

Product Specification

NHD-7.0CTP-CAPE-N

Color TFT Liquid Crystal Display Module + BeagleBone Black Cape

NHD-	Newhaven Display
7.0-	7.0" Diagonal
CTP-	Capacitive Touch Panel with Controller
CAPE-	BeagleBone Black Cape
N-	Display: NHD-7.0-800480EF-ASXN#-CTP, Sunlight Readable Type, Wide Temperature

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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>



Document Revision History

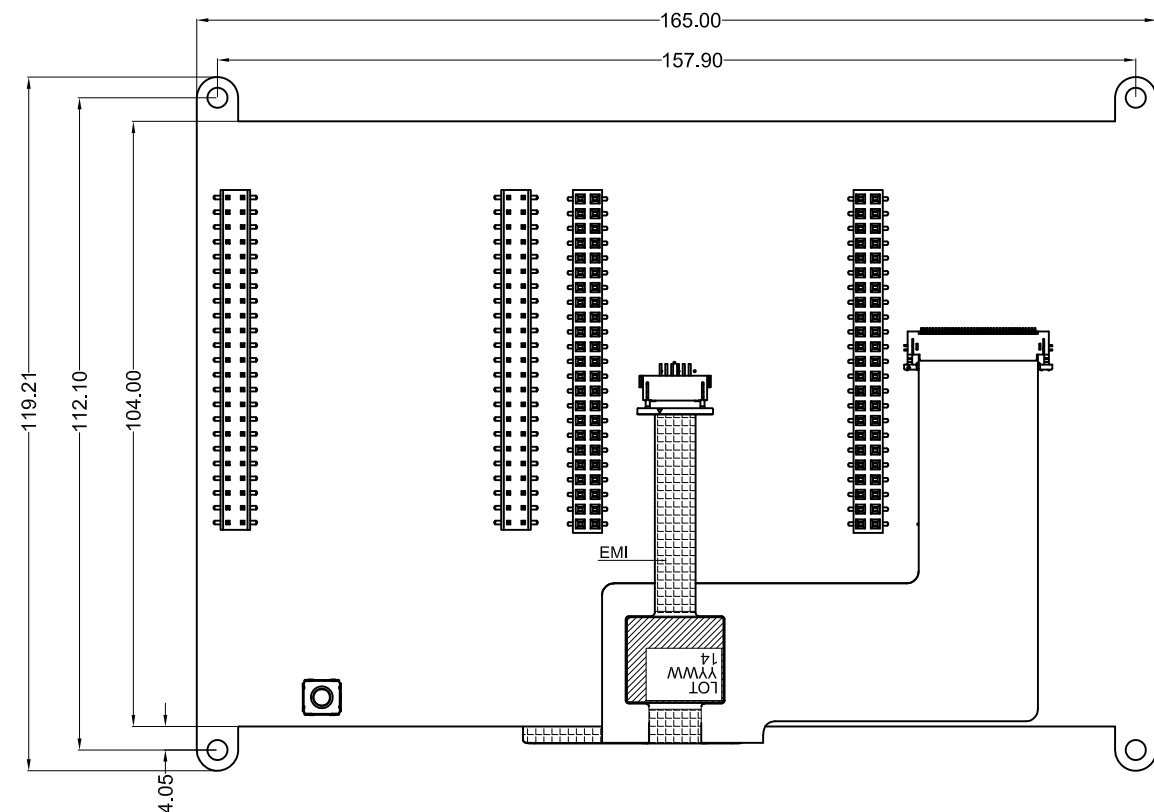
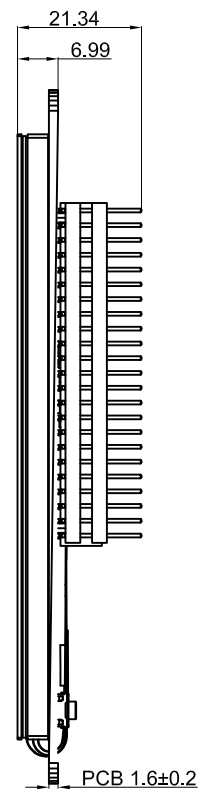
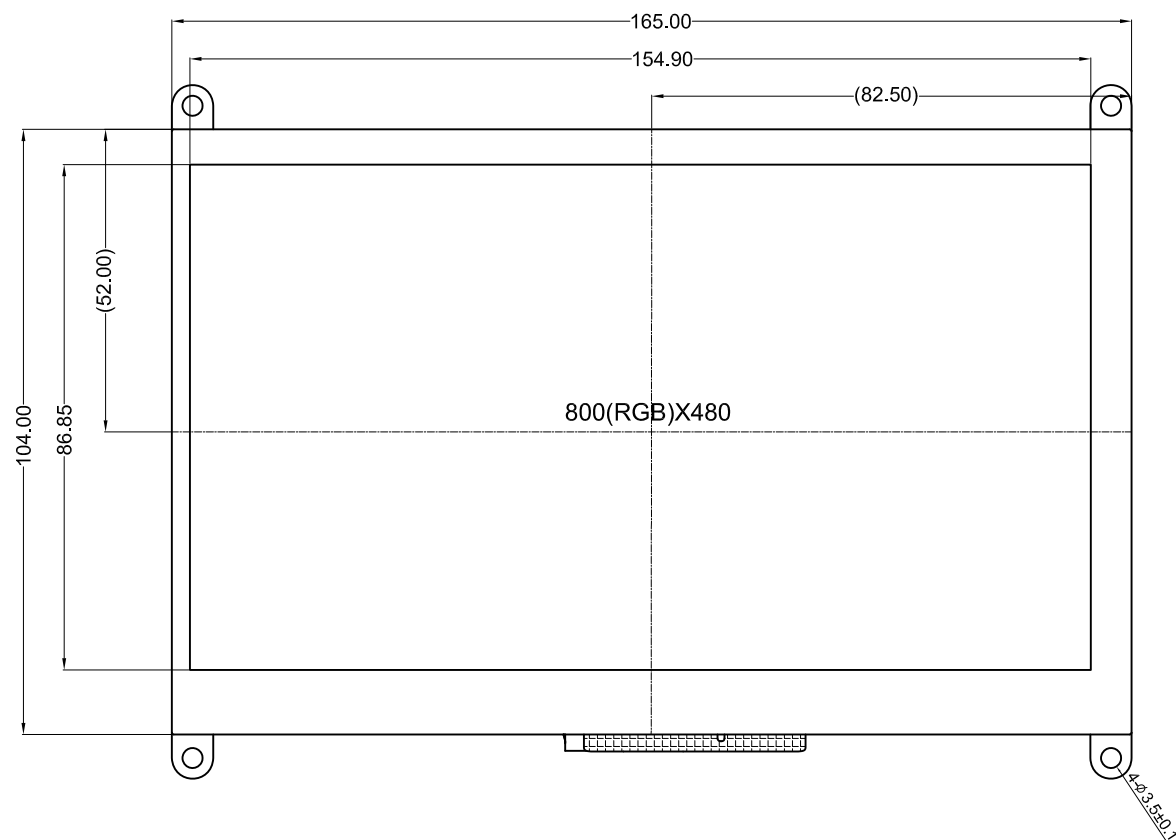
Revision	Date	Description	Changed By
0	09/22/2016	Initial Release	PB
1	11/22/2021	CTP IC Updated to FT5426	ZP
2	11/04/2022	Updated Mechanical Drawing and Quality Information	KL
3	11/14/2023	Mechanical Drawing Updated	KL
4	02/19/2024	Mechanical Drawing & Schematic Updated CTP Controller Upgraded from FT5426 to FT5426G	KL
5	08/18/2024	Firmware ID Updated on Mechanical Drawing	KL

User Guide:

Please download the User Guide at http://www.newhavendisplay.com/userguides/NHD-7.0CTP-CAPE_User_Guide.pdf



Mechanical Drawing



Product Description: 7.0" 800x480 BeagleBone Cape TFT w/ Capacitive Touch

1. Driver IC: EK9716B TFT, FT5426G CTP

2. Interface: 24-Bit RGB TFT, I²C CTP

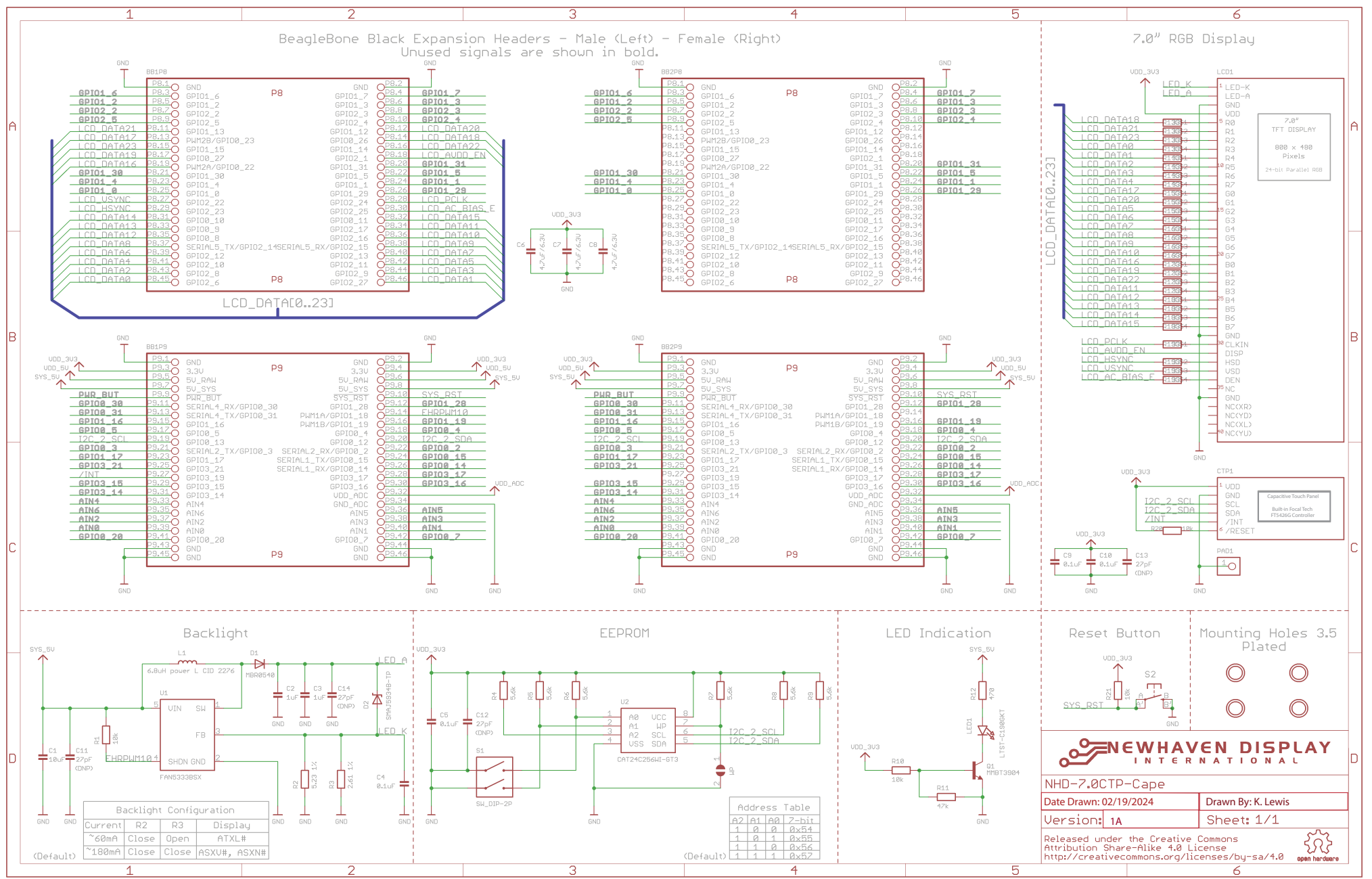
3. Power Requirement: 5.0V

4. Optical Features: Normally White, Transmissive, 830cd/m²

5. Key Features: EMI Shielded FPC

Standard Tolerance: (Unless otherwise specified) Linear: ±0.3mm	 NEWHAVEN DISPLAY INTERNATIONAL	
	Drawing/Part Number: NHD-7.0CTP-CAPE-N	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
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.		

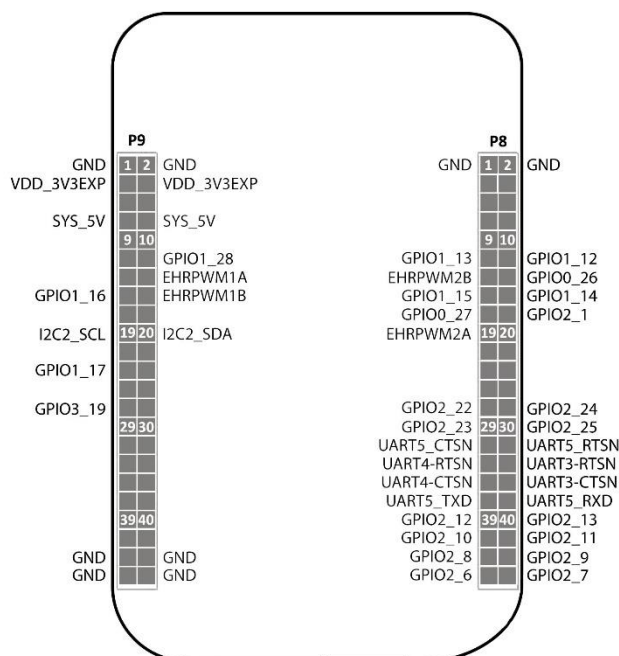
Schematic



Signal Usage

The BeagleBone Black NHD-7.0CTP-CAPE uses 40 signals including:

- VDD_3V3EXP
- SYS_5V
- DGND
- GPIO1_28
- EHRPWM1A
- GPIO1_16
- GPIO1_19
- I2C2_SCL
- I2C2_SDA
- GPIO1_17
- GPIO3_19
- LCD_VSYNC
- LCD_HSYNC
- LCD_PCLK
- LCD_DATA[0..23]
- LCD_AC_DATA_EN
- GPIO2_1



EEPROM

On the NHD-7.0CTP-CAPE there is an EEPROM which is used to configure the BeagleBone Black with the appropriate configuration in order to use the Cape.

EEPROM Details	
EEPROM Support	Yes
Board Name	nhd7cape
Version	00A0
Manufacturer	Newhaven Display
Part Number	NHD-7.0CTP-CAPE
Pins Used	40

Note:

Some EEPROM content refers to LCD7 00A3 which is made by CircuitCo and the nh7cape 00A0 which is made by Cembsoft. This is due to how the BBB identifies the CAPE and what drivers to apply to it.

All references to CircuitCo (LCD7) and Cembsoft (nh7cape) remain the property of CircuitCo and Cembsoft. They are not affiliated to Newhaven Display in any way.

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Display Information

TFT:

NHD-7.0-800480EF-ASXN#-CTP - Sunlight Readable 7.0" TFT, 800x480 Pixels, 24-bit Parallel RGB Interface, w/ Projected Capacitive Touch Panel.

Please download specification at <http://www.newhavendisplay.com/specs/NHD-7.0-800480EF-ASXN-CTP.pdf>

Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	T _{OP}	Absolute Max	-20	-	+70	°C
Storage Temperature Range	T _{ST}	Absolute Max	-30	-	+80	°C
Supply Voltage	V _{DD}	-	4.8	5.0	5.5	V
Supply Current	I _{DD}	V _{DD} = 5V	-	1	1.5	A
"H" level input	V _{IH}	-	2.2	-	V _{DD}	V
"L" level input	V _{IL}	-	GND	-	0.8	V

Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Optimal Viewing Angles	Top	φY+	CR ≥ 10	-	60	-	°
	Bottom	φY-		-	50	-	°
	Left	θX-		-	60	-	°
	Right	θX+		-	60	-	°
Contrast Ratio		CR	-	-	400	-	-
Luminance		L _V	I _{LED} = 180 mA	660	830	-	cd/m ²
Response Time		T _R + T _F	T _{OP} = 25°C	-	25	35	ms
Chromaticity	Red	X _R	-	0.526	0.576	0.626	-
		Y _R	-	0.290	0.340	0.390	-
	Green	X _G	-	0.278	0.328	0.378	-
		Y _G	-	0.575	0.625	0.675	-
	Blue	X _B	-	0.102	0.152	0.202	-
		Y _B	-	0.085	0.135	0.185	-
	White	X _W	-	0.245	0.295	0.345	-
		Y _W	-	0.514	0.366	0.614	-

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 , 1.5mm 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.