting with Windows 10

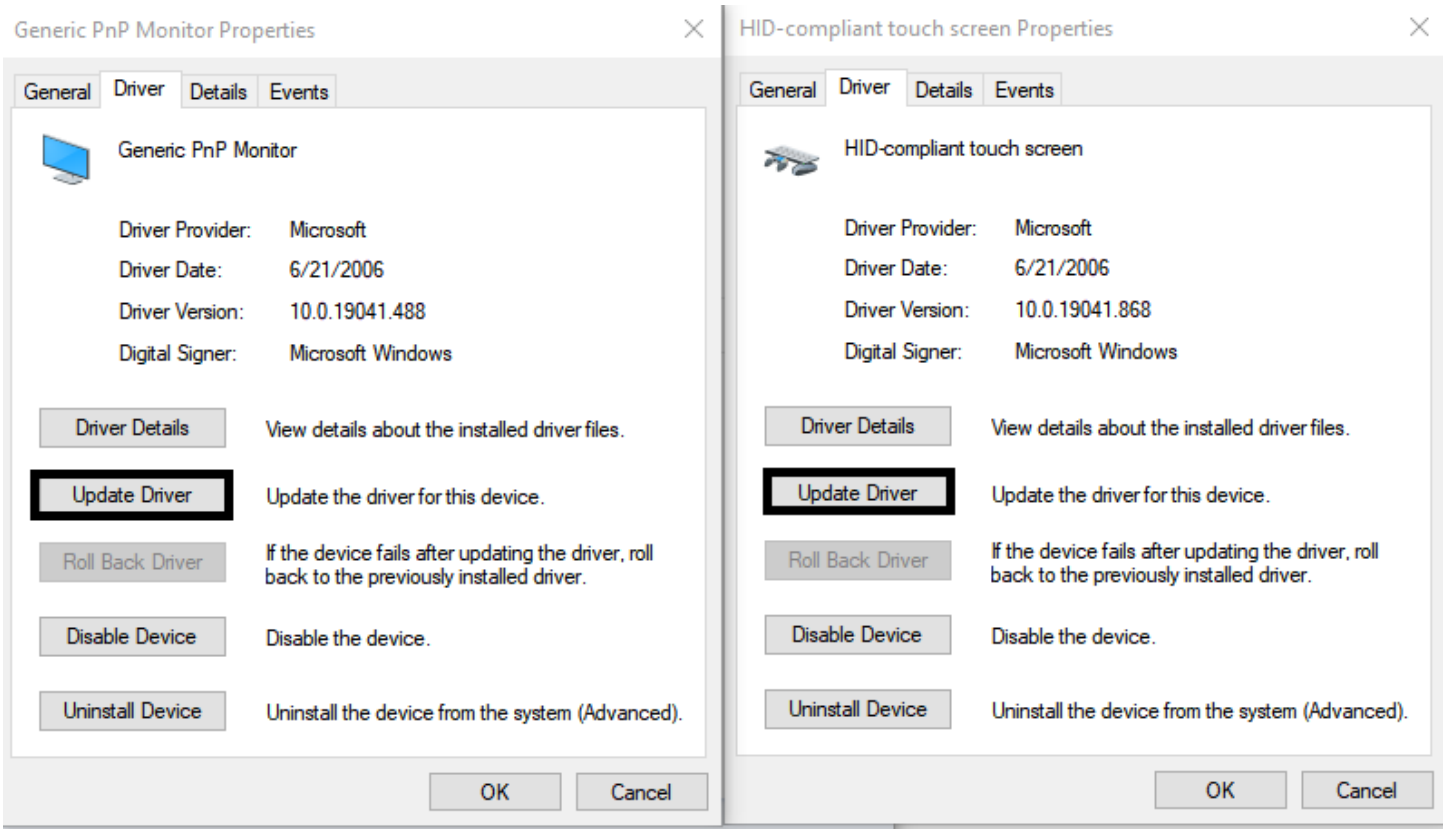
Connecting our HDMI TFT Modules to a Windows system is fully plug-and-play. Start by plugging in a DC power supply in the range of 5 - 7.5V, with at least 1A of output current. The green LED (PWR) will illuminate when the board has power supplied to it. Next, connect the display to your system via HDMI cable. Due to the on-board EDID, the display will be detected automatically, and the system's output resolution will set itself. For Touch Panel models, once the display is connected to the system via USB, Windows will automatically detect and install the necessary drivers.



Properly connected devices will appear in "Devices and Printers" within the Control Panel.



If multiple monitors are connected our display can be verified by looking at the hardware ID.



Verify Drivers for both touch and display are the most recent.

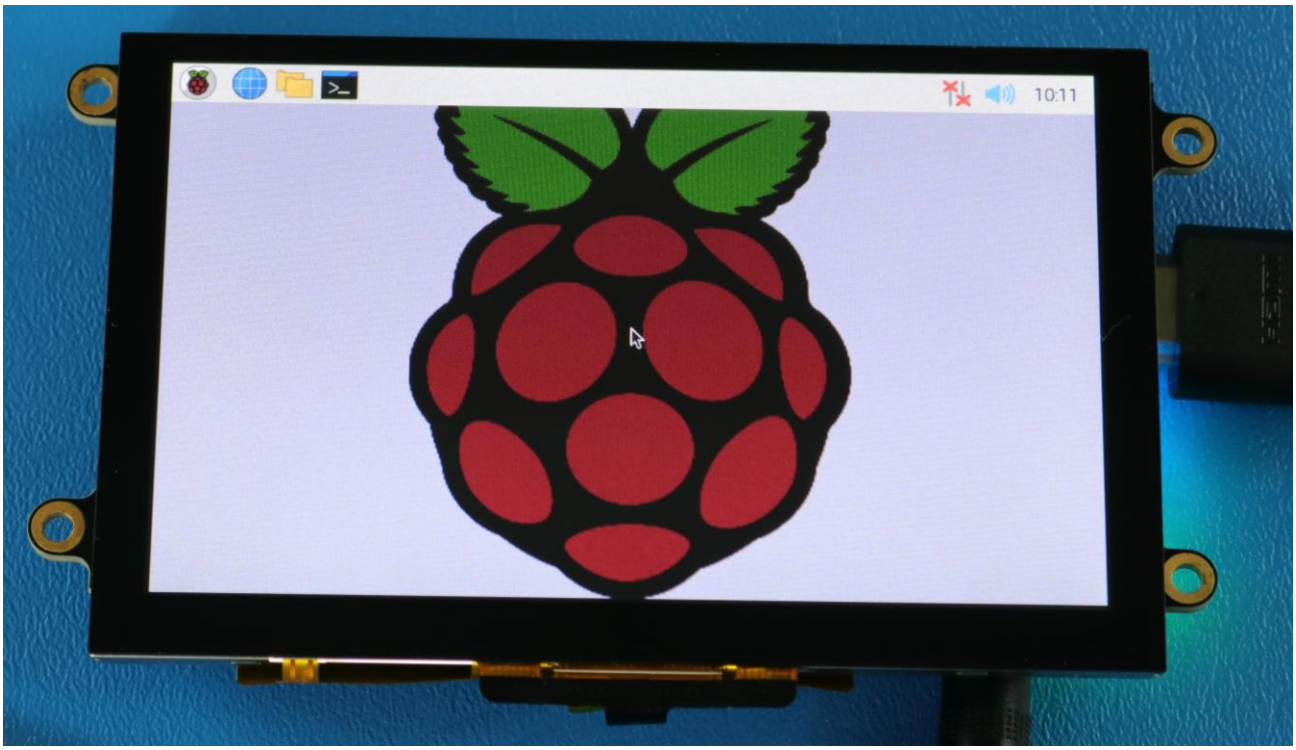
Windows Home Screen.

Connecting with Linux

Most Linux applications with an HDMI source will also be fully plug-and-play, however when using our HDMI TFT Modules with the Raspberry Pi, the config.txt file on the Pi's microSD card will need to be slightly modified by the user.

The following highlighted lines need to be added in config.txt for proper display output:

```
# For more options and information see
# http://rpf.io/configtxt
# Some settings may impact device functionality. See link above for details

# uncomment if you get no picture on HDMI for a default "safe" mode
#hdmi_safe=1

# uncomment this if your display has a black border of unused pixels visible
# and your display can output without overscan
#disable_overscan=1

# uncomment the following to adjust overscan. Use positive numbers if console
# goes off screen, and negative if there is too much border
#overscan_left=16
#overscan_right=16
#overscan_top=16
#overscan_bottom=16

# uncomment to force a console size. By default it will be display's size minus
# overscan.
#framebuffer_width=1280
#framebuffer_height=720

# uncomment if hdmi display is not detected and composite is being output
#hdmi_force_hotplug=1

# uncomment to force a specific HDMI mode (this will force VGA)
#hdmi_group=1
#hdmi_mode=1

hdmi_group=2
hdmi_mode=87

hdmi_cvt=800 480 60 6 0 0 0 #(800x600 pixels)

# uncomment to force a HDMI mode rather than DVI. This can make audio work in
# DMT (computer monitor) modes
#hdmi_drive=2

# uncomment to increase signal to HDMI, if you have interference, blanking, or
# no display
#config_hdmi_boost=4

# uncomment for composite PAL
#sdtv_mode=2

#uncomment to overclock the arm. 700 MHz is the default.
#arm_freq=800

# Uncomment some or all of these to enable the optional hardware interfaces
#dtparam=i2c_arm=on
#dtparam=i2s=on
#dtparam=spi=on

# Uncomment this to enable the lirc-rpi module
#dtoverlay=lirc-rpi

# Additional overlays and parameters are documented /boot/overlays/README

# Enable audio (loads snd_bcm2835)
dtparam=audio=on
```



Raspberry Pi Home Screen.

Tutorial Videos

HDMI: https://www.youtube.com/watch?v=6p2pMpa2c5Y&list=PLV6MQRlaoTx4WZBxy_fgYI4fxNI7pAsNo&index=6

PWM: https://www.youtube.com/watch?v=xE5RPdkxyvE&list=PLV6MQRlaoTx6hdIA6g_GdkUwEoGpMwin_&index=13

Precautions for Using LCDs/LCMs

See Precautions at www.newhavendisplay.com/specs/precautions.pdf

Document Revision History

Revision	Date	Comments
1.0	1/4/2017	Initial Release
1.1	2/8/2018	Add DC Jack size; Update Schematic link
1.2	5/8/2020	Updated Luminance, Viewing Angles, & Static Electricity Test
1.3	7/15/2020	Included product information for new line of 5.0” Sunlight Readable (-RSXN) TFT Models
1.4	8/10/2021	User Guide Updated