NEWHAVEN DISPLAY INTERNATIONAL

Product Specification

NHD-7.0-HDMI-N-RSXV-CTU

7.0" HDMI TFT Module w/USB-HID Capacitive Touch

NHD-	Newhaven Display
7.0-	7.0" Diagonal
HDMI-	HDMI (Type-A) Input
N-	Video Only, Fixed Input Resolution (800x480)
R-	On-board HDMI/DVI Receiver
S-	High Brightness, White LED Backlight
X-	TFT
V-	Premium (MVA), Wide Temperature
CTU-	USB-HID Capacitive Touch Panel

Newhaven Display International, Inc.
2661 Galvin Court, Elgin, IL 60124 USA

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www.newhavendisplay.com

REACH Compliant

RoHS Compliant

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Table of Contents

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
- **Quality Center:** 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

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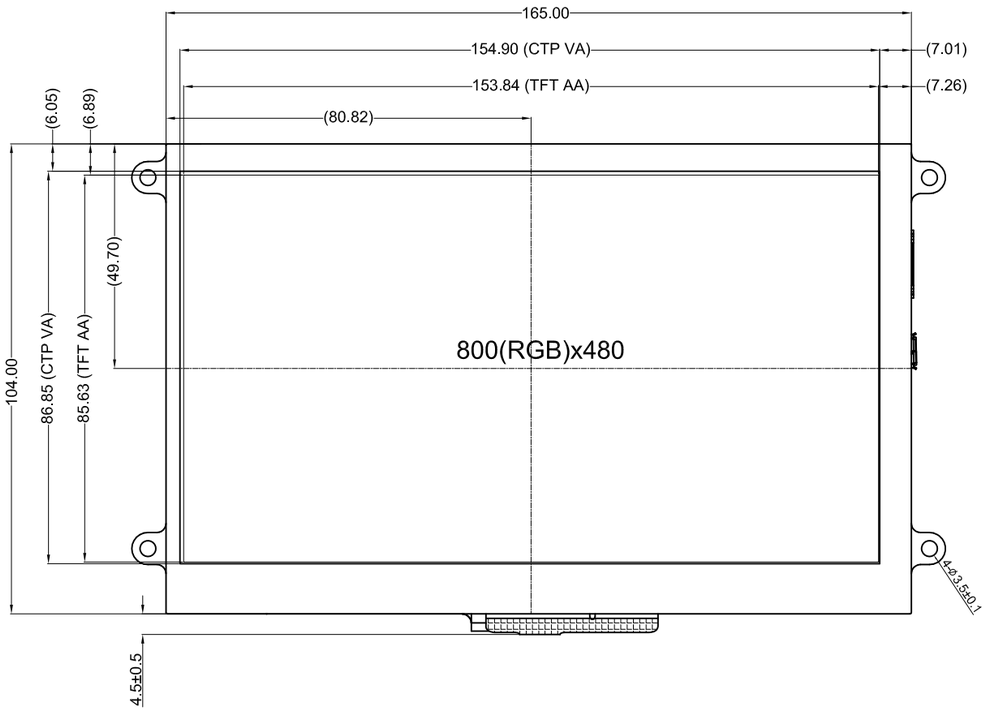
Document Revision History

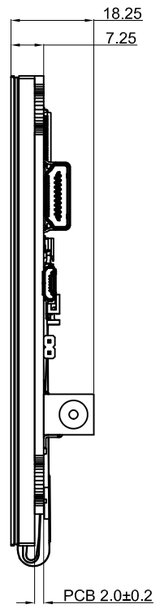
Revision	Date	Description	Changed By
-	10/13/2017	Initial Release	PB, ML
1	04/26/2023	Updated Schematic to include Equivalent ICs	KL
2	02/19/2024	Mechanical Drawing & Schematic Updated CTP Controller Upgraded from FT5426 to FT5426G	KL
3	04/12/2024	Schematic Updated	KL
4	07/09/2024	Mechanical Drawing Updated	KL
5	08/18/2024	Firmware ID Updated on Mechanical Drawing	

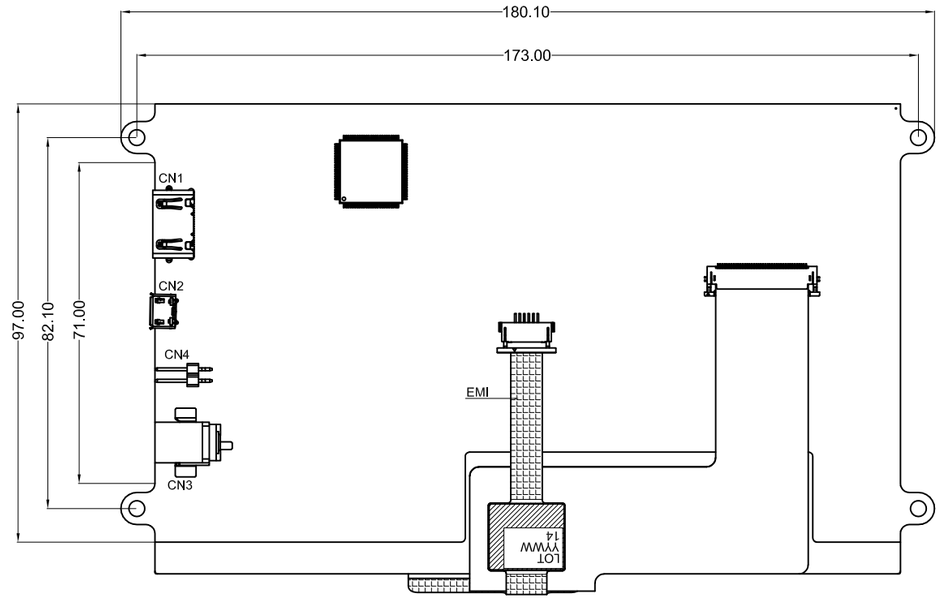
Mechanical Drawing

Newhaven Display
NHD-7.0-HDMI-N-RSXV-CTU
Date Code

Part Label (type/format may vary)







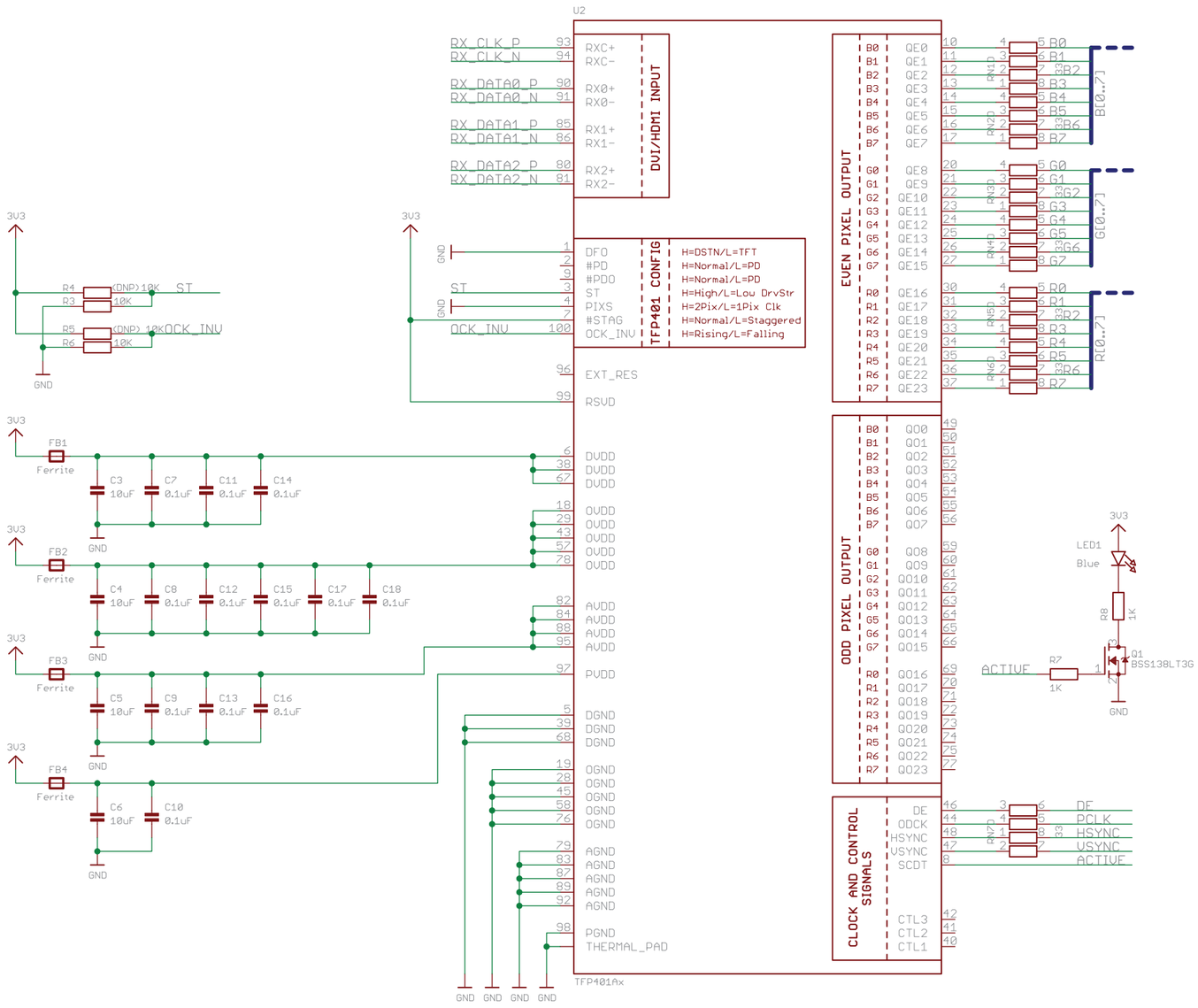
Product Description: 7.0” 800x480 Premium IPS HDMI TFT w/ Capacitive Touch

1. Driver IC: TFP401A
2. Interface: HDMI, USB
3. Power Requirement: 7.0V
4. Optical Features: Normally White, Transmissive, 660cd/m²
5. EMI Shielded FPC

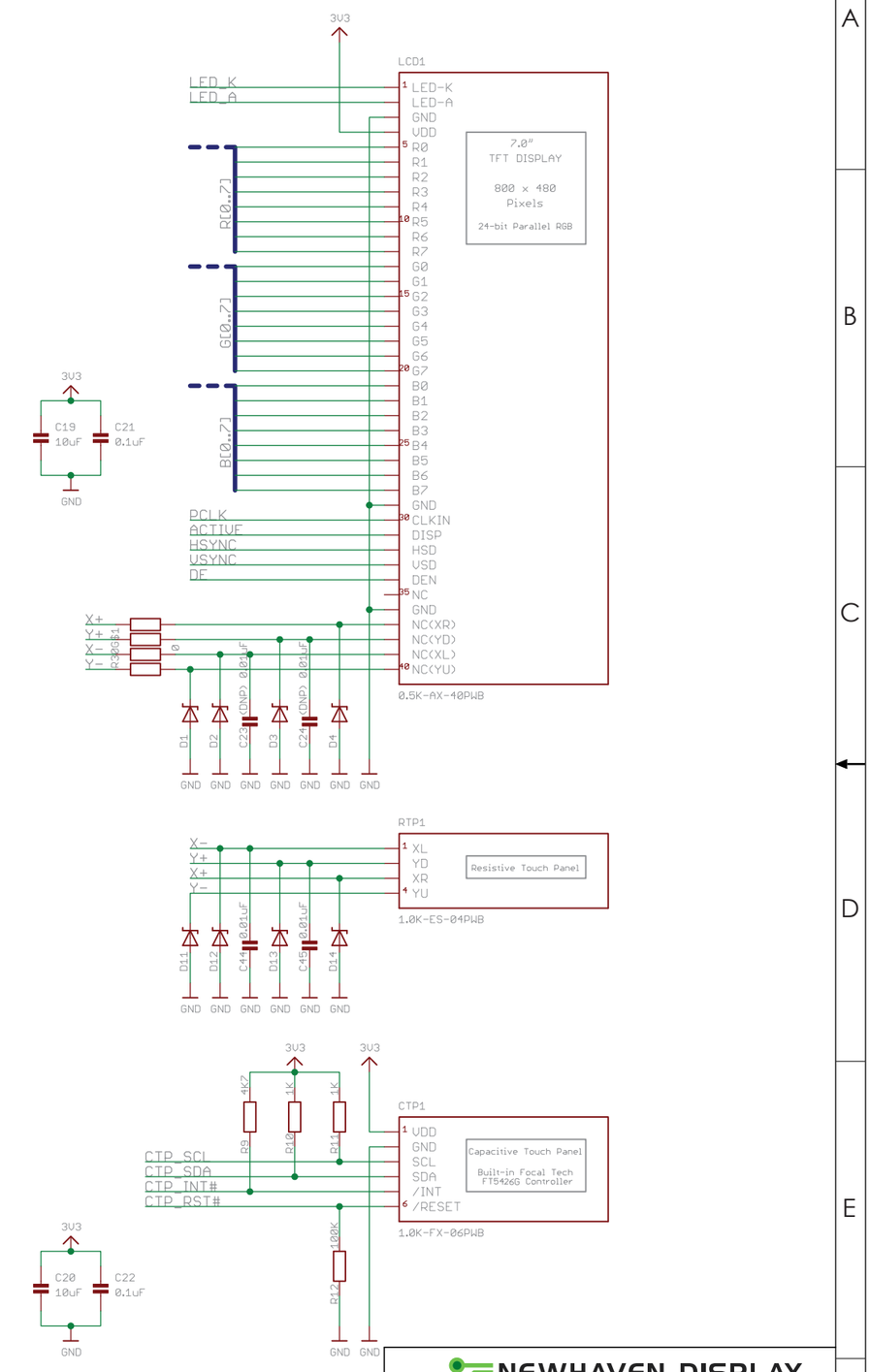
⚠ Improper handling of the FPC connections at the bottom edge of this module may cause damage resulting in display or touch failure. Take special care when handling this area of the display module to make sure these connections are never strained nor creased.

Standard Tolerance: (Unless otherwise specified) Linear: ±0.3mm	NEWHAVEN DISPLAY INTERNATIONAL		
	Drawing/Part Number: NHD-7.0-HDMI-N-RSXV-CTU		Revision: -
Unless otherwise specified: • Dimensions are in Millimeters • Third Angle Projection	Drawn By: K. Lewis	Approved By: K. Lewis	
	Drawn Date: 08/18/2024	Approved Date: 08/18/2024	

TFP401 (DVI/HDMI Decoder)

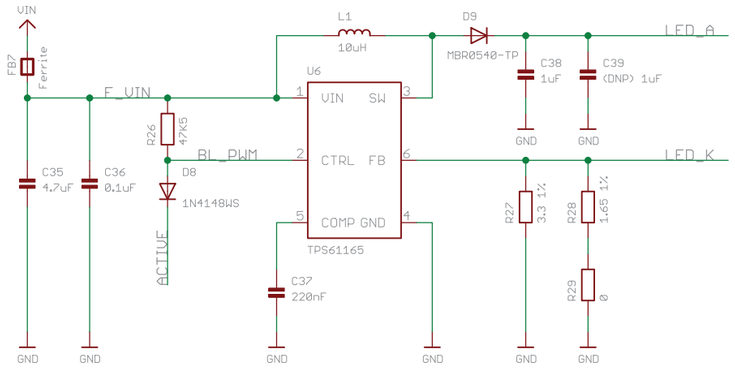


LCD Interface



Schematic / Part Number: NHD-7.0-HDMI-N			Revision: 1A
Drawn By:	K. Lewis	Checked By:	K. Lewis
Drawn Date:	04/12/2024	Checked Date:	04/12/2024

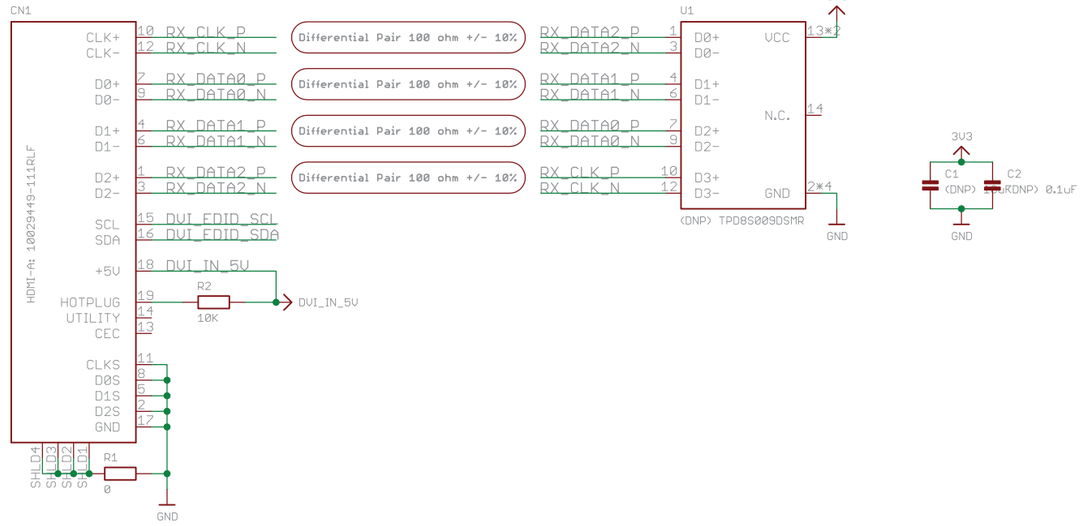
Backlight



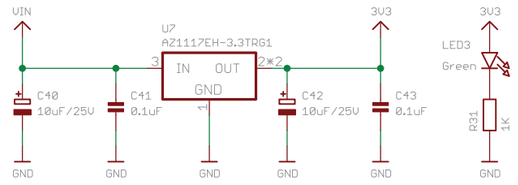
Backlight Configuration	
Current	R29
~60mA	Open
~180mA	Close

(Default)

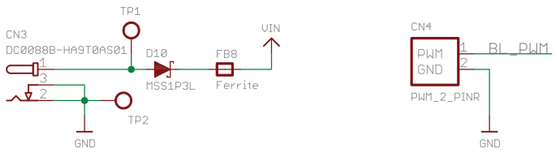
HDMI-A



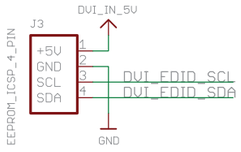
3.3V Regulator 800mA

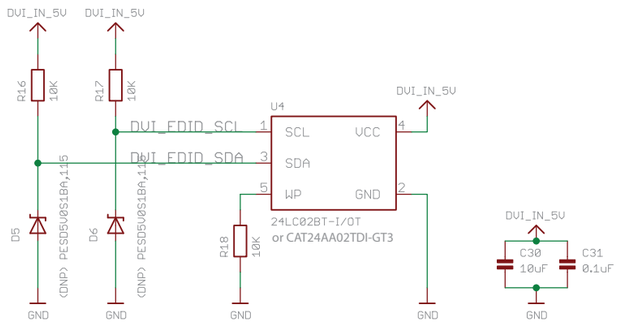


VIN / PWM



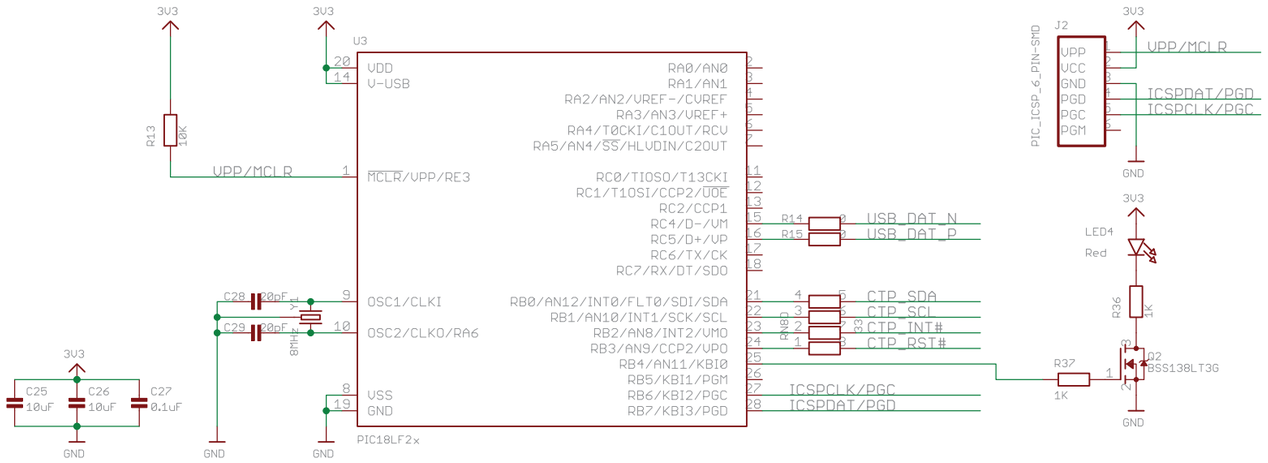
EEPROM



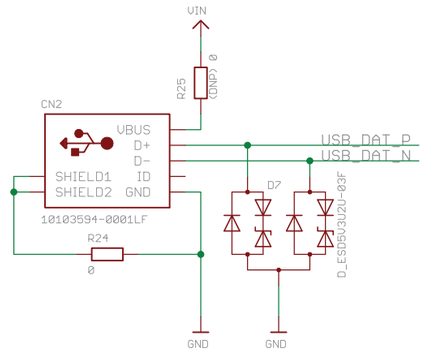


NEWHAVEN DISPLAY INTERNATIONAL	
Schematic / Part Number: NHD-7.0-HDMI-N	Revision: 1A
Drawn By: K. Lewis	Checked By: K. Lewis
Drawn Date: 04/12/2024	Checked Date: 04/12/2024

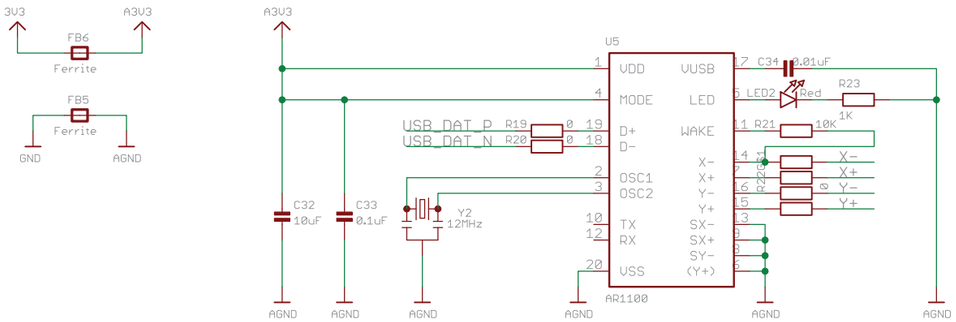
PIC18LF2x / Capacitive Touch Screen Controller



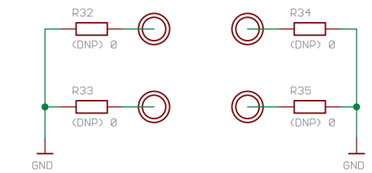
Micro-B USB



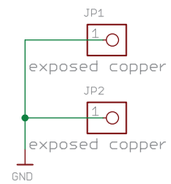
Resistive Touch Screen Controller



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

NEWHAVEN DISPLAY INTERNATIONAL

Schematic / Part Number:		Revision:
NHD-7.0-HDMI-N		1A
Drawn By: K. Lewis	Checked By: K. Lewis	
Drawn Date: 04/12/2024	Checked Date: 04/12/2024	

Electrical Characteristics

Item	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Temperature Range	T_{OP}	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T_{ST}	Absolute Max	-30	-	+80	°C
Backlight PWM Voltage	V_{PWM}	-	2.5	3.3	5.5	V
Backlight PWM Frequency	f_{PWM}	V_{PWM} = 3.3V	5	-	100	kHz
Module Supply Voltage	V_{DD}	-	5.0	-	7.5	V
Module Supply Current	I_{DD}	V_{DD} = 5V	-	750	790	mA
		V_{DD} = 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/slds190a/slds190a.pdf

Technical Resource

3D Model	TFT Panel Used	Display Type	Luminance Rating	Optimal Viewing Angle	Touch Panel
NHD-7.0-HDMI-N-RSXV-CTU	NHD-7.0-800480EF-ASXV#-CTP	Premium MVA	660 cd/m²	70° all angles	PCAP (USB-HID)

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,
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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,
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};
```
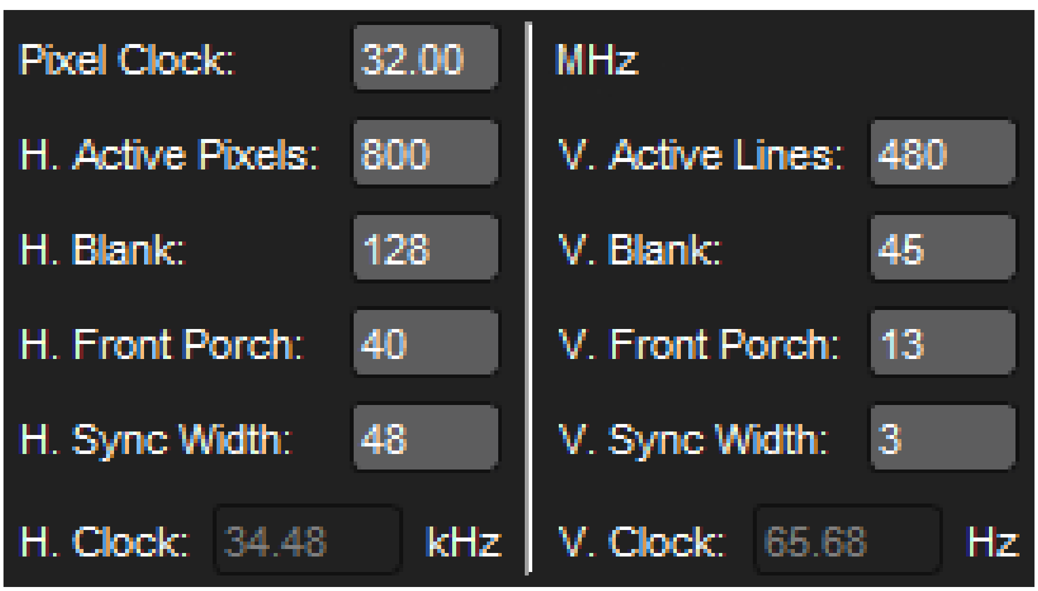

EDID Timing



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 , 96hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 96hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C , 96hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 96hrs	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 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 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.