

# NHD-5.7-320240WFB-ETXI#-1

## TFT (Thin-Film-Transistor) Color Liquid Crystal Display Module

NHD-	Newhaven Display
5.7-	5.7" Diagonal
320240-	320xRGBx240 pixels
WFB-	Model
E-	Built-in driver + Controller (16-bit)
T-	White LED backlight
X-	TFT
I-	6:00 view, Wide Temp
#-1	<b>RoHS Compliant</b>

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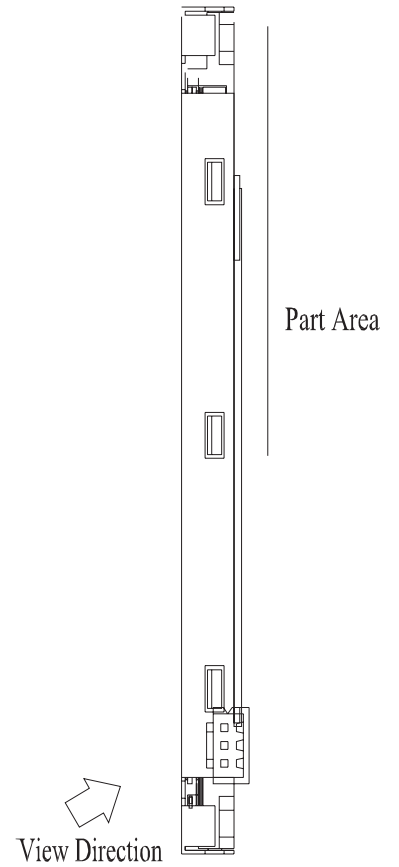
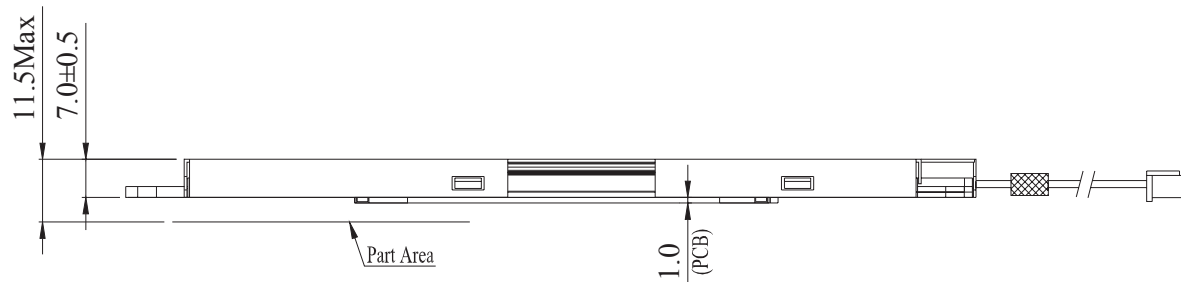
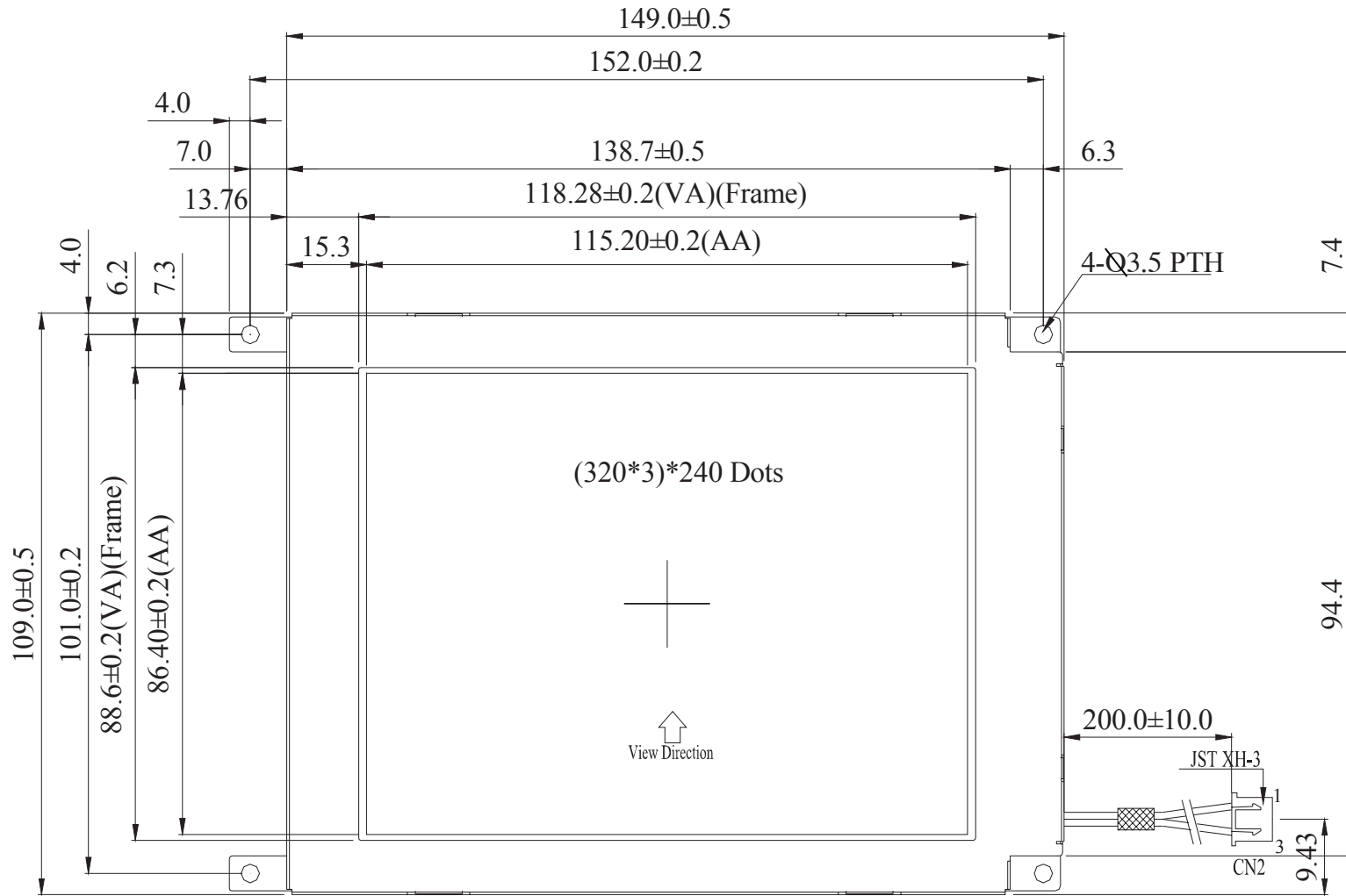
## Document Revision History

Revision	Date	Description	Changed by
0	7/8/2009	Initial Release	CL
1	7/29/2009	MECHANICAL DRAWING UPDATE	CL
2	11/4/2009	Quality Information Update	BE
3	3/19/2010	Pin description updated	BE
4	5/24/2011	Electrical characteristics updated	AK
5	1/6/2012	Pixel data format updated	AK

## Functions and Features

- 320xRGBx240 resolution
- LED backlight
- 16-bit parallel interface
- SSD1963 Controller

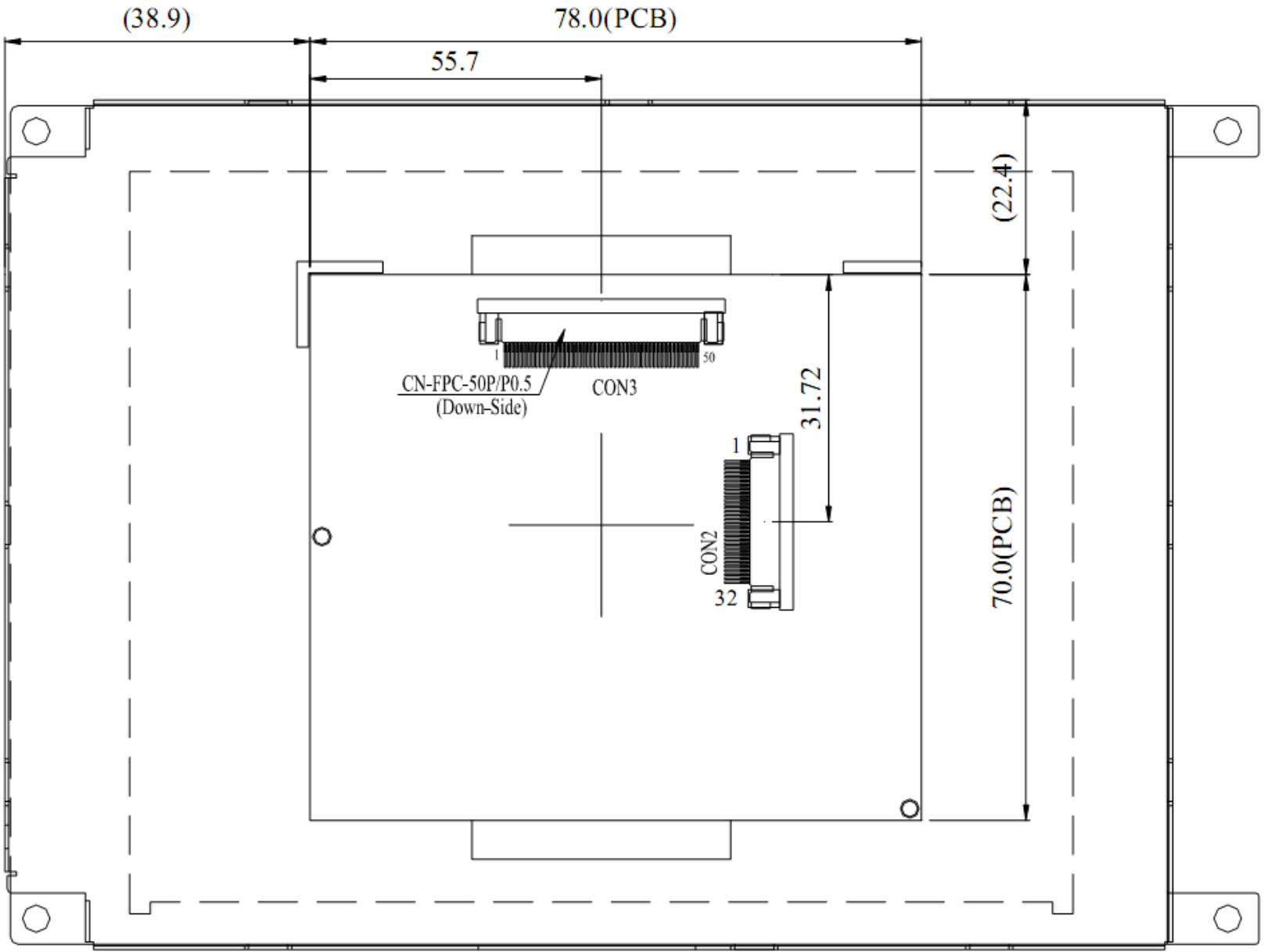
# Mechanical Drawing



Newhaven Display

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Mechanical Drawing NHD-5.7-320240WFB-ETXI#--1



## Pin Description

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	Ground
2	VCC	Power Supply	Power supply for LCD and logic (3.3V)
3	NC	-	No Connect
4	D/C#	MPU	Register Select signal – : 1=Data , 0=Command
5	WR#	MPU	Active LOW Write signal, 8080 MPU interface
6	RD#	MPU	Active LOW Read signal, 8080 MPU interface
7-22	[DB0-DB15]	MPU	Bi-directional data bus lines
23	NC	-	No Connect
24	NC	-	No Connect
25	CS#	MPU	Active LOW Chip Select signal
26	RES#	MPU	Active LOW Reset signal
27	R/L	-	Scan direction 1: Right (Tied internally)
28	U/D	-	Scan direction 0: Down (Tied internally)
29-32	NC	-	No Connect

**Recommended LCD connector:** 0.5mm pitch 32-Conductor FFC. Hirose p/n FH12A-32S-0.5SH(55)

**Backlight connector:** JST p/n: XHP-3 **Mates with:** JST p/n: S3B-XH-SM3-TB

# Controller Information

Built-in SSD1963 controller.

Please download specification at [http://www.newhavendisplay.com/app\\_notes/SSD1963.pdf](http://www.newhavendisplay.com/app_notes/SSD1963.pdf)

## 8080 Mode Interface:

The 8080 mode MPU interface consists of CS#, D/C, RD#, WR#, and DB[15:0]. This interface uses WR# to define a write cycle and RD# to define a read cycle. If the WR# goes LOW when the CS# signal is LOW, the data or command will be latched into the system at the rising edge of WR#. Similarly, the read cycle will start when RD# goes LOW and end at the rising edge of RD#. See the SSD1963 datasheet for detailed timing diagrams.

## Command Instructions:

See the SSD1963 datasheet for the Instruction Table and Command Descriptions.

## Pixel Data Format: (2-options for 16-bit transfer)

Interface	Cycle	D[15]	D[14]	D[13]	D[12]	D[11]	D[10]	D[9]	D[8]	D[7]	D[6]	D[5]	D[4]	D[3]	D[2]	D[1]	D[0]
16 bits (565 format)	1 <sup>st</sup>	R5	R4	R3	R2	R1	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1
16 bits	1 <sup>st</sup>	R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0
	2 <sup>nd</sup>	B7	B6	B5	B4	B3	B2	B1	B0	R7	R6	R5	R4	R3	R2	R1	R0
	3 <sup>rd</sup>	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0

## Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-20	-	+70	°C
Storage Temperature Range	Tst	Absolute Max	-30	-	+80	°C
Supply Voltage	VCC		3.0	3.3	3.6	V
Supply Current	ICC	VCC=3.3		121		mA
Backlight Supply Current	IB			140	210	mA
Backlight Supply Voltage	VBL		9.0	9.4	9.8	V
Backlight Lifetime			10,000			Hr

**Backlight is 7 Parallel groups of 3-Serial LEDs each.**

## Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle – Top		Cr ≥ 10	40	50		°
Viewing Angle – Bottom		Cr ≥ 10	45	55		°
Viewing Angle – Left		Cr ≥ 10	50	60		°
Viewing Angle – Right		Cr ≥ 10	50	60		°
Contrast Ratio	Cr		300	400		
Luminance	YL		200	250		cd/m <sup>2</sup>
Response Time (rise)	Tr	-	-	10		ms
Response Time (fall)	Tr	-	-	15		ms

## 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 , 240hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 240hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C 240hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 240hrs	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 , 240hrs	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.

## Precautions for using LCDs/LCMs

See Precautions at [www.newhavendisplay.com/specs/precautions.pdf](http://www.newhavendisplay.com/specs/precautions.pdf)

## Warranty Information and Terms & Conditions

[http://www.newhavendisplay.com/index.php?main\\_page=terms](http://www.newhavendisplay.com/index.php?main_page=terms)