

**Product Specification**

---

# NHD-7.0-HDMI-N-RSXP

## TFT Liquid Crystal Display

<b>NHD-</b>	Newhaven Display
<b>7.0-</b>	7" Diagonal
<b>HDMI-</b>	HDMI Interface
<b>N-</b>	800x480 Resolution
<b>RSXP-</b>	IPS Display

## Table of Contents

Document Revision History.....	2
Mechanical Drawing .....	3
Schematic.....	4
Electrical Characteristics .....	7
HDMI Receiver Information .....	7
Technical Resource .....	7
EDID Array.....	8
EDID Timing.....	8
Quality Information .....	9

---

## Additional Resources

- **Support Forum:** <https://support.newhavendisplay.com/hc/en-us/community/topics>
- **GitHub:** <https://github.com/newhavendisplay>
- **Example Code:** <https://support.newhavendisplay.com/hc/en-us/categories/4409527834135-Example-Code/>
- **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>

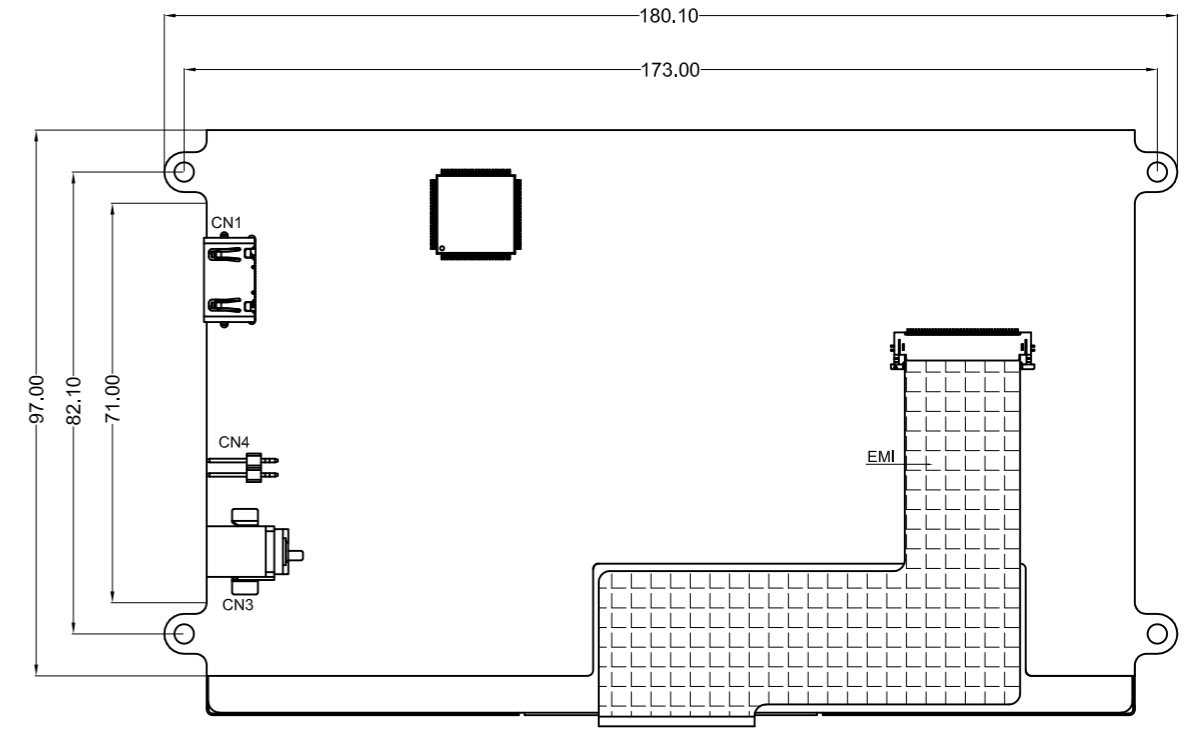
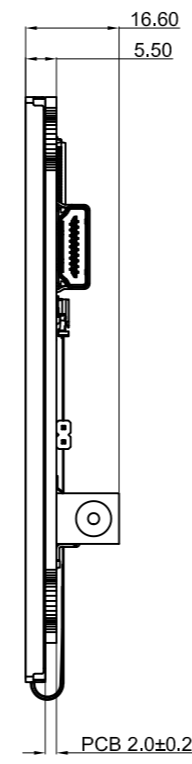
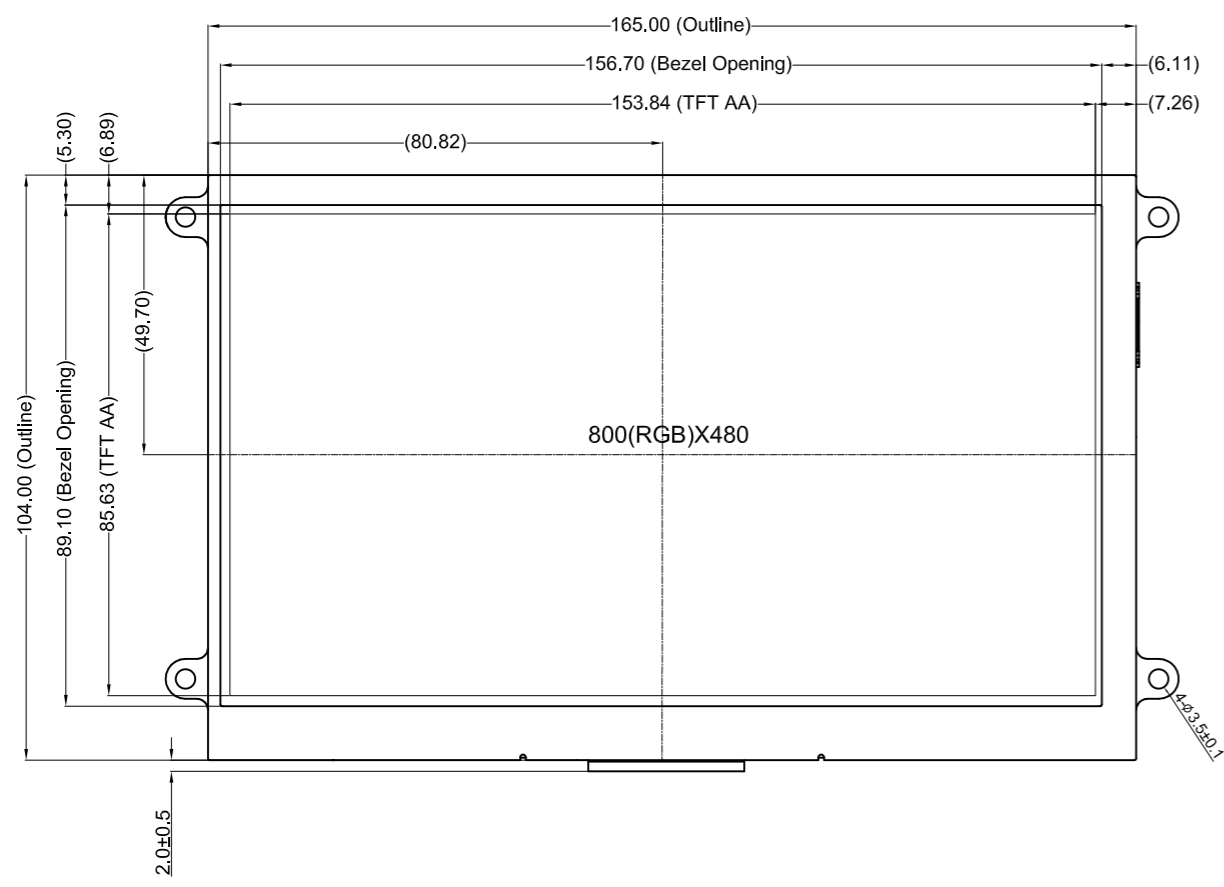


## Document Revision History

Revision	Date	Description	Changed By
-	07/18/2024	Initial Release	KL

# Mechanical Drawing

**Newhaven Display**  
 NHD-7.0-HDMI-N-RSXP  
 Date Code  
 Part Label (type/format may vary)



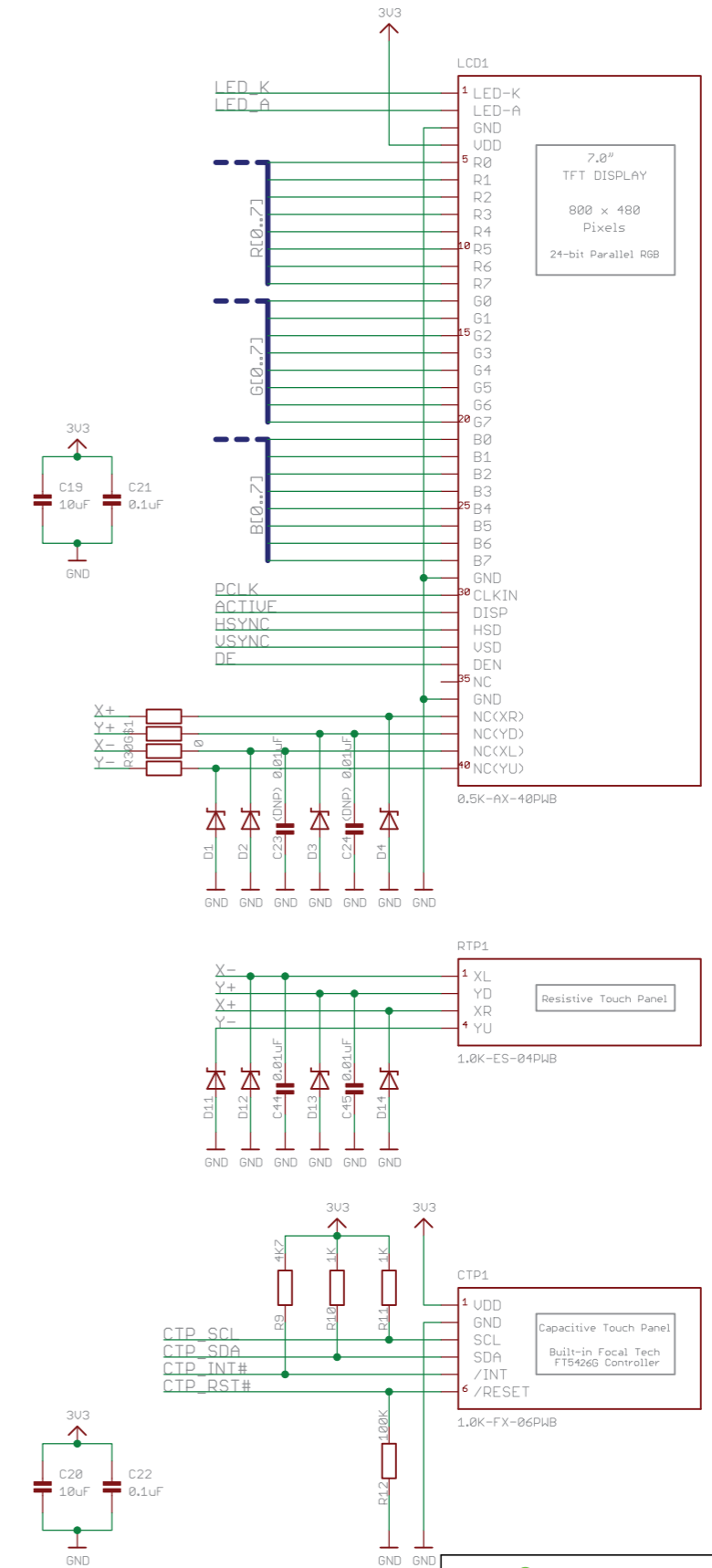
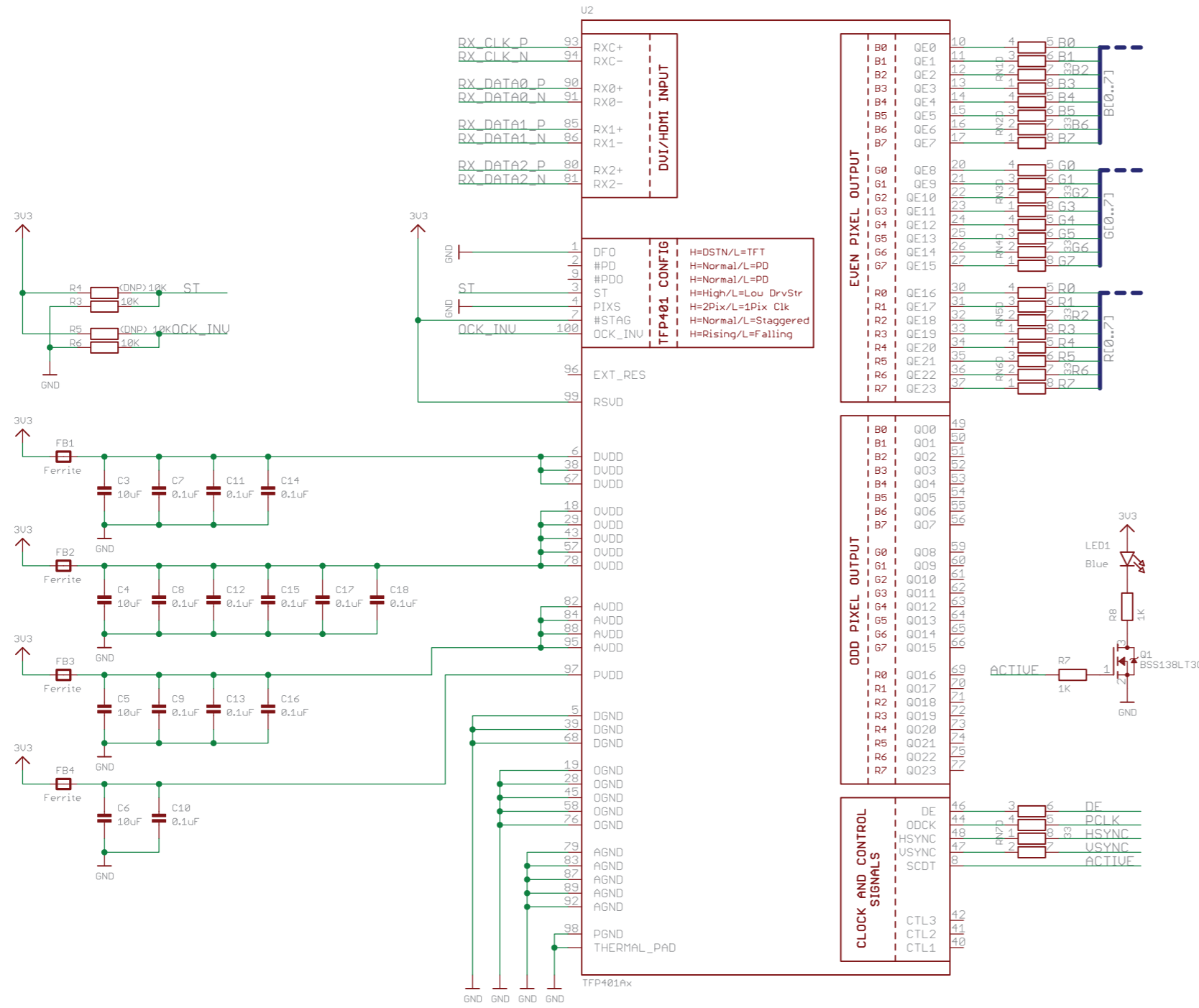
Product Description: 7.0" 800x480 IPS HDMI TFT

1. Driver IC: TFP401A
2. Interface: HDMI
3. Power Requirement: 5.0V
4. Optical Features: Normally Black, Transmissive, Anti-Glare, 1000cd/m<sup>2</sup>
5. EMI Shielded FPC

<b>Standard Tolerance:</b> (Unless otherwise specified)  Linear: ±0.3mm		
	Drawing/Part Number: <b>NHD-7.0-HDMI-N RSXP</b>	Revision: -
<b>Unless otherwise specified:</b> • Dimensions are in Millimeters • Third Angle Projection	Drawn By: K. Lewis Drawn Date: 07/18/2024	Approved By: K. Lewis Approved Date: 07/18/2024
	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

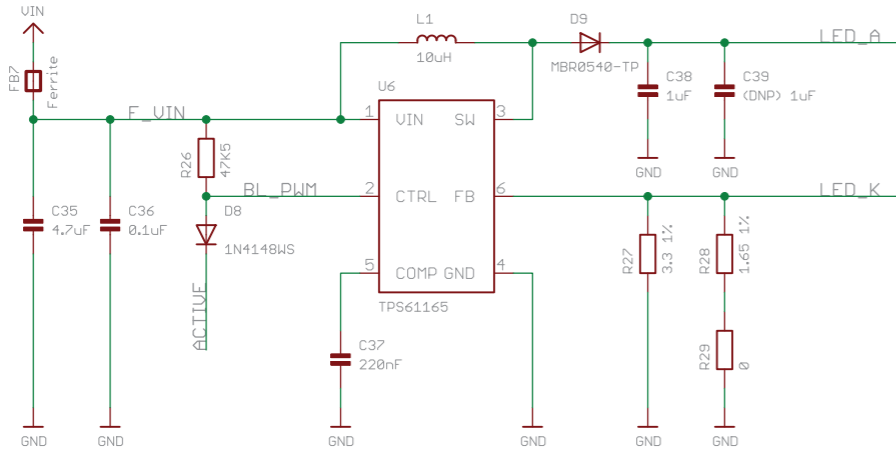


**NEWHAVEN DISPLAY INTERNATIONAL**

Schematic / Part Number: <b>NHD-7.0-HDMI-N</b>		Revision: 1A
Drawn By: K. Lewis	Checked By: K. Lewis	
Drawn Date: 07/25/2024	Checked Date: 07/25/2024	

This document and any associated data contain restricted information that is Newhaven Display International, Inc property. Only disclose or duplicate for others as authorized by Newhaven Display.

## Backlight

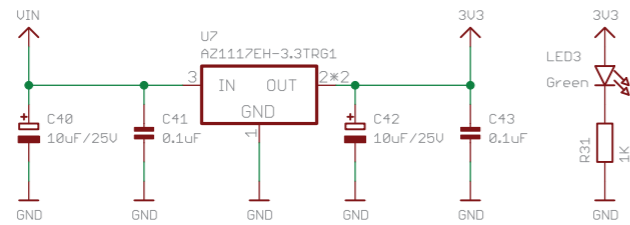


Backlight Configuration	
Current	R29
~60mA	Open
~180mA	Close

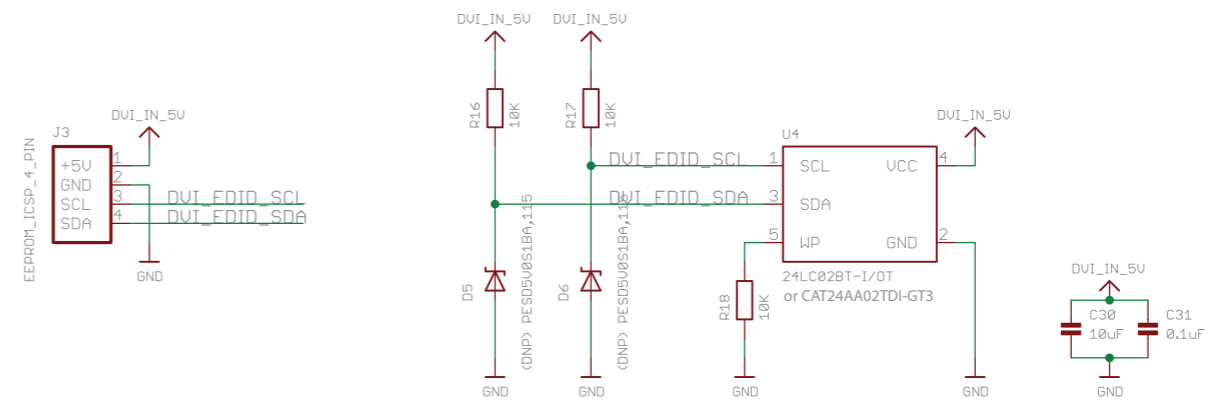
## HDMI-A



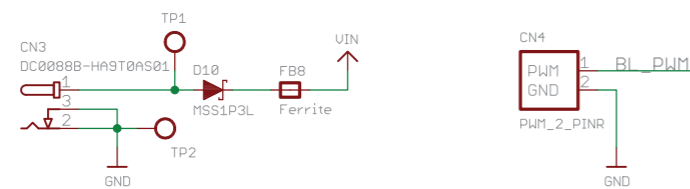
## 3.3V Regulator 800mA



## EEPROM



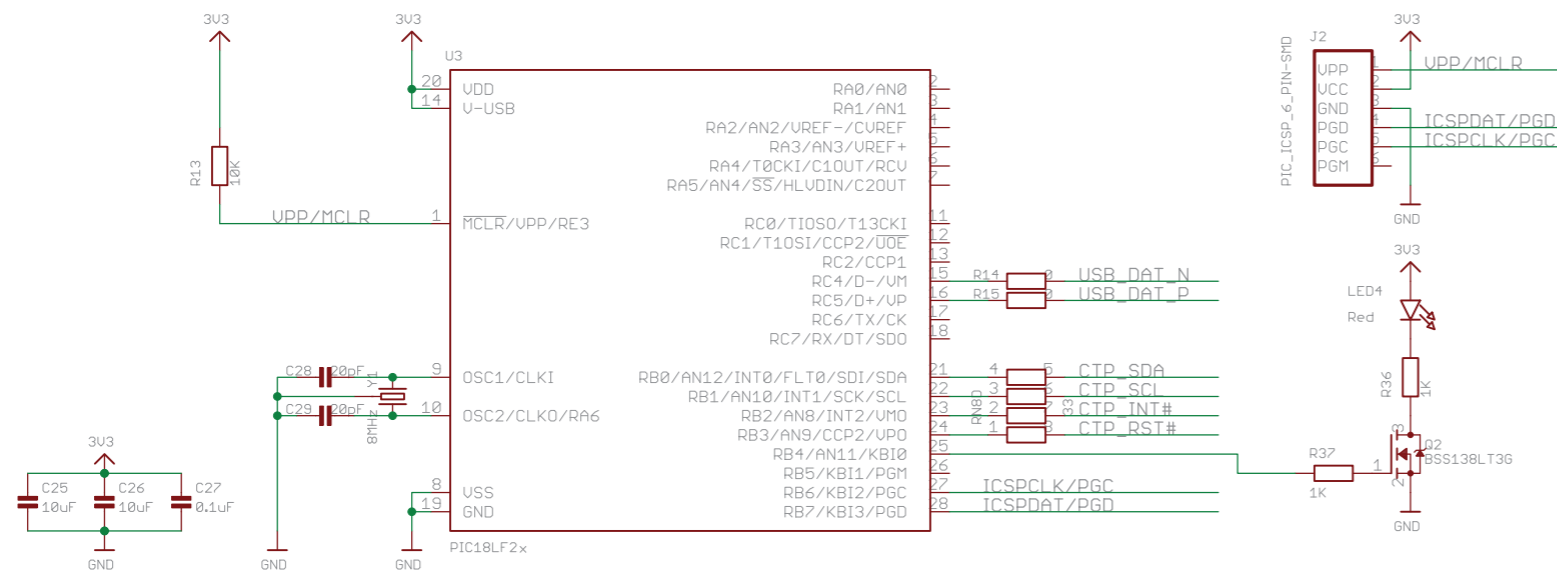
## UIN / PWM



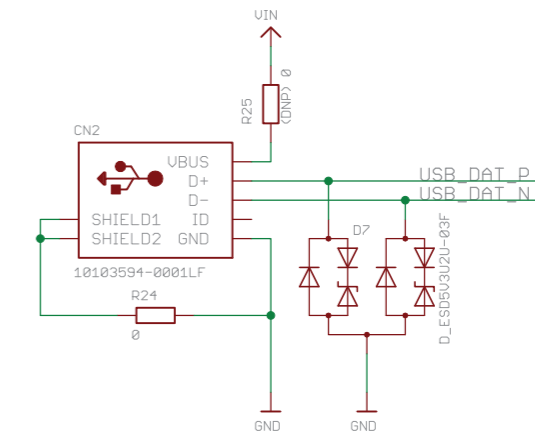
Schematic / Part Number: <b>NHD-7.0-HDMI-N</b>		Revision: <b>1A</b>
Drawn By: <b>K. Lewis</b>	Checked By: <b>K. Lewis</b>	
Drawn Date: <b>07/25/2024</b>	Checked Date: <b>07/25/2024</b>	

This document and any associated data contain restricted information that is Newhaven Display International, Inc property. Only disclose or duplicate for others as authorized by Newhaven Display.

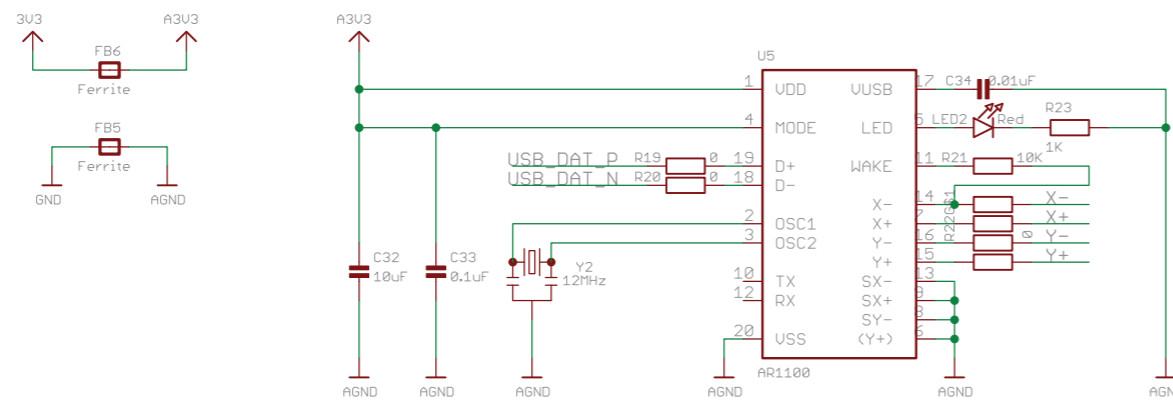
## PIC18LF2x / Capacitive Touch Screen Controller



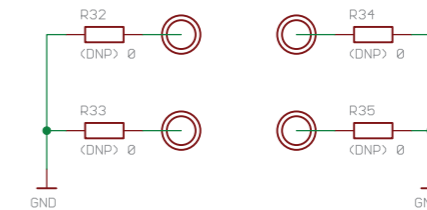
## Micro-B USB



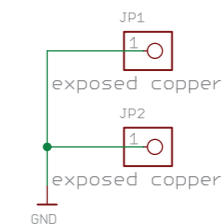
## Resistive Touch Screen Controller



## Mounting Holes 3.5mm Plated



## Exposed Pads to Ground TFT Bezel



## BOARD VERSIONS

RTU Version: (DNP) - C1, C20, C25, C26, C2, C22, C27, C23, C24, C28, C29, C39, CTP1, D1, D2, D3, D4, D5, D6, D11, D12, D13, D14, LED4, Q2, R4, R5, R13, R9, R10, R11, R36, R37, R12, R14, R15, R25, R32, R33, R34, R35, RN8, U1, U3, Y1

CTU Version: (DNP) - C1, C32, C2, C33, C23, C24, C34, C44, C45, C39, D1, D2, D3, D4, D5, D6, D11, D12, D13, D14, FB5, FB6, LED2, R4, R5, R21, R19, R20, R25, R32, R33, R34, R35, R22, R30, R23, RTP1, U1, U5, Y2

Non-Touch Version: (DNP) - C1, C20, C25, C26, C32, C2, C22, C27, C33, C23, C24, C34, C44, C45, C28, C29, C39, CN2, CTP1, D1, D2, D3, D4, D5, D6, D11, D12, D13, D14, D7, FB5, FB6, LED2, LED4, Q2, R4, R5, R13, R21, R9, R10, R11, R23, R36, R37, R12, R14, R15, R19, R20, R24, R25, R32, R33, R34, R35, R22, R30, RN8, RTP1, U1, U3, U5, Y1, Y2



Schematic / Part Number: <b>NHD-7.0-HDMI-N</b>		Revision: 1A
Drawn By: K. Lewis	Checked By: K. Lewis	
Drawn Date: 07/25/2024	Checked Date: 07/25/2024	

This document and any associated data contain restricted information that is Newhaven Display International, Inc property. Only disclose or duplicate for others as authorized by Newhaven Display.

## 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	-	7.5	V
Module Supply Current	I <sub>DD</sub>	V <sub>DD</sub> = 5V	-	730	790	mA
		V <sub>DD</sub> = 7.5V	-	560	590	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

TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Contrast Ratio	Touch Panel
<a href="#">NHD-7.0-800480AF-ASXP</a>	IPS	1000 cd/m <sup>2</sup>	85° all angles	1000	No Touch



## EDID Array

```
const unsigned char NHD_HDMI7[] = {  
0x00, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0xFF, 0x00, 0x39, 0x04, 0x4F, 0x07, 0x00, 0x00, 0x00, 0x00,  
0x01, 0x11, 0x01, 0x03, 0x80, 0x0F, 0x09, 0x00, 0x0A, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x01,  
0x01, 0x01, 0x01, 0x01, 0x01, 0x01, 0x80, 0x0C, 0x20, 0x80, 0x30, 0xE0, 0x2D, 0x10, 0x28, 0x30,  
0xD3, 0x00, 0x9A, 0x56, 0x00, 0x00, 0x00, 0x18, 0x00, 0x00, 0x00, 0xFC, 0x00, 0x4E, 0x48, 0x44,  
0x2D, 0x37, 0x2E, 0x30, 0x20, 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, 0x10,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00,  
0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 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.	VS=800V, RS=1.5KΩ, CS=100pF 1 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.

