

**Product Specification**

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# NHD-4.3-HDMI-HR-RSXP-CTU

## TFT Liquid Crystal Display

<b>NHD-</b>	Newhaven Display
<b>4.3-</b>	4.3" Diagonal
<b>HDMI-</b>	HDMI Interface
<b>HR-</b>	800x480 Resolution
<b>RSXP-</b>	IPS Display
<b>CTU-</b>	Capacitive USB-HID

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## Additional Resources

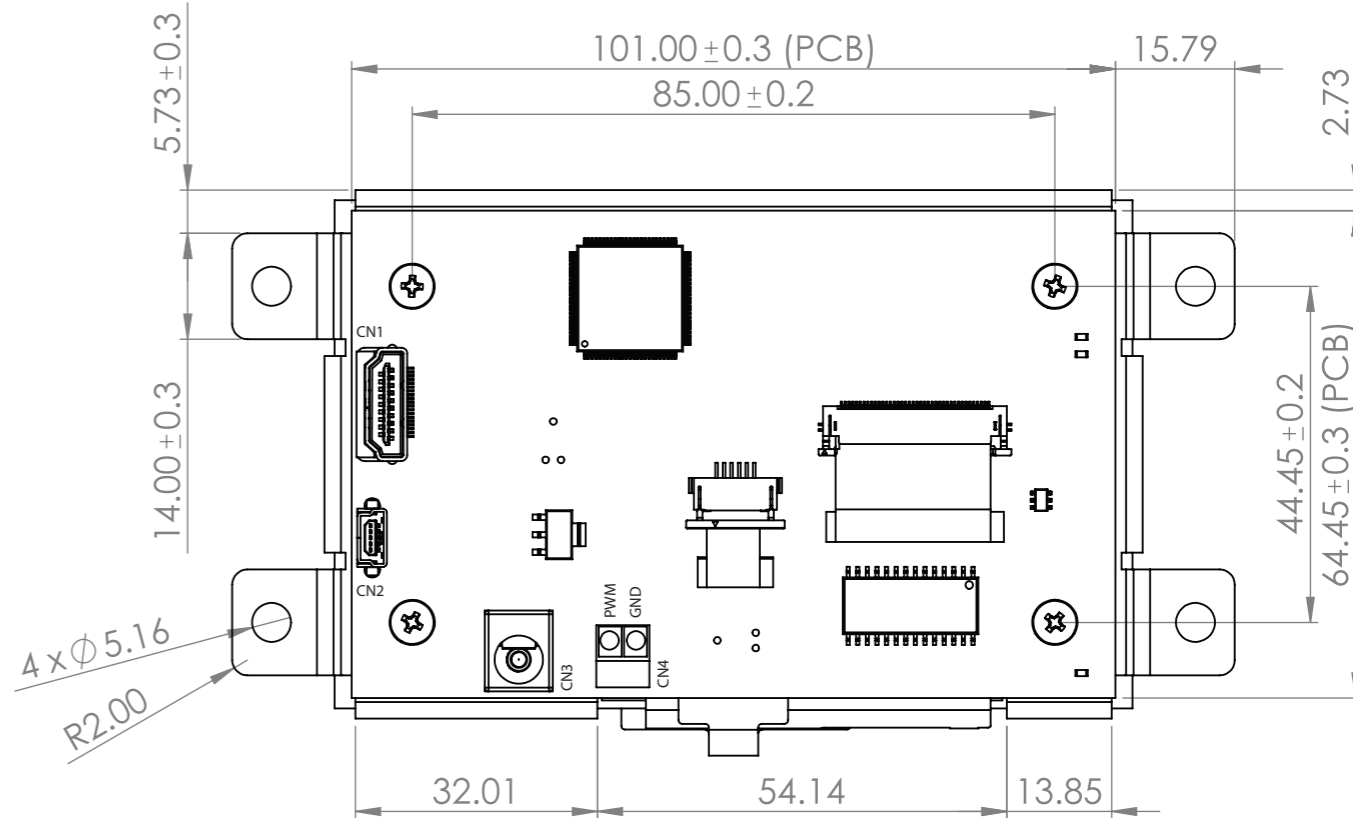
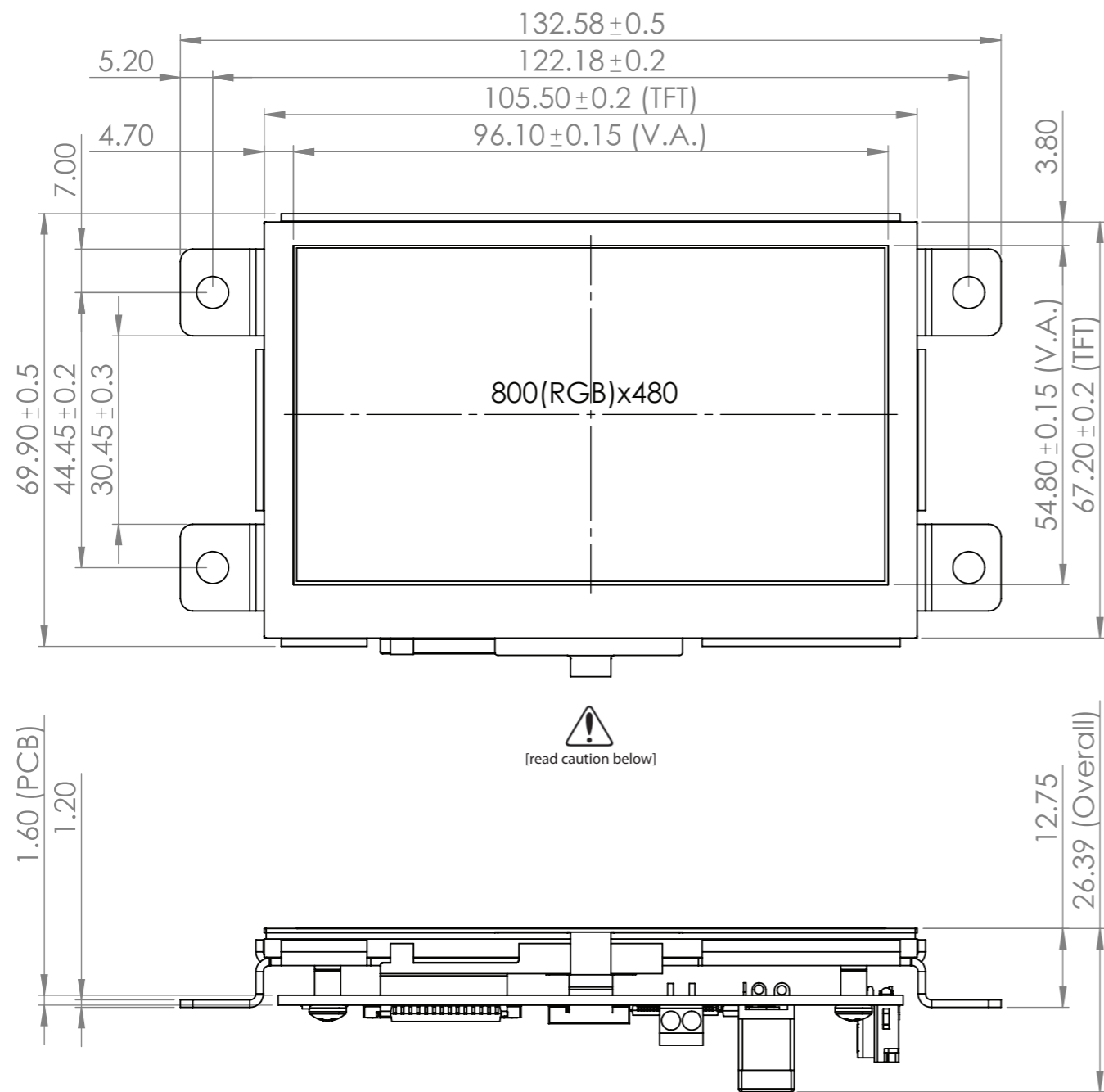
- **Support Forum:** <http://www.nhdforum.newhavendisplay.com>
- **Github:** <https://github.com/newhavendisplay>
- **Example Code:** [https://www.newhavendisplay.com/example\\_code.html](https://www.newhavendisplay.com/example_code.html)
- **Knowledge Center:** [https://www.newhavendisplay.com/knowledge\\_center.html](https://www.newhavendisplay.com/knowledge_center.html)
- **Quality Center:** [https://www.newhavendisplay.com/quality\\_center.html](https://www.newhavendisplay.com/quality_center.html)
- **Precautions for using LCDs/LCMs:** <https://www.newhavendisplay.com/specs/precautions.pdf>
- **Warranty / Terms & Conditions:** <https://www.newhavendisplay.com/terms.html>



## Document Revision History

Revision	Date	Description	Changed By
0	09/29/2021	Initial Release	ZP
1	1/10/2022	Updated cover page, technical resource section, and mechanical drawing. FT5426 IC version update.	CJ

SYMBOL	REVISION	DATE



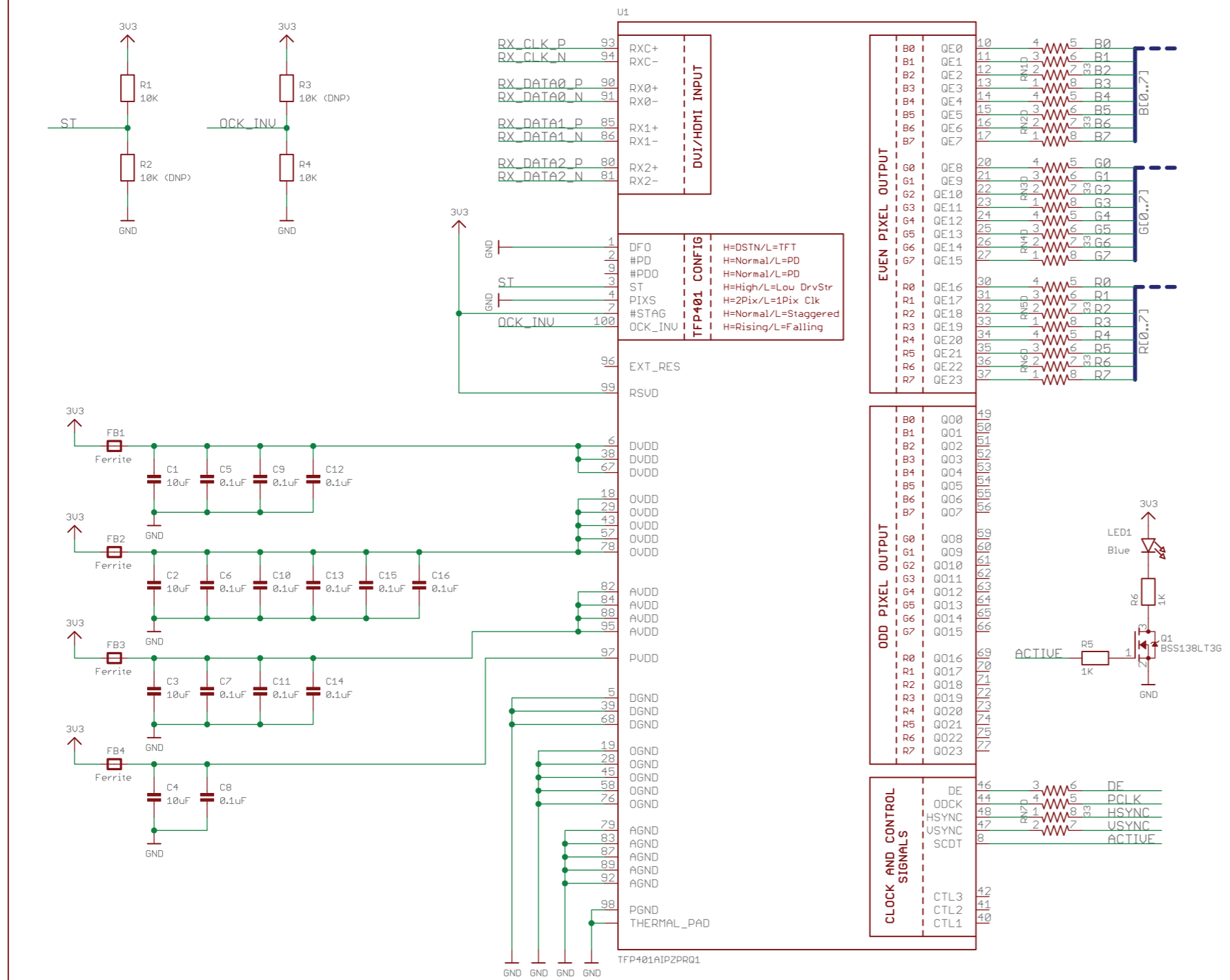
**Product Description: 4.3" IPS TFT w/ Capacitive Touch**

1. TFT Driver IC: TFP401A, CTP IC: FT5426
2. TFT Interface: 24-Bit RGB, CTP Interface: I2C
3. TFT Power Requirement: 5V 615mA
4. Optical Features: Normally Black, Transmissive, Anti-Glare, 723 cd/m<sup>2</sup>

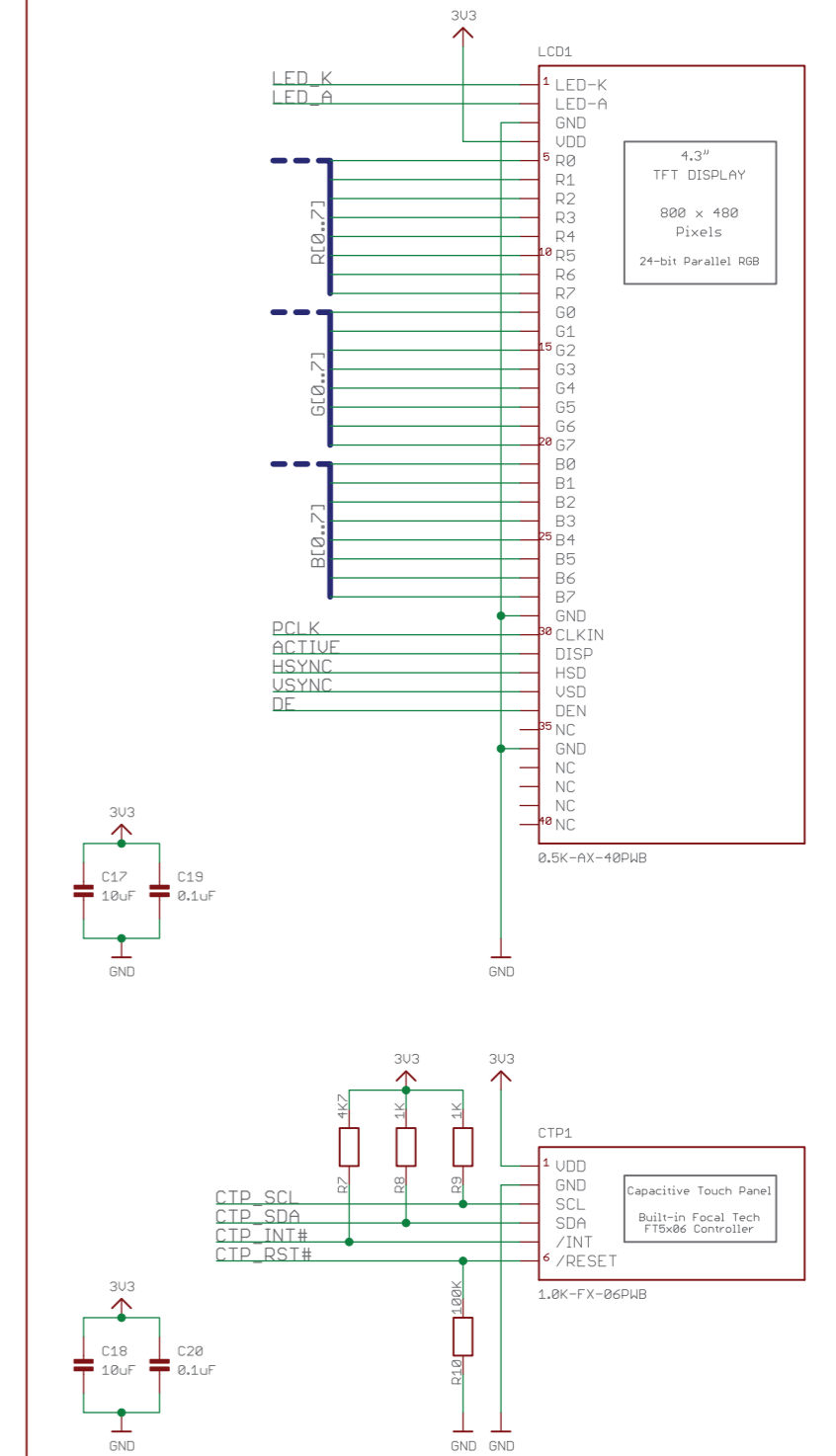
**!** Improper handling of the FPC connections at the bottom edge of this module may cause damage resulting in display or touch failure. Take special care when handling this area of the display module to make sure these connections are never strained nor created.

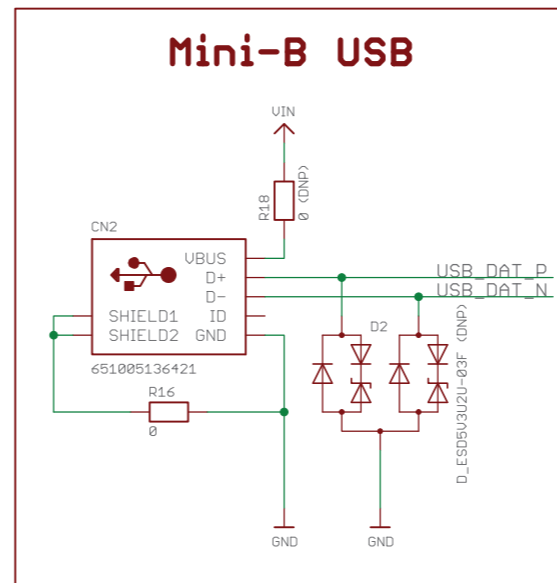
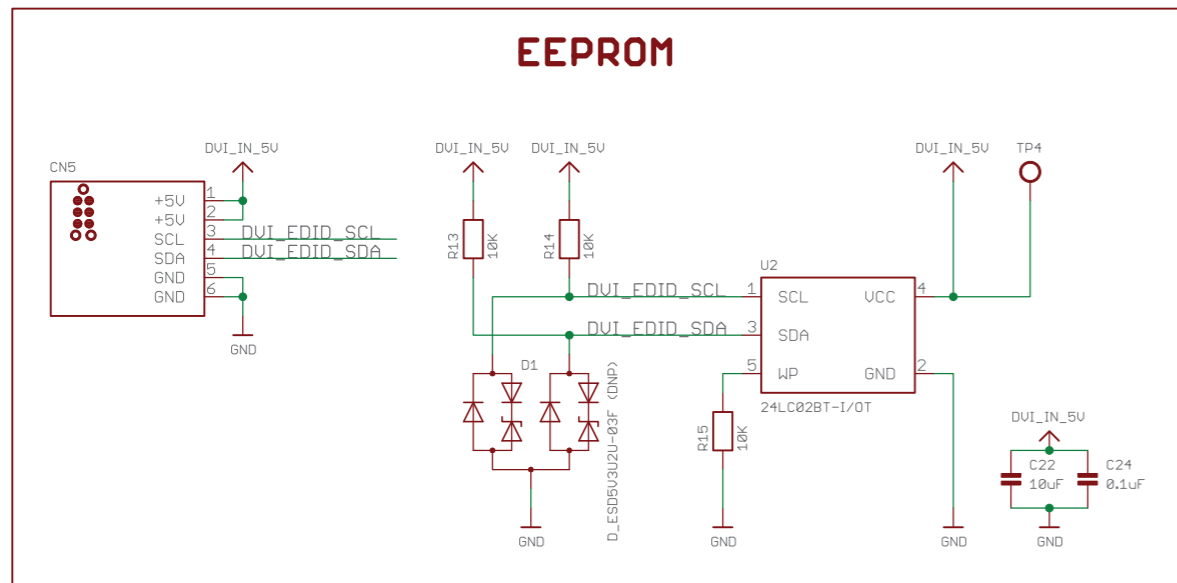
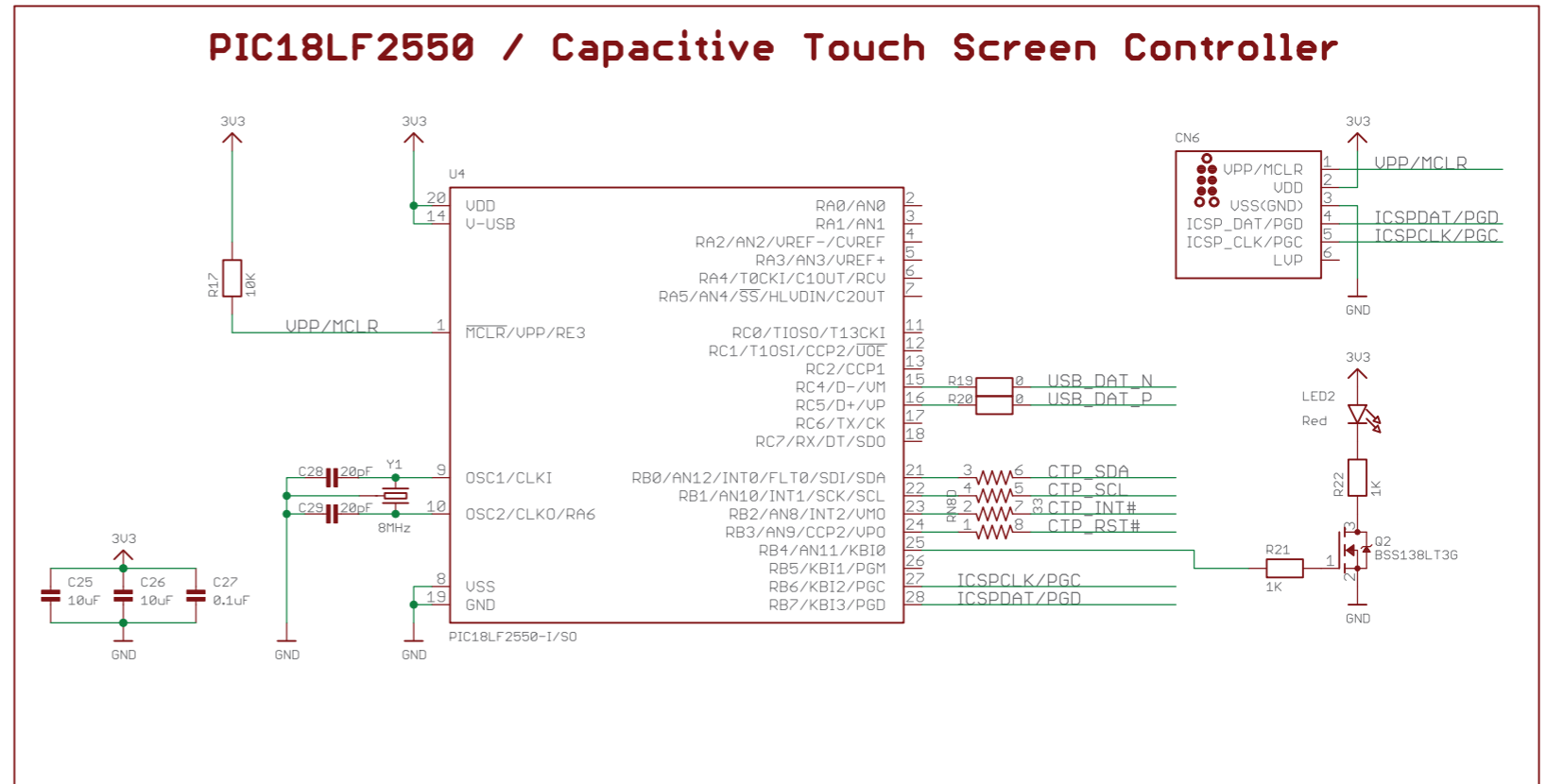
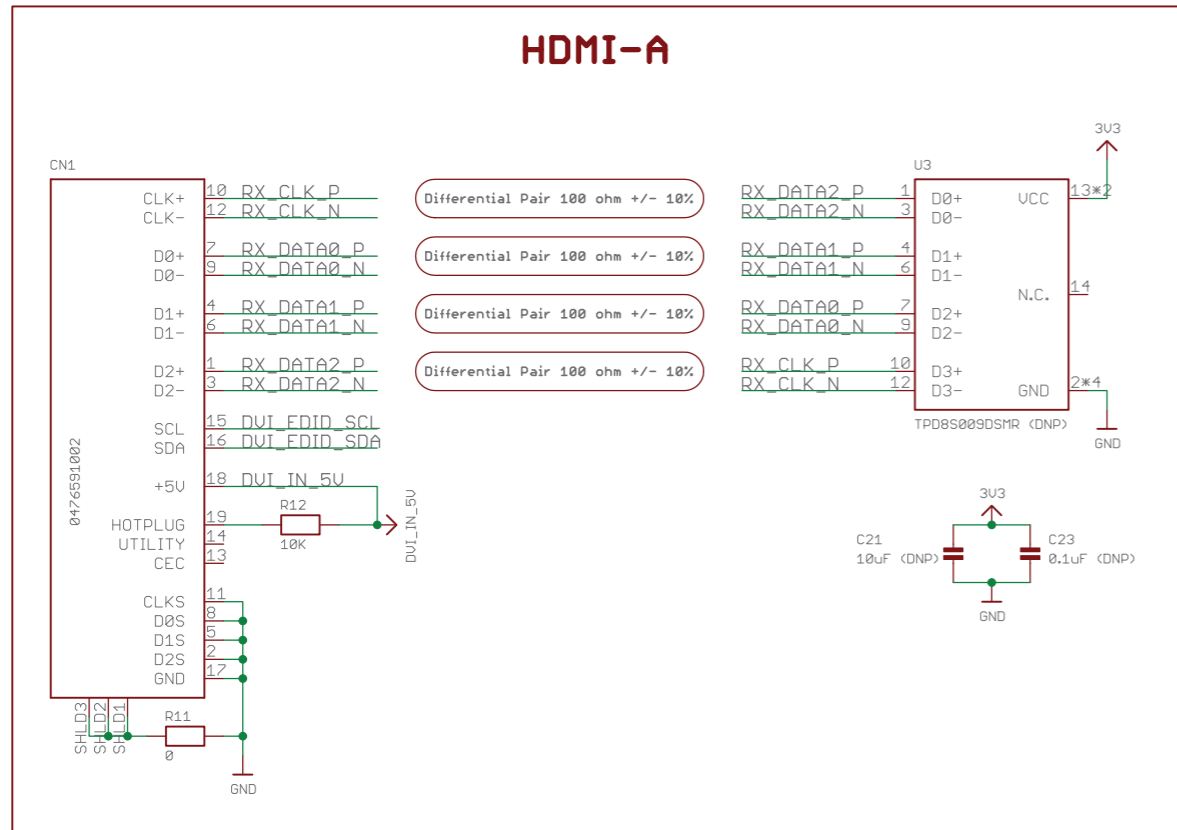
STANDARD TOLERANCE: (UNLESS OTHERWISE SPECIFIED)		
LINEAR: ±0.3mm	DRAWING/PART NUMBER: <b>NHD-4.3-HDMI-HR-RSXP-CTU</b>	REVISION: -
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION	DRAWN BY: C. Johnson	APPROVED BY: A. Khan
	DRAWN DATE: 01/10/22	APPROVED DATE: 01/10/22
	DO NOT SCALE DRAWING	
	SHEET 1 OF 1	
THIS DRAWING IS SOLELY THE PROPERTY OF NEWHAVEN DISPLAY INTERNATIONAL, INC. THE INFORMATION IT CONTAINS IS NOT TO BE DISCLOSED, REPRODUCED OR COPIED IN WHOLE OR PART WITHOUT WRITTEN APPROVAL FROM NEWHAVEN DISPLAY.		

# TFP401 (DVI/HDMI Decoder)

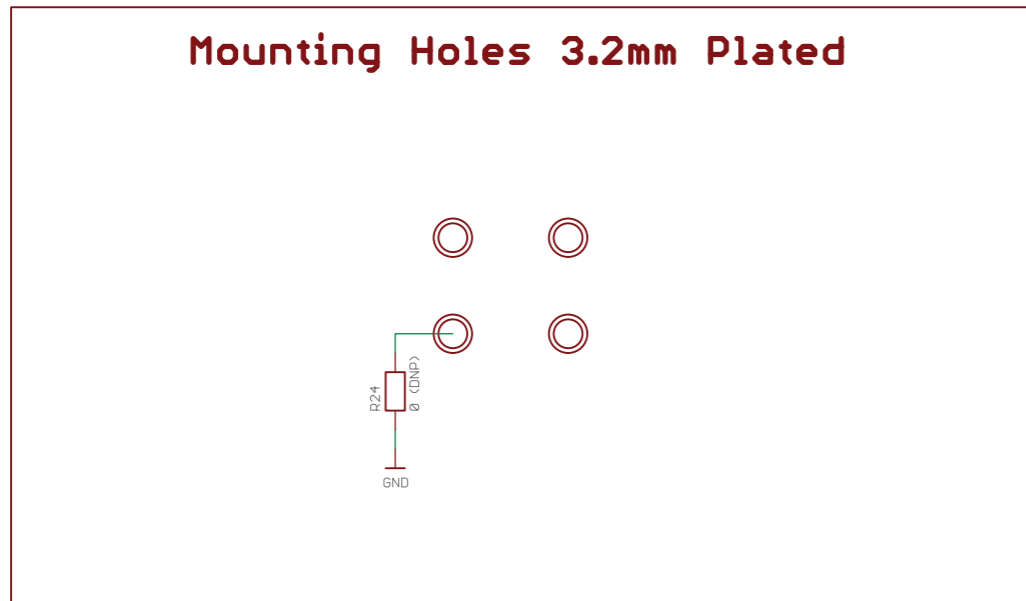
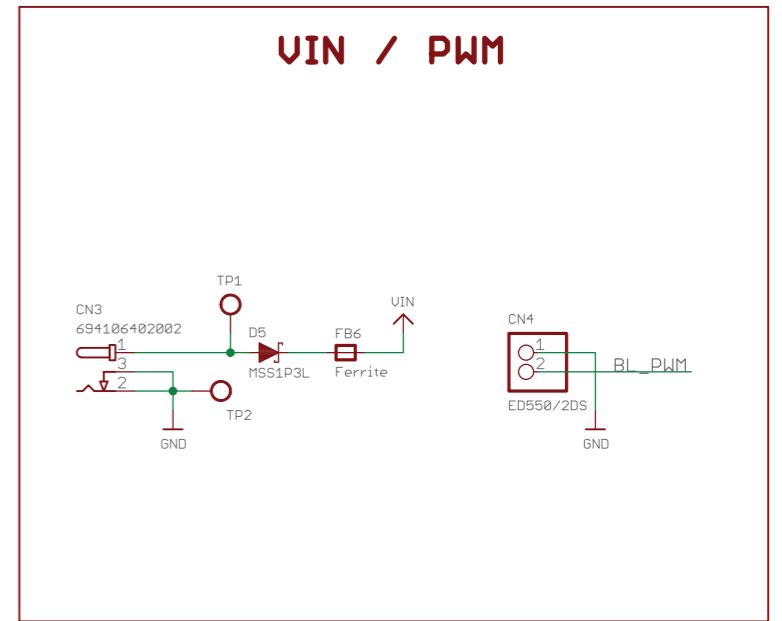
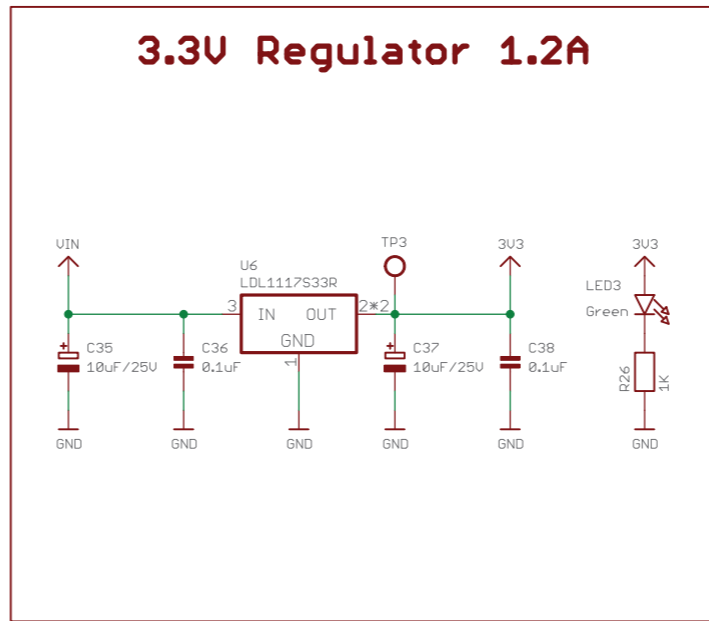
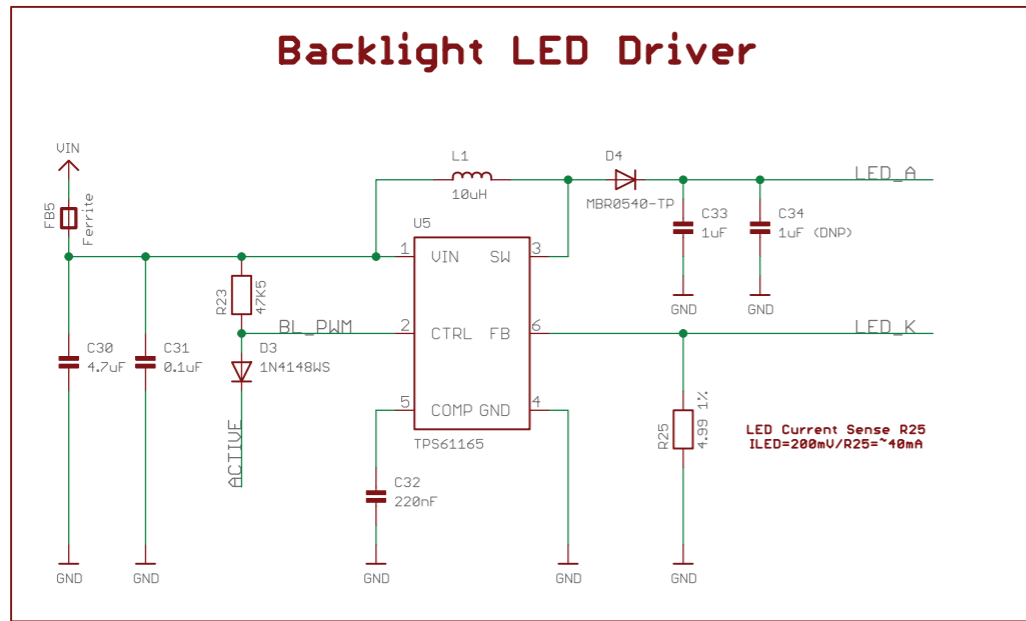


# LCD Interface





Note: The PIC18LF2550 / Capacitive Touch Screen Controller and necessary components are only populated on the CTU version.



### BOARD VERSIONS

CTU Version: (DNP) - C21, C23, C34, CN5, CN6, D1, D2, R2, R3, R18, R24, U3

Non-Touch Version: (DNP) - C18, C21, C25, C26, C20, C23, C27, C28, C29, C34, CTP1, CN2, CN5, CN6, D1, D2, LED2, Q2, R2, R3, R17, R7, R10, R16, R19, R20, R24, R18, R8, R9, R21, R22, RN8, U3, U4, Y1

		REVISION:	-
SCHEMATIC/PART NUMBER:		SIZE:	A3
<b>NHD-4.3-HDMI-HR</b>		SHEET:	3 of 3
DRAWN BY:	P. Bartek	CHECKED BY:	M. LaVine
DRAWN DATE:	12/18/18	CHECKED DATE:	12/18/18
Released under the Creative Commons Attribution Share - Alike 4.0 License <a href="http://creativecommons.org/licenses/by-sa/4.0">http://creativecommons.org/licenses/by-sa/4.0</a>		open source hardware	

## Electrical Characteristics

Item	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Temperature Range	T <sub>OP</sub>	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T <sub>ST</sub>	Absolute Max	-30	-	+80	°C
Backlight PWM Voltage	V <sub>PWM</sub>	-	2.5	3.3	5.5	V
Backlight PWM Frequency	f <sub>PWM</sub>	V <sub>PWM</sub> = 3.3V	5	-	100	kHz
Module Supply Voltage	V <sub>DD</sub>	-	5.0	-	7.0	V
Module Supply Current	I <sub>DD</sub>	V <sub>DD</sub> = 5.0V	-	615	650	mA
		V <sub>DD</sub> = 7.0V	-	530	560	mA

## HDMI Receiver Information

On-board Texas Instruments TFP401A Receiver. To view the full TFP401A specification, please download it by accessing the link: <http://www.ti.com/lit/ds/slids190a/slids190a.pdf>

## Technical Resource

3D Model	TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Touch Panel
<a href="#">NHD-4.3-HDMI-HR-RSXP-CTU</a>	<a href="#">NHD-4.3-800480CF-ASXP-CTP</a>	IPS, Sunlight Readable	723 cd/m <sup>2</sup>	85° all angles	PCAP (USB-HID)



## EDID Array

```
const unsigned char NHD_HDMI5[] = {
0x00, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0x00, 0x39, 0x04, 0x31, 0x04, 0x00, 0x00, 0x00, 0x00,
0xFF, 0x1E, 0x01, 0x04, 0x80, 0x0A, 0x07, 0x00, 0x1A, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0x00, 0x01, 0x00, 0x01, 0x00, 0x01, 0x00, 0x01, 0x00,
0x01, 0x00, 0x01, 0x00, 0x01, 0x00, 0x80, 0x0C, 0x20, 0x80, 0x30, 0xE0, 0x2D, 0x10, 0x28, 0x30,
0xD1, 0x00, 0x69, 0x43, 0x00, 0x00, 0x00, 0x18, 0x00, 0x00, 0x00, 0xFC, 0x00, 0x4E, 0x48, 0x44,
0x2D, 0x34, 0x2E, 0x33, 0x2D, 0x48, 0x44, 0x4D, 0x49, 0x0A, 0x00, 0x00, 0x00, 0x10, 0x00, 0x00,
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x10,
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0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,
};
```

## EDID Timing

Pixel Clock:	32.00	MHz
H. Active Pixels:	800	V. Active Lines: 480
H. Blank:	128	V. Blank: 45
H. Front Porch:	40	V. Front Porch: 13
H. Sync Width:	48	V. Sync Width: 3
H. Clock:	34.48	kHz
V. Clock:	65.68	Hz

## 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, 96 hrs.	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C, 96 hrs.	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C, 96 hrs.	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C, 96 hrs.	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, 96 hrs.	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 10 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	10-55Hz, 15mm amplitude. 60 sec in each of 3 directions X,Y,Z For 15 minutes	3
Static electricity test	Endurance test applying electric static discharge.	Air: $V_s = \pm 8KV$ , Contact: $V_s = \pm 4KV$ 10 Times	

**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.