

NHD-5.7-320240WFB-ETXI#-T-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 + 16-Bit Controller
T-	White LED Backlight
X-	TFT
I-	12:00 Optimal View, Wide Temp.
#-1	RoHS Compliant
T-	Touch Panel

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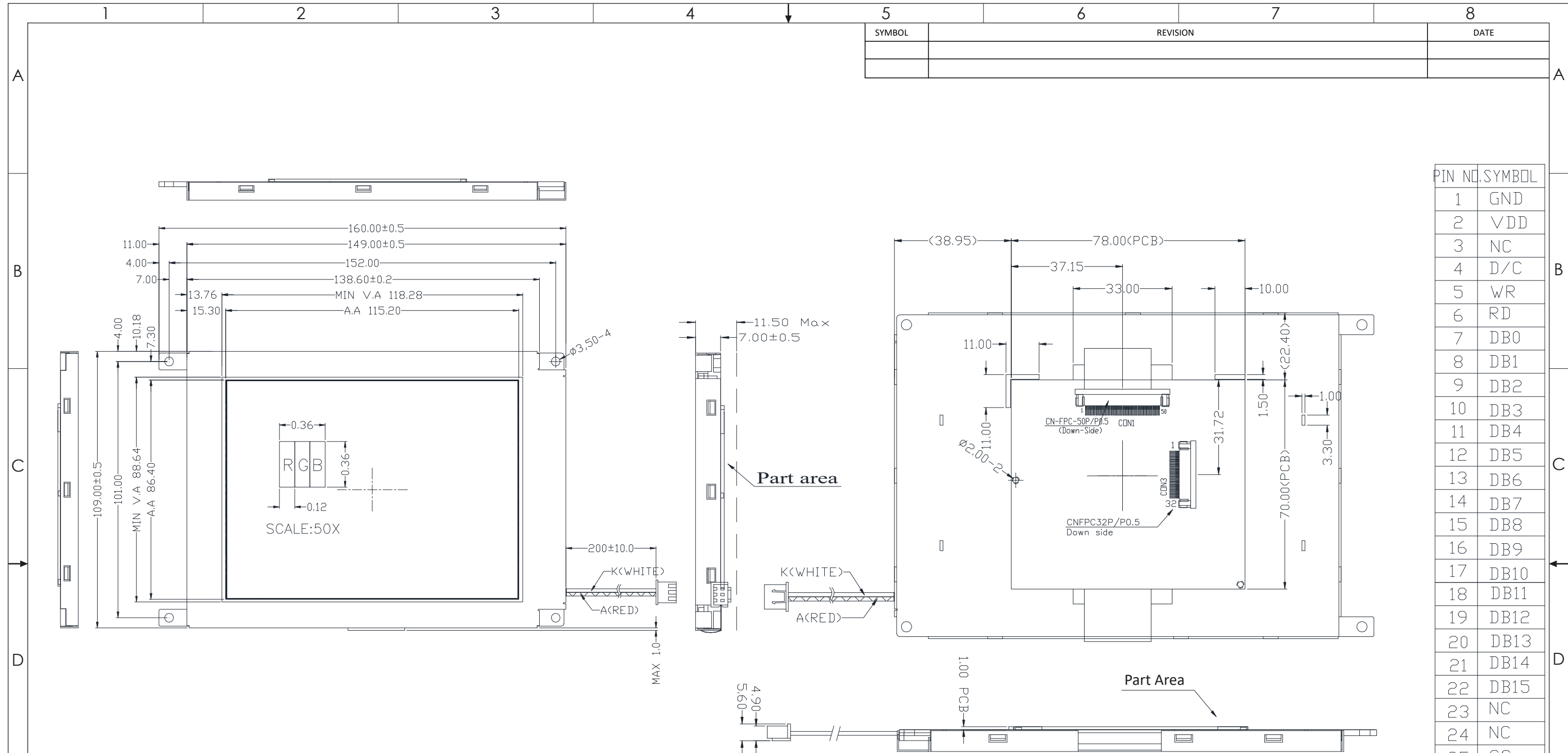
Document Revision History

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	3/26/2010	Pin Description Update	MP
4	5/24/2011	Electrical characteristics updated	AK
5	1/6/2012	Pixel data format updated	AK
6	5/15/2012	Touch panel pin description updated	AK
7	7/17/2012	Mechanical drawing updated	AK
8	1/10/17	Mech. Drawing, Electrical and Optical Characteristics Updated	TM
9	2/21/17	Mechanical and Electrical Characteristics Updated	TM
10	4/19/17	Mechanical Drawing and Optical Characteristics Updated	TM
11	5/30/19	Recommended Connector, Electrical & Optical Characteristics Updated	SB

Functions and Features

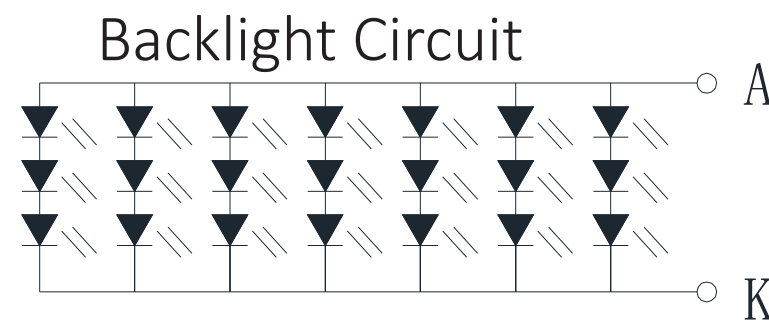
- 320xRGBx240 resolution
- LED backlight
- 16-bit parallel interface
- SSD1963 Controller

5		6		7		8	
SYMBOL		REVISION				DATE	

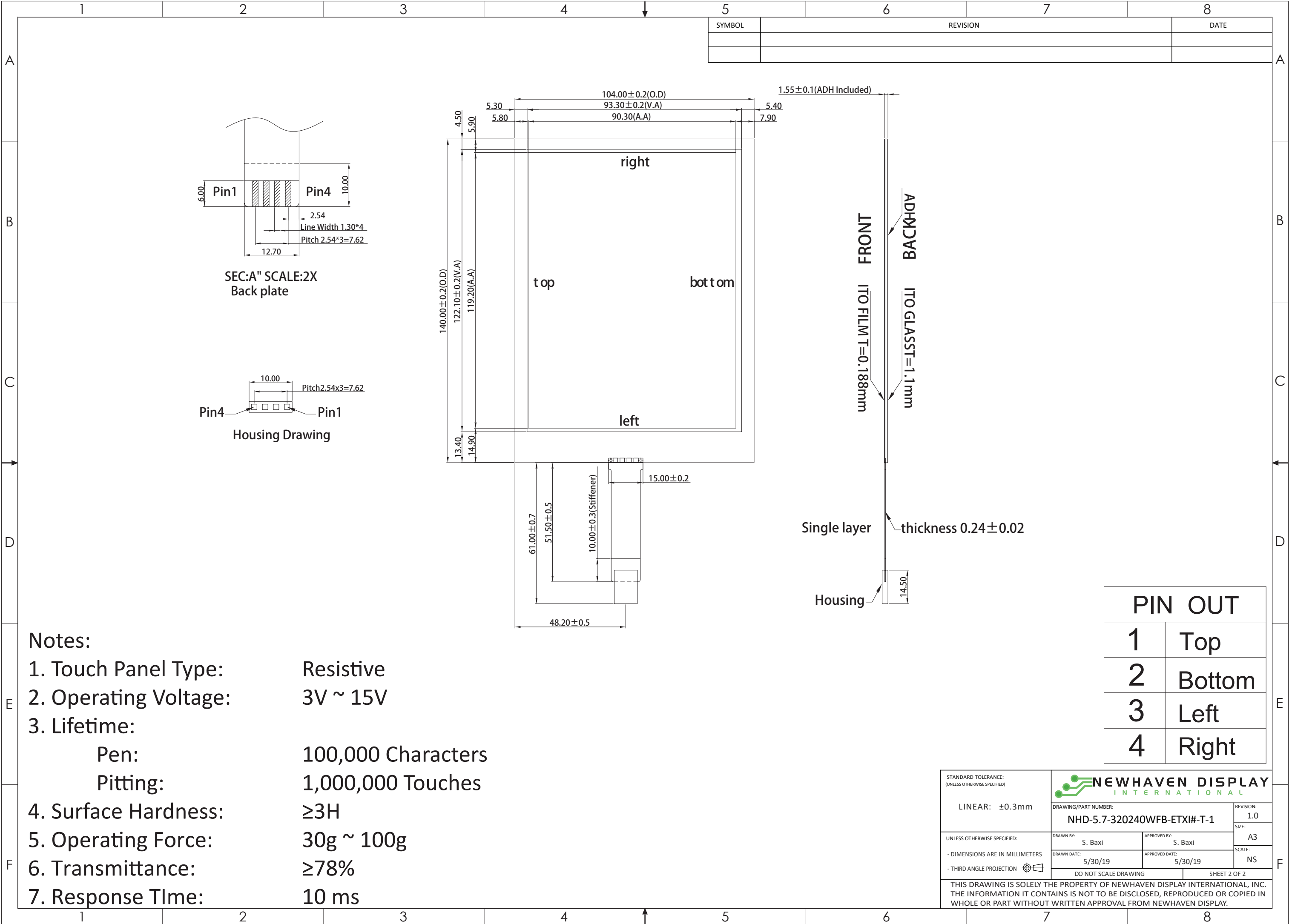


Notes:

- | | |
|------------------|------------------------------------|
| 1. Voltage: | 3.3V VDD |
| 2. Backlight: | 140mA @ 9.9V, White LED |
| 3. Display Type: | 5.7" TFT, 320x240 Pixels |
| 4. Display Mode: | Transmissive, Normally White |
| 5. Driver IC: | SSD1963, 16-Bit Parallel Interface |
| 6. Interface: | 8-bit Parallel MCU |
| 7. Optimal View: | 12:00 |
| 8. Luminance: | 390 cd/m ² (Typical) |



STANDARD TOLERANCE: (UNLESS OTHERWISE SPECIFIED)	 NEWHAVEN DISPLAY INTERNATIONAL		
LINEAR: ±0.3mm	DRAWING/PART NUMBER: NHD-5.7-320240WFB-ETXI#-T-1		REVISION: 1.0
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION 	DRAWN BY: S. Baxi	APPROVED BY: S. Baxi	SIZE: A3
	DRAWN DATE: 5/30/19	APPROVED DATE: 5/30/19	SCALE: NS
	DO NOT SCALE DRAWING		SHEET 1 OF 2
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Notes:

- | | |
|-----------------------|--------------------|
| 1. Touch Panel Type: | Resistive |
| 2. Operating Voltage: | 3V ~ 15V |
| 3. Lifetime: | |
| Pen: | 100,000 Characters |
| Pitting: | 1,000,000 Touches |
| 4. Surface Hardness: | ≥3H |
| 5. Operating Force: | 30g ~ 100g |
| 6. Transmittance: | ≥78% |
| 7. Response Time: | 10 ms |

PIN OUT	
1	Top
2	Bottom
3	Left
4	Right

STANDARD TOLERANCE: (UNLESS OTHERWISE SPECIFIED)	NEWHAVEN DISPLAY INTERNATIONAL	
	DRAWING/PART NUMBER: NHD-5.7-320240WFB-ETXI#-T-1	REVISION: 1.0
UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION	DRAWN BY: S. Baxi	APPROVED BY: S. Baxi
	DRAWN DATE: 5/30/19	APPROVED DATE: 5/30/19
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Pin Description

CON2:

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. Molex 015166-0348

Backlight:

Pin No.	Symbol	External Connection	Function Description
1	V _{DD}	Power Supply	Red, LED Anode (140mA @ 9.9V)
2	NC	-	No Connect
3	GND	Power Supply	White, LED Cathode (Ground)

Backlight connector: JST p/n: XHP-3 **Mates with:** JST p/n: B 3B-XH-A

Touch Panel:

Pin No.	Symbol	External Connection	Function Description
1	Y+	Touch Controller	TOP
2	Y-	Touch Controller	BOTTOM
3	X+	Touch Controller	LEFT
4	X-	Touch Controller	RIGHT

Recommended Touch panel connector: 2.54mm pitch Standard Pin Headers

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}	-	3.0	3.3	3.6	V
Supply Current	I _{DD}	V _{DD} = 3.3V	105	210	315	mA
"H" Level input	V _{IH}	-	0.8*V _{DD}	-	V _{DD}	V
"L" Level input	V _{IL}	-	GND	-	0.2*V _{DD}	V
Backlight Supply Current	I _{LED}	-	-	140	210	mA
Backlight Supply Voltage	V _{LED}	I _{LED} = 140mA T _{OP} = 25°C	9.0	9.9	10.5	V
Backlight Lifetime*	-		-	50,000	-	Hrs.

*Backlight lifetime is rated as Hours until **half-brightness**, under normal operating conditions. The LED of the backlight is driven by current drain; drive voltage is for reference only. Drive voltage must be selected to ensure backlight current drain is below MAX level stated.

Optical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Optimal Viewing Angles	Top	φY+	CR ≥ 10	-	70	-	°
	Bottom	φY-		-	50	-	°
	Left	θX-		-	70	-	°
	Right	θX+		-	70	-	°
Contrast Ratio		CR	-	150	250	-	-
Luminance		L _V	I _{LED} = 140 mA	310	390	-	cd/m ²
Response Time	Rise	T _R	T _{OP} = 25°C	-	15	30	ms
	Fall	T _F		-	35	50	ms

Touch Panel Characteristics

Item	Min.	Typ.	Max.	Unit
Linearity	-	-	1.5	%
Circuit Resistance – X-Axis	150	-	650	Ω
Circuit Resistance – Y-Axis	350	-	1000	Ω
Insulation Resistance	20	-	-	MΩ
Operating Voltage	3	-	15	V
Response Time	-	-	10	ms
Transmittance	78	-	-	%
Activation Force	30	-	100	g
Pen Writing Durability	100,000	-	-	Characters
Pitting Durability	1,000,000	-	-	Touches
Surface Hardness	3	-	-	H

Controller Information

Built-in SSD1963 Controller.

Please download specification at 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[7:0]. 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:

Interface	Cycle	D[7]	D[6]	D[5]	D[4]	D[3]	D[2]	D[1]	D[0]
8 bits	1 st	R7	R6	R5	R4	R3	R2	R1	R0
	2 nd	G7	G6	G5	G4	G3	G2	G1	G0
	3 rd	B7	B6	B5	B4	B3	B2	B1	B0

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 , 200hrs	2
Low Temperature storage	Endurance test applying the low storage temperature for a long time.	-30°C , 200hrs	1,2
High Temperature Operation	Endurance test applying the electric stress (voltage & current) and the high thermal stress for a long time.	+70°C , 200hrs	2
Low Temperature Operation	Endurance test applying the electric stress (voltage & current) and the low thermal stress for a long time.	-20°C , 200hrs	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 For 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.

Precautions for using LCDs/LCMs

See Precautions at www.newhavendisplay.com/specs/precautions.pdf

Warranty Information and Terms & Conditions

http://www.newhavendisplay.com/index.php?main_page=terms

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