

Product Specification

NHD-5.0-HDMI-N-RTXL-CTU

TFT Liquid Crystal Display

NHD-	Newhaven Display
5.0-	5" Diagonal
HDMI-	HDMI Interface
N-	800x480 Resolution
RTXL-	Premium (MVA) Display
CTU-	Capacitive Touch Panel

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Additional Resources

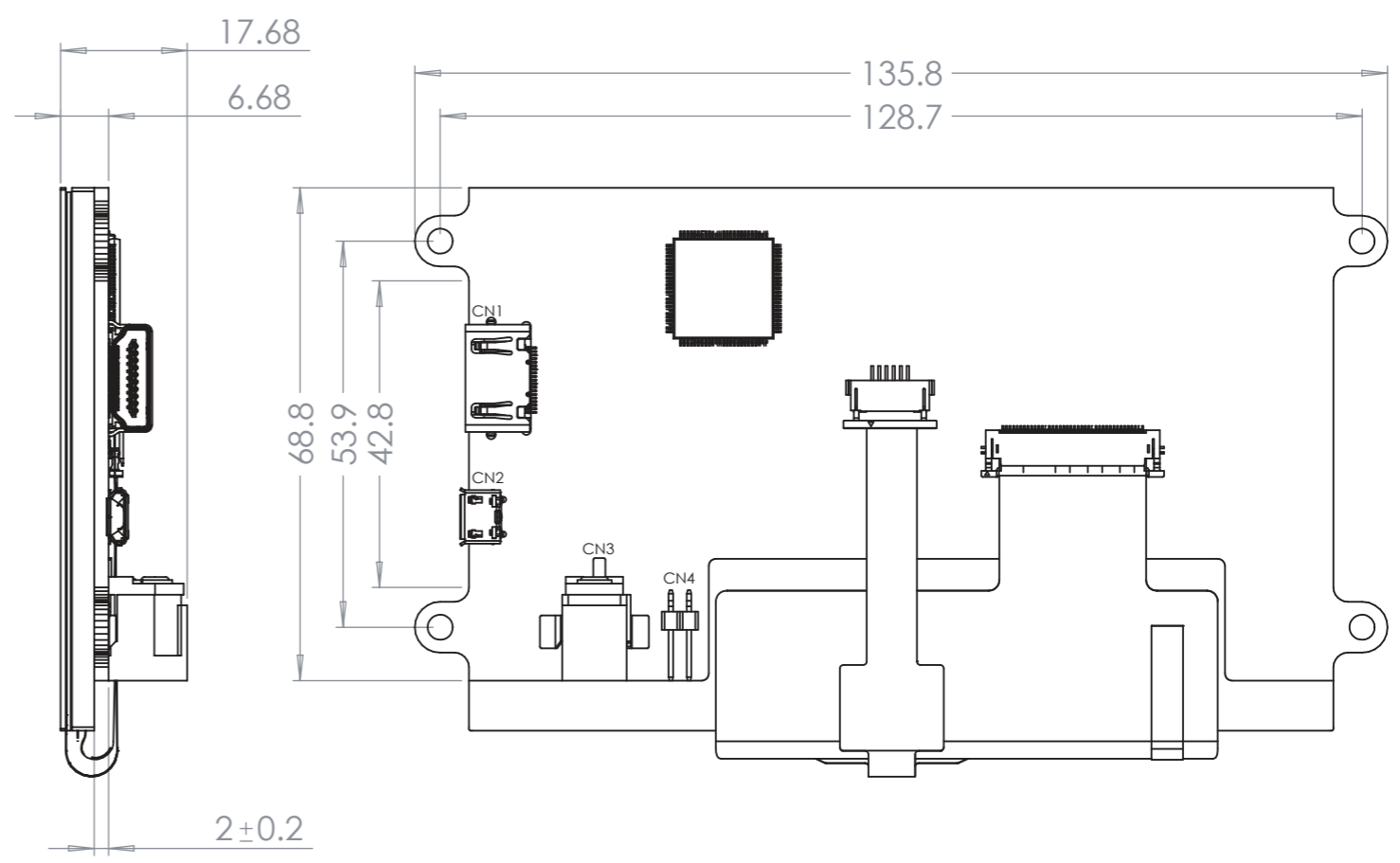
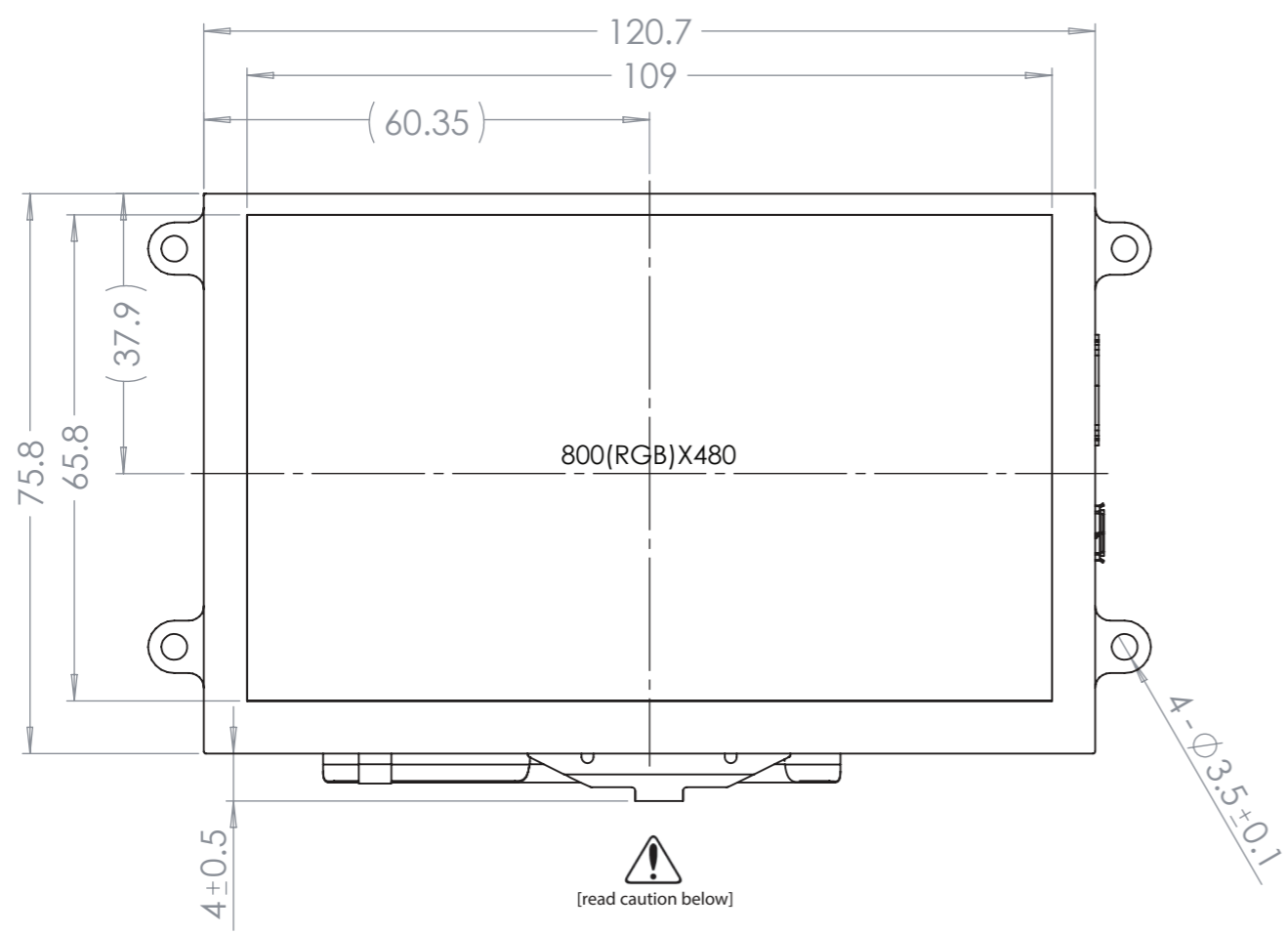
- **Support Forum:** <http://www.nhdforum.newhavendisplay.com>
- **Github:** <https://github.com/newhavendisplay>
- **Example Code:** https://www.newhavendisplay.com/example_code.html
- **Knowledge Center:** https://www.newhavendisplay.com/knowledge_center.html
- **Quality Center:** https://www.newhavendisplay.com/quality_center.html
- **Precautions for using LCDs/LCMs:** <https://www.newhavendisplay.com/specs/precautions.pdf>
- **Warranty / Terms & Conditions:** <https://www.newhavendisplay.com/terms.html>



Document Revision History

Revision	Date	Description	Changed By
0	04/22/2021	Initial Release	ZP
1	01/25/2022	Updated Spec Format	ZP

SYMBOL	REVISION	DATE



Product Description: 5.0" Premium HDMI TFT Module w/ Capacitive Touch

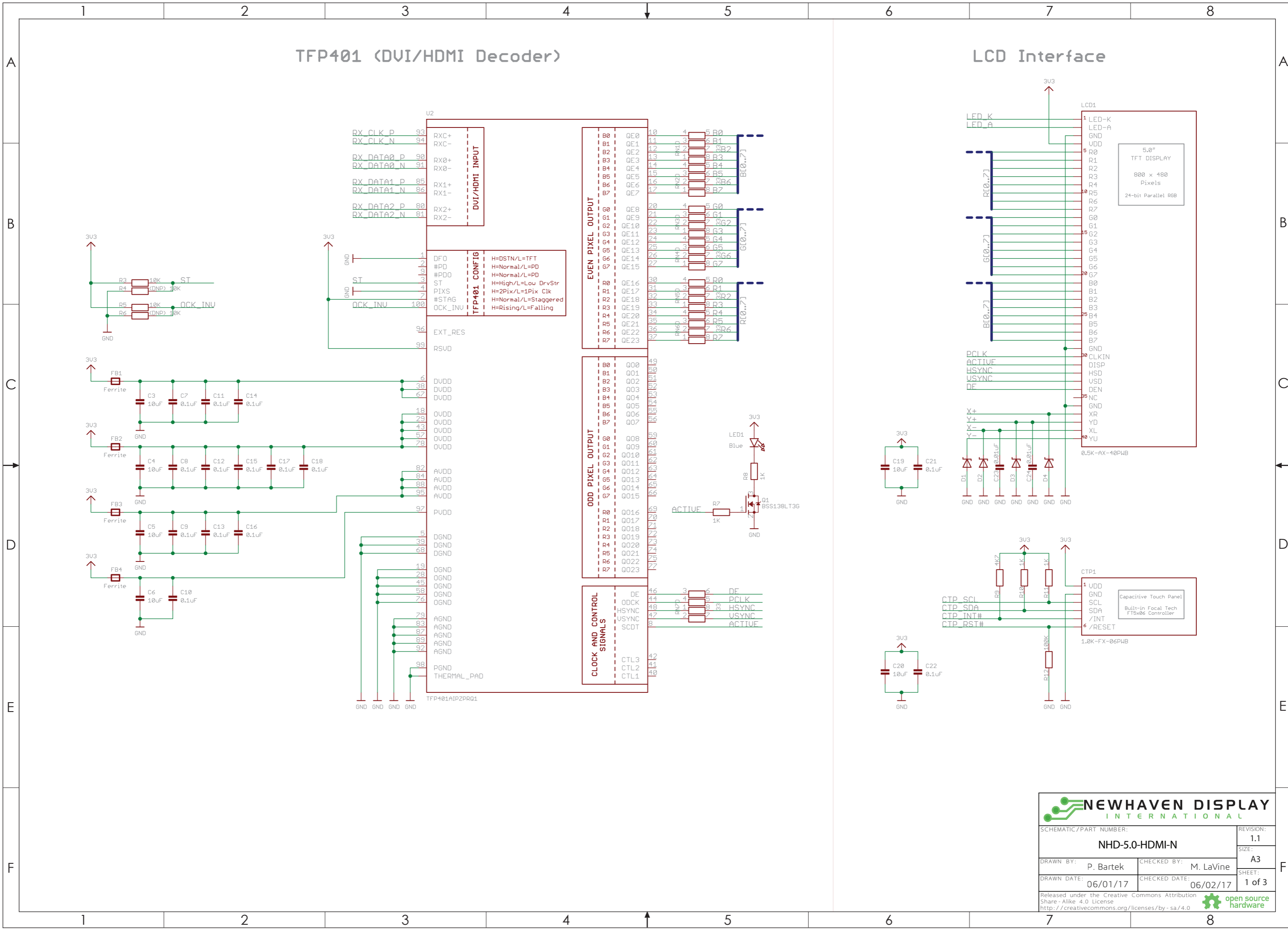
1. TFT Driver IC: TFP401A
2. TFT Interface: 24-Bit RGB
3. TFT Power Requirement: 5V/1.2A
4. Optical Features: Normally White, Transmissive, Anti-Glare, 500 cd/m2

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: $\pm 0.3\text{mm}$	DRAWING/PART NUMBER: NHD-5.0-HDMI-N-RTXL-CTU	REVISION: -
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION	DRAWN BY: Z.Palrang	APPROVED BY: Z.Palrang
	DRAWN DATE: 01/25/2022	APPROVED DATE: 01/25/2022
	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



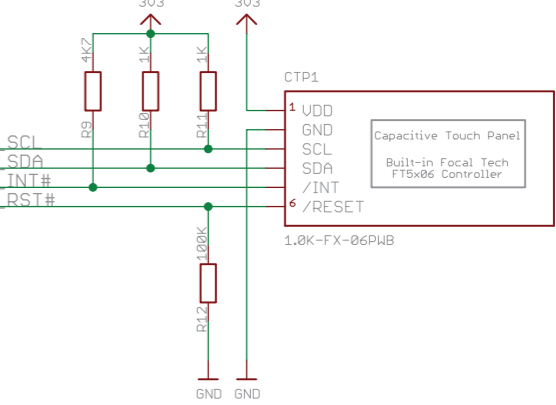
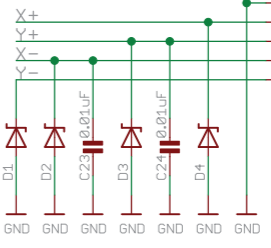
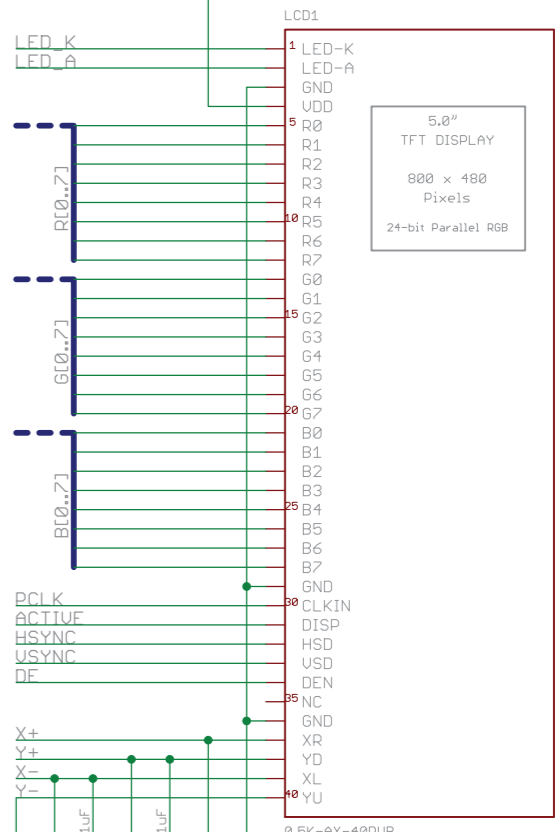
DVI/HDMI INPUT	
RXC+	93
RXC-	94
RX_DATA0_P	90
RX_DATA0_N	91
RX_DATA1_P	85
RX_DATA1_N	86
RX_DATA2_P	80
RX_DATA2_N	81

TFP401 CONFIG	
DF0	H=DSTN/L=TFT
#PD	H=Normal/L=PD
#PDD	H=Normal/L=PD
ST	H=High/L=Low DrvStr
PIXS	H=2Pix/L=1Pix Clk
#STAG	H=Normal/L=Staggered
OCC_INU	H=Rising/L=Falling

EVEN PIXEL OUTPUT	
B0	QE0
B1	QE1
B2	QE2
B3	QE3
B4	QE4
B5	QE5
B6	QE6
B7	QE7
G0	QE8
G1	QE9
G2	QE10
G3	QE11
G4	QE12
G5	QE13
G6	QE14
G7	QE15

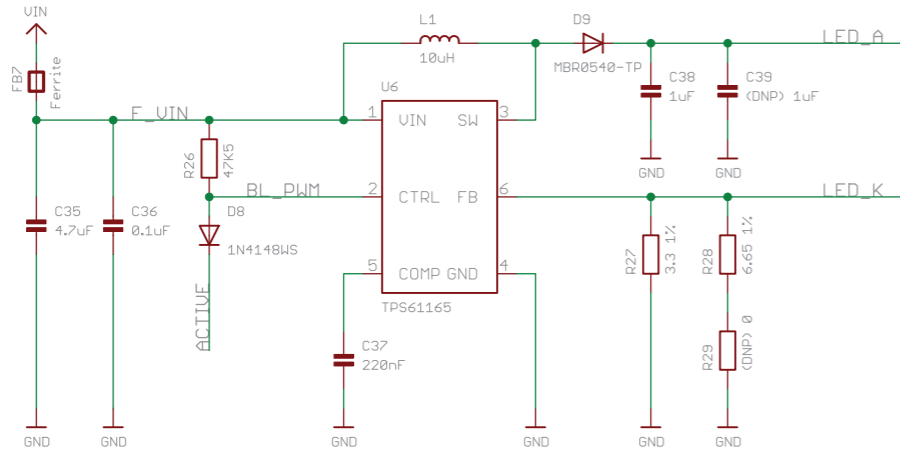
ODD PIXEL OUTPUT	
B0	Q00
B1	Q01
B2	Q02
B3	Q03
B4	Q04
B5	Q05
B6	Q06
B7	Q07
G0	Q08
G1	Q09
G2	Q10
G3	Q11
G4	Q12
G5	Q13
G6	Q14
G7	Q15

CLOCK AND CONTROL SIGNALS	
DE	46
ODCK	44
HSYNC	48
USYNC	47
SCDT	8
CTL3	42
CTL2	41
CTL1	40



SCHEMATIC/PART NUMBER: NHD-5.0-HDMI-N	
REVISION: 1.1	SIZE: A3
DRAWN BY: P. Bartek	CHECKED BY: M. LaVine
DRAWN DATE: 06/01/17	CHECKED DATE: 06/02/17
SHEET: 1 of 3	
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Backlight

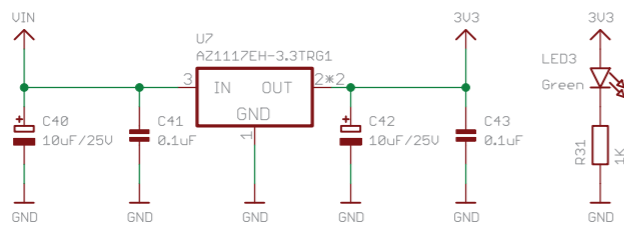


Backlight Configuration		
Current	R29	Display
(Default) ~60mA	Open	ATXL#
~90mA	Close	ASXU#, ASXN#

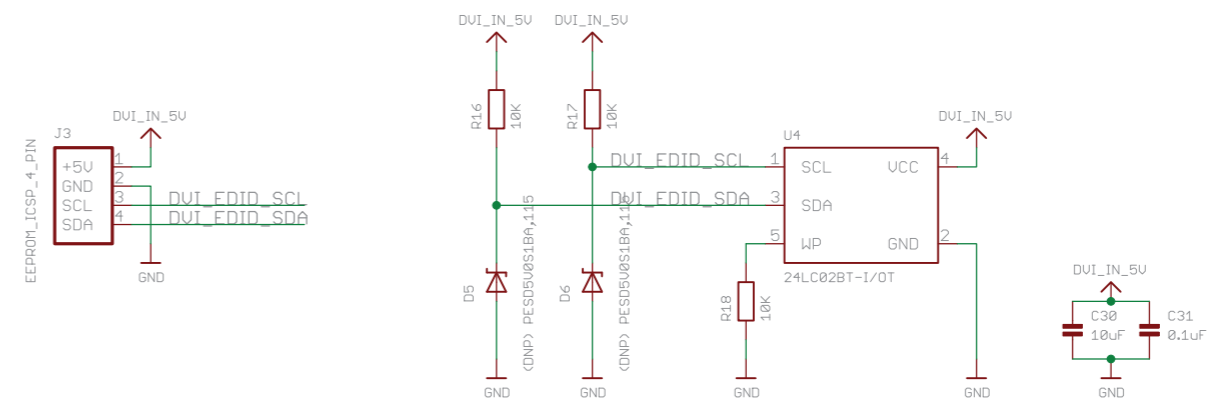
HDMI-A



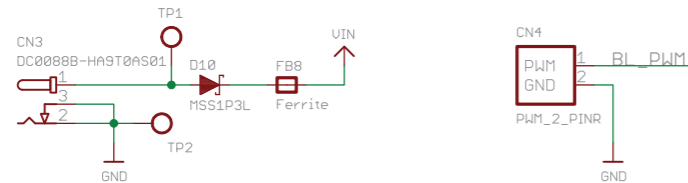
3.3V Regulator 800mA



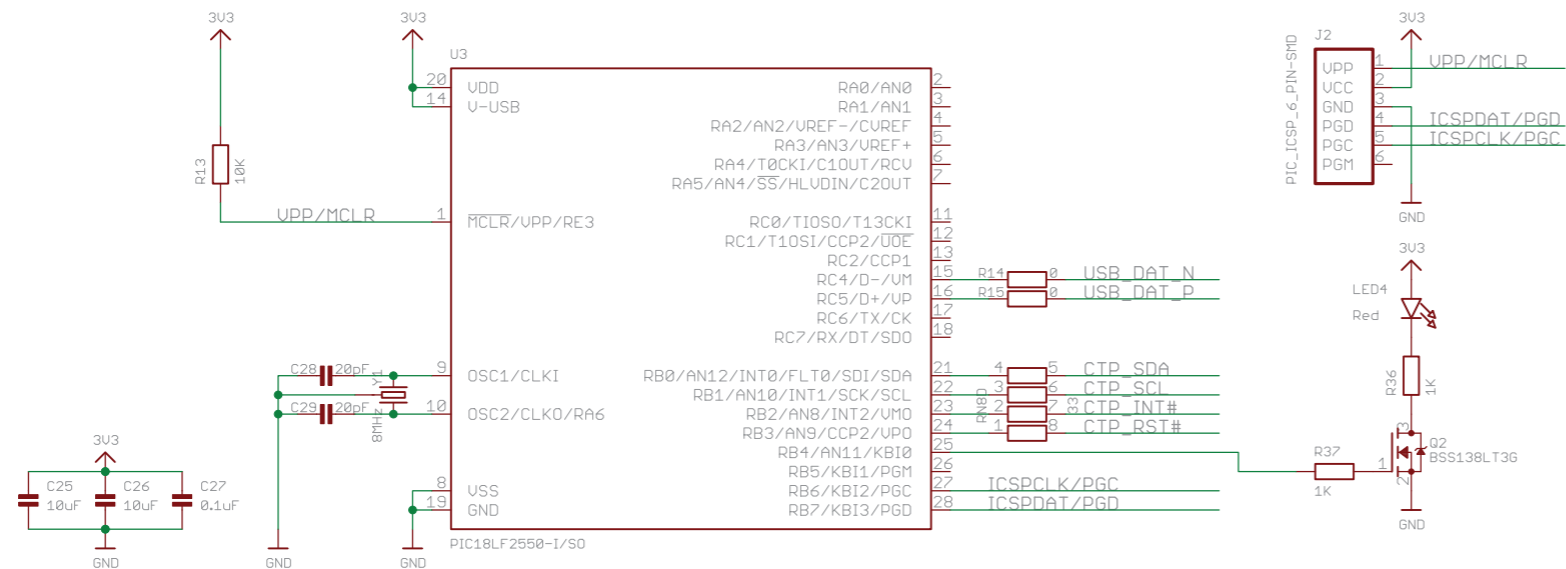
EEPROM



UIN / PWM

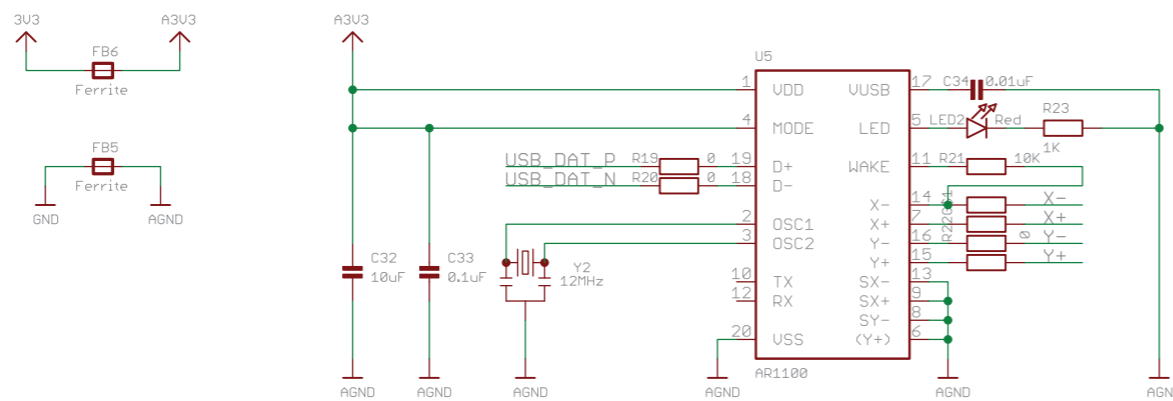


PIC18LF2550 / Capacitive Touch Screen Controller



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

Resistive Touch Screen Controller



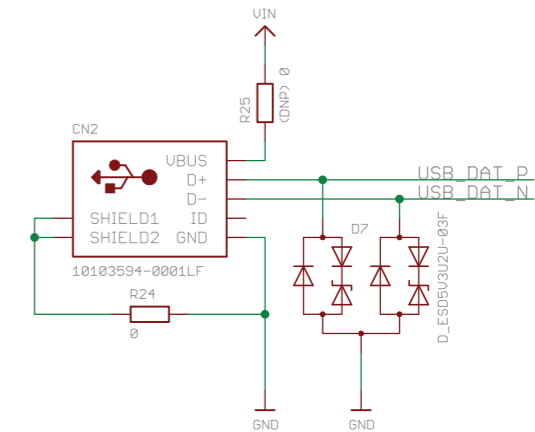
BOARD VERSIONS

RTU Version: (DNP) - C1, C20, C25, C26, C2, C22, C27, C28, C29, C39, CTP1, D1, D2, D3, D4, D5, D6, LED4, Q2, R4, R6, R13, R9, R10, R11, R36, R37, R12, R14, R15, R25, R29, R32, R33, R34, R35, RN8, U1, U3, Y1

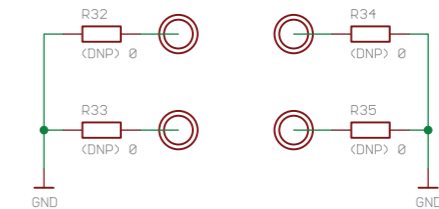
CTU Version: (DNP) - C1, C32, C2, C33, C23, C24, C34, C39, D1, D2, D3, D4, D5, D6, FB5, FB6, LED2, R4, R6, R21, R19, R20, R25, R29, R22, R23, R32, R33, R34, R35, U1, U5, Y2

Non-Touch Version: (DNP) - C1, C20, C25, C26, C32, C2, C22, C27, C33, C23, C24, C34, C28, C29, C39, CN2, CTP1, D1, D2, D3, D4, D5, D6, D7, FB5, FB6, LED2, LED4, Q2, R4, R6, R13, R21, R9, R10, R11, R23, R36, R37, R12, R14, R15, R19, R20, R24, R25, R29, R22, R32, R33, R34, R35, RN8, U1, U3, U5, Y1, Y2

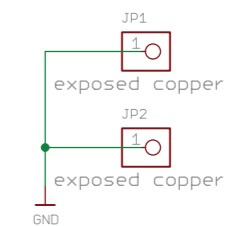
Micro-B USB



Mounting Holes 3.5mm Plated



Exposed Pads to Ground TFT Bezel



		REVISION: 1.1
SCHE MATT C /PART NUMBER: NHD-5.0-HDMI-N		SIZE: A3
DRAWN BY: P. Bartek	CHECKED BY: M. LaVine	SHEET : 3 of 3
DRAWN DATE: 06/01/17	CHECKED DATE: 06/02/17	
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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	-	7.0	V
Module Supply Current	I _{DD}	V _{DD} = 5V	-	1.2	1.5	A
		V _{DD} = 7V	-	0.9	1.2	A

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
NHD-5.0-HDMI-N-RTXL-CTU	NHD-5.0-800480TF-ATXL#-CTP	Premium MVA	500 cd/m ²	70° all angles	PCAP (USB-HID)

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.