

Product Specification

NHD-7.0CTP-CAPE-P

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
P-	Display: NHD-7.0-800480AF-ASXP-CTP, IPS, Sunlight Readable, 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

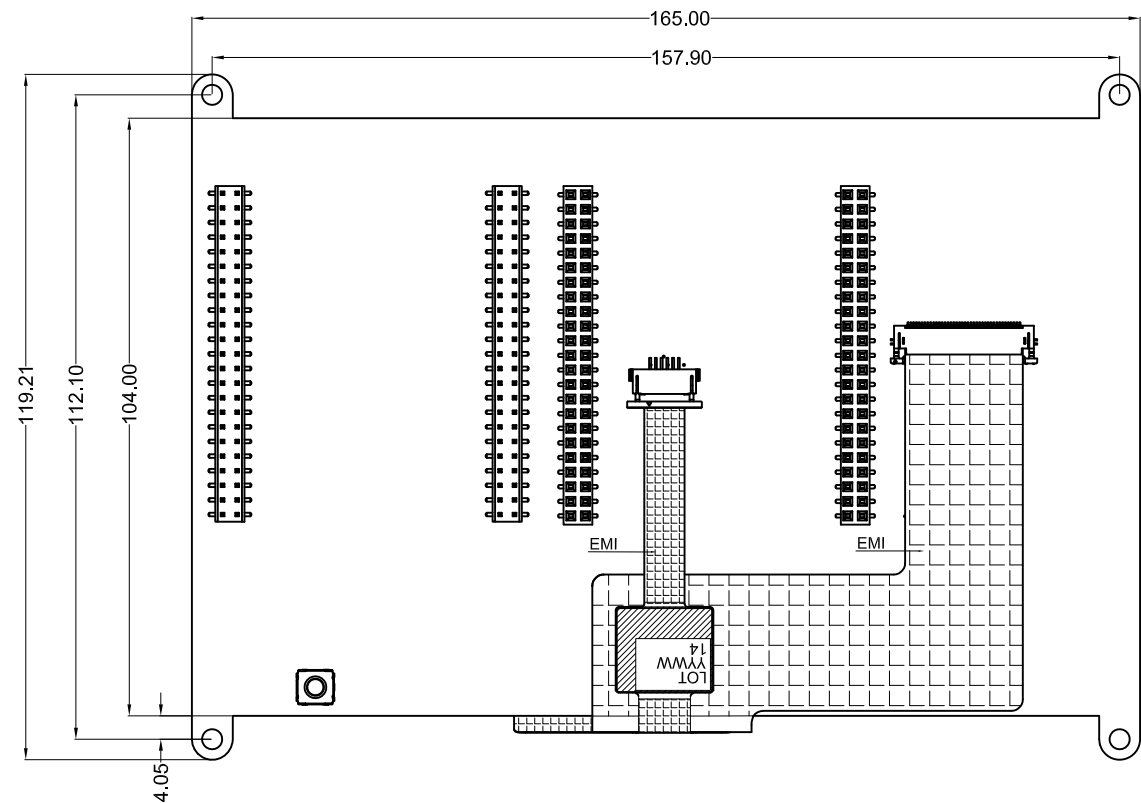
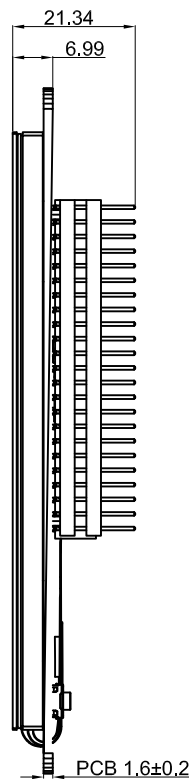
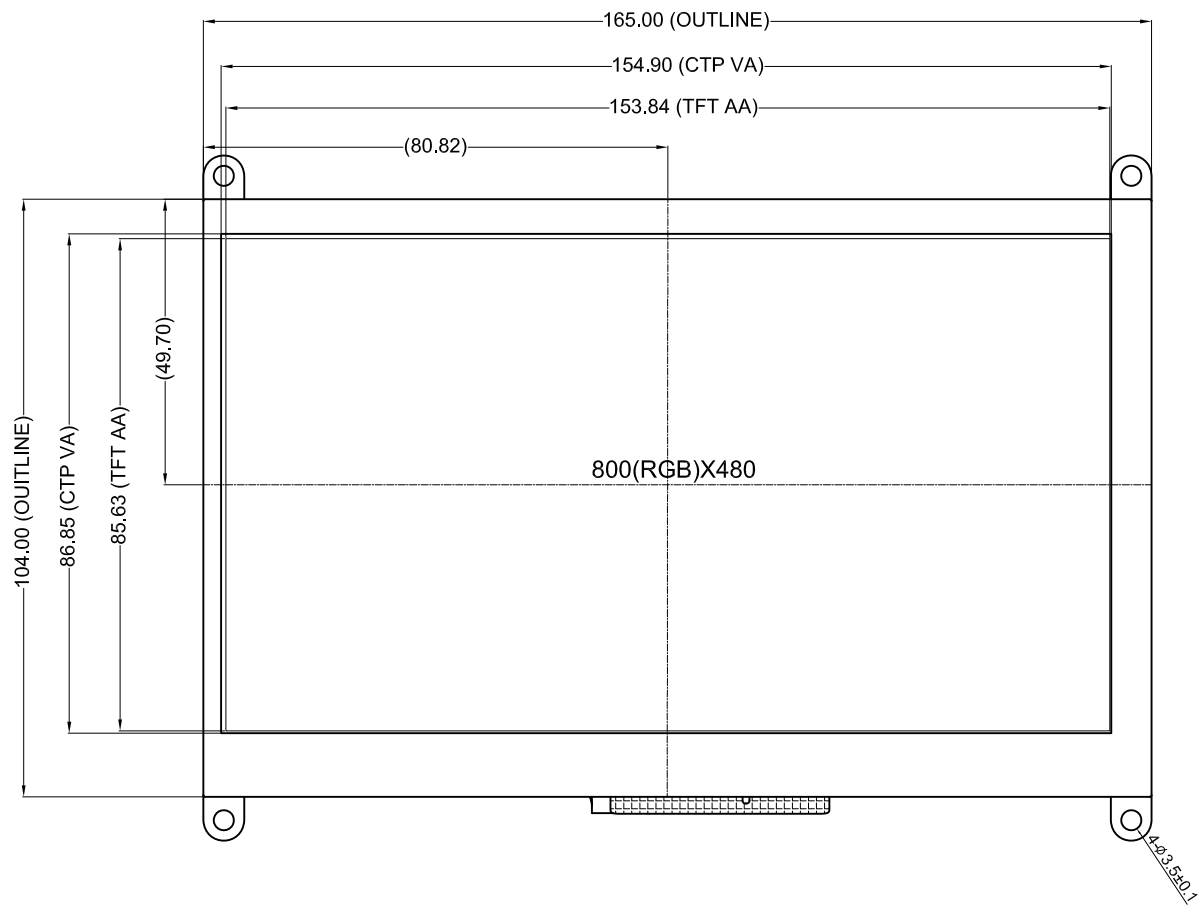
Revision	Date	Description	Changed By
-	08/26/2024	Initial Release	KL

User Guide:

Please download the User Guide at: https://newhavendisplay.com/content/userguide/NHD-7.0CTP-CAPE_User_Guide.pdf



Mechanical Drawing



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

1. Driver IC: ST7277 TFT, FT5426G CTP

2. Interface: 24-Bit RGB TFT, I²C CTP

3. Power Requirement: 5.0V

4. Optical Features: Normally Black, Transmissive, 850cd/m²

5. Key Features: EMI Shielded FPC

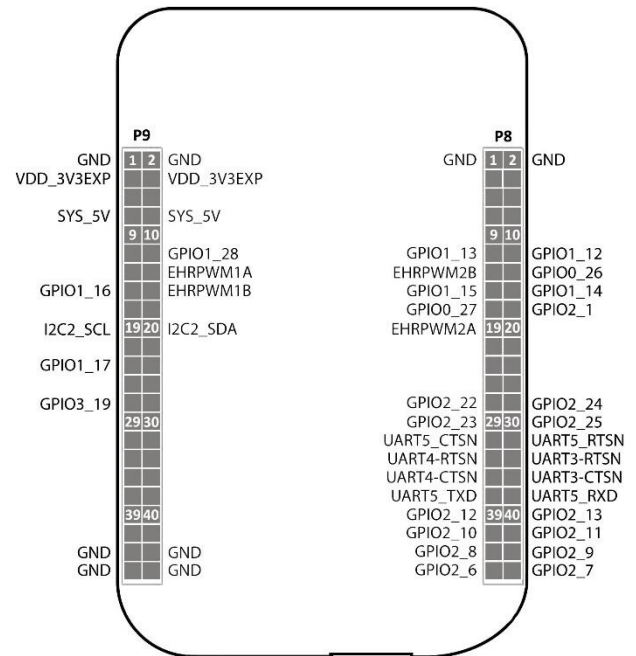
Standard Tolerance: (Unless otherwise specified) Linear: ±0.3mm	 NEWHAVEN DISPLAY INTERNATIONAL	
	Drawing/Part Number: NHD-7.0CTP-CAPE-P	Revision: -
Unless otherwise specified: • Dimensions are in Millimeters • Third Angle Projection 	Drawn By: K. Lewis	Approved By: K. Lewis
	Drawn Date: 08/26/2024	Approved Date: 08/26/2024
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-7.0-800480AF-ASXP-CTP

<https://newhavendisplay.com/content/specs/NHD-7.0-800480AF-ASXP.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	-	85	-	°
	Bottom	φY-		-	85	-	°
	Left	θX-		-	85	-	°
	Right	θX+		-	85	-	°
Contrast Ratio		CR	-	800	1000	-	-
Luminance		L _V	I _{LED} = 180 mA	680	850	-	cd/m ²
Response Time		T _R + T _F	T _{OP} = 25°C	-	25	-	ms
Chromaticity	Red	X _R	-	0.569	0.619	0.669	-
		Y _R	-	0.289	0.339	0.389	-
	Green	X _G	-	0.284	0.334	0.384	-
		Y _G	-	0.535	0.585	0.635	-
	Blue	X _B	-	0.077	0.127	0.177	-
		Y _B	-	0.078	0.128	0.178	-
	White	X _W	-	0.246	0.296	0.346	-
		Y _W	-	0.286	0.336	0.36	-

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.	+50°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,60min -> 70°C,60 min =20 cycles	
Vibration test	Endurance test applying vibration to simulate transportation and use.	Frequency range:10Hz~50Hz Acceleration of gravity:5G X, Y, Z 30 min for each direction	3
Static electricity test	Endurance test applying electric static discharge.	Air: ±8kV ; Contact: ±4kV For 5 times each.	

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.