

NHD-5.7-320240WFB-CTXI#-T-1

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

NHD-	Newhaven Display
5.7-	5.7" Diagonal
320240-	320xRGBx240 Pixels
WFB-	Model
C-	Built-in Driver + Controller
T-	White LED Backlight
X-	TFT
I-	12:00 Optimal View, Wide Temp
#-	RoHS Compliant
T-1	Touch Panel

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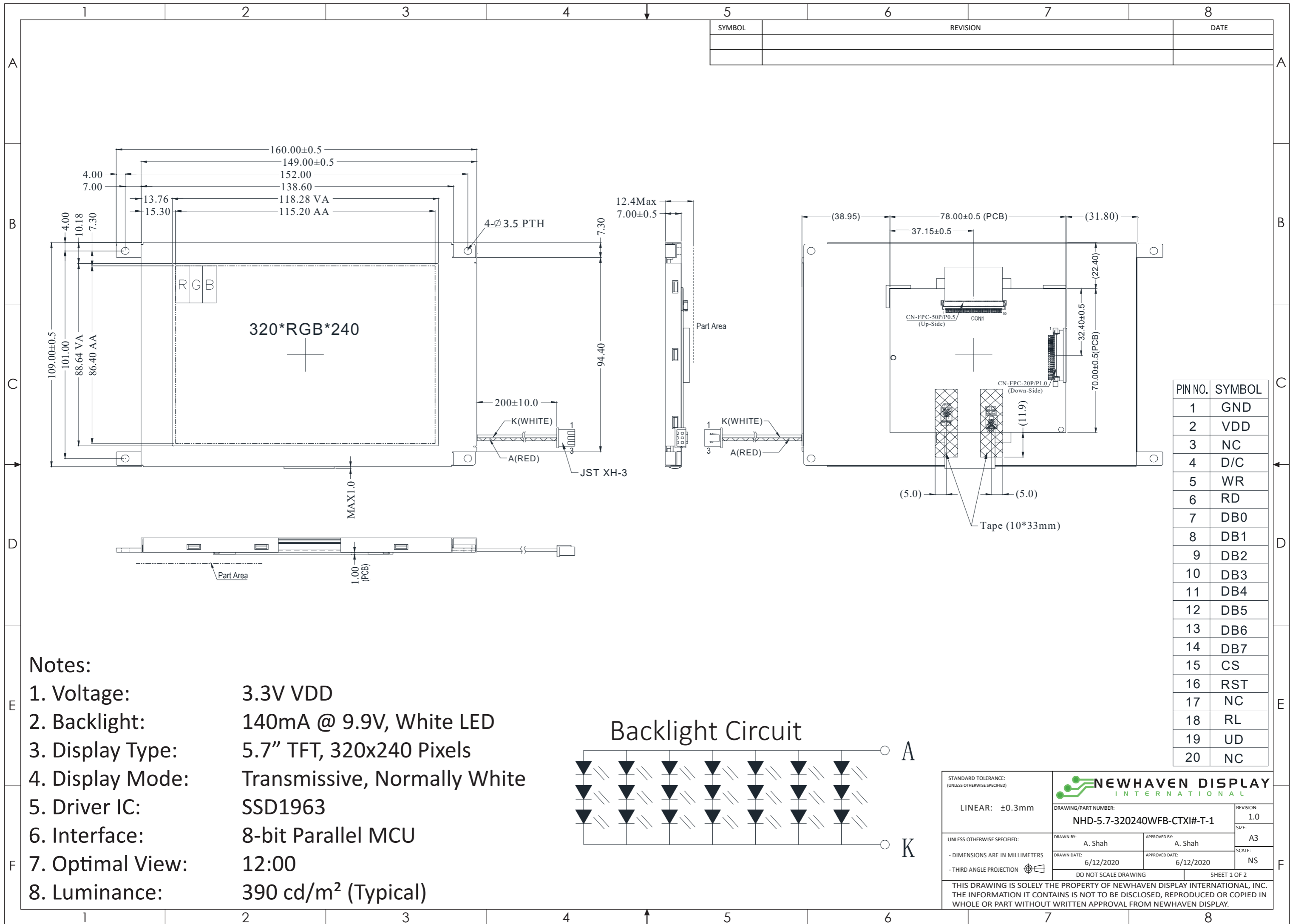
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Document Revision History

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	3/26/2009	Pin Description Update	MP
4	4/16/2010	Updated the Recommended LCD Connector	MC
5	12/1/2010	Mechanical Drawing Update	MC
6	2/22/2011	Symbols for Pin/electrical updated	BE
7	5/24/2011	Electrical characteristics updated	AK
8	1/6/2012	Pixel data format updated	AK
9	6/4/2012	Mechanical drawing / Optical characteristics updated	AK
10	6/8/2012	Optical characteristics updated	TJ
11	12/2/16	Updated Mech. Drawing, Electrical and Optical Characteristics	TM
12	4/10/17	Optical Characteristics Updated	TM
13	5/29/19	Recommended Connector, Electrical & Optical Characteristics Updated	SB
14	3/12/20	Mechanical Drawing Updated	SB
15	6/12/20	Updated 2D Mechanical Drawing, Quality Information	AS

Functions and Features

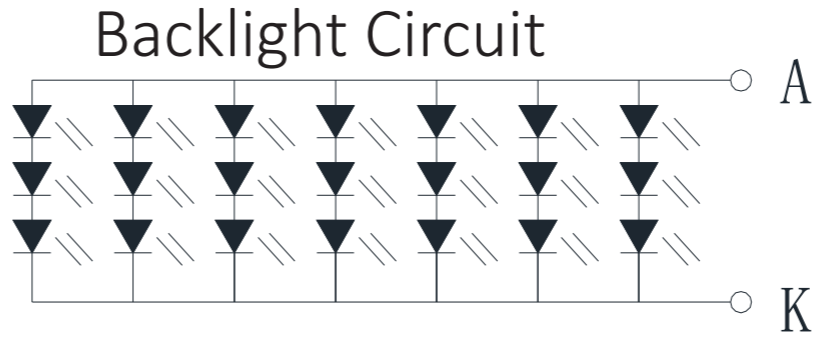
- 320xRGBx240 resolution
- LED backlight
- 8-bit parallel interface
- SSD1963 Controller



SYMBOL	REVISION	DATE

PIN NO.	SYMBOL
1	GND
2	VDD
3	NC
4	D/C
5	WR
6	RD
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	CS
16	RST
17	NC
18	RL
19	UD
20	NC

- Notes:**
- Voltage: 3.3V VDD
 - Backlight: 140mA @ 9.9V, White LED
 - Display Type: 5.7" TFT, 320x240 Pixels
 - Display Mode: Transmissive, Normally White
 - Driver IC: SSD1963
 - Interface: 8-bit Parallel MCU
 - Optimal View: 12:00
 - Luminance: 390 cd/m² (Typical)



STANDARD TOLERANCE: (UNLESS OTHERWISE SPECIFIED)

LINEAR: ±0.3mm

UNLESS OTHERWISE SPECIFIED: - DIMENSIONS ARE IN MILLIMETERS - THIRD ANGLE PROJECTION

NEWHAVEN DISPLAY INTERNATIONAL

DRAWING/PART NUMBER: NHD-5.7-320240WFB-CTXI#-T-1

REVISION: 1.0

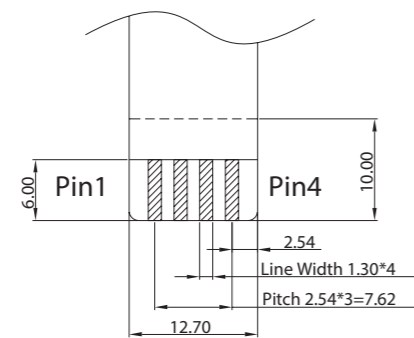
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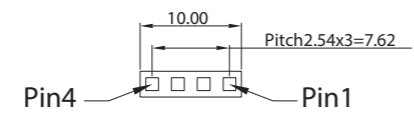
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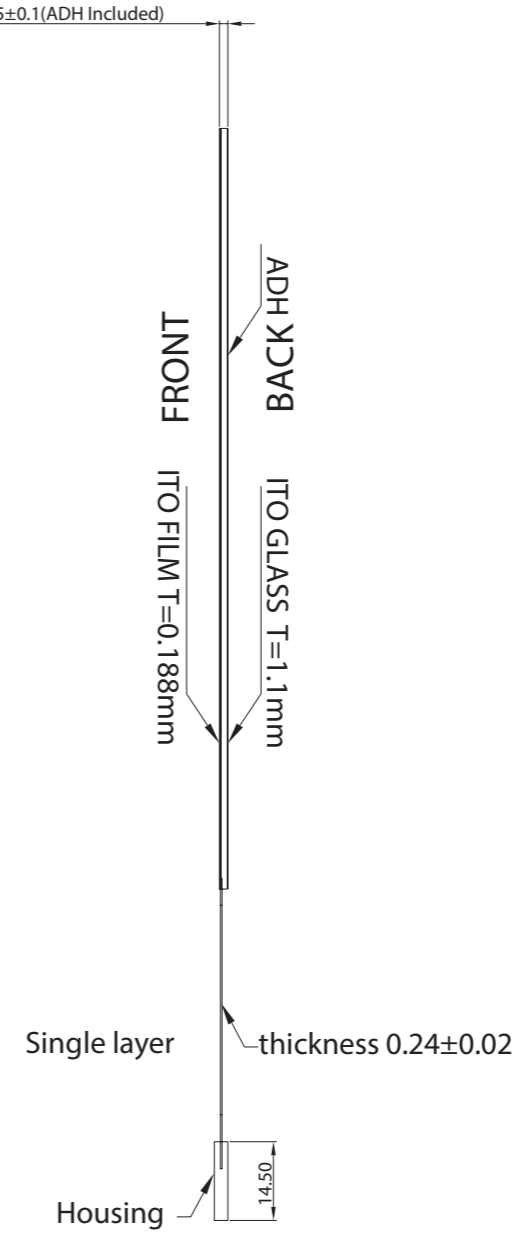
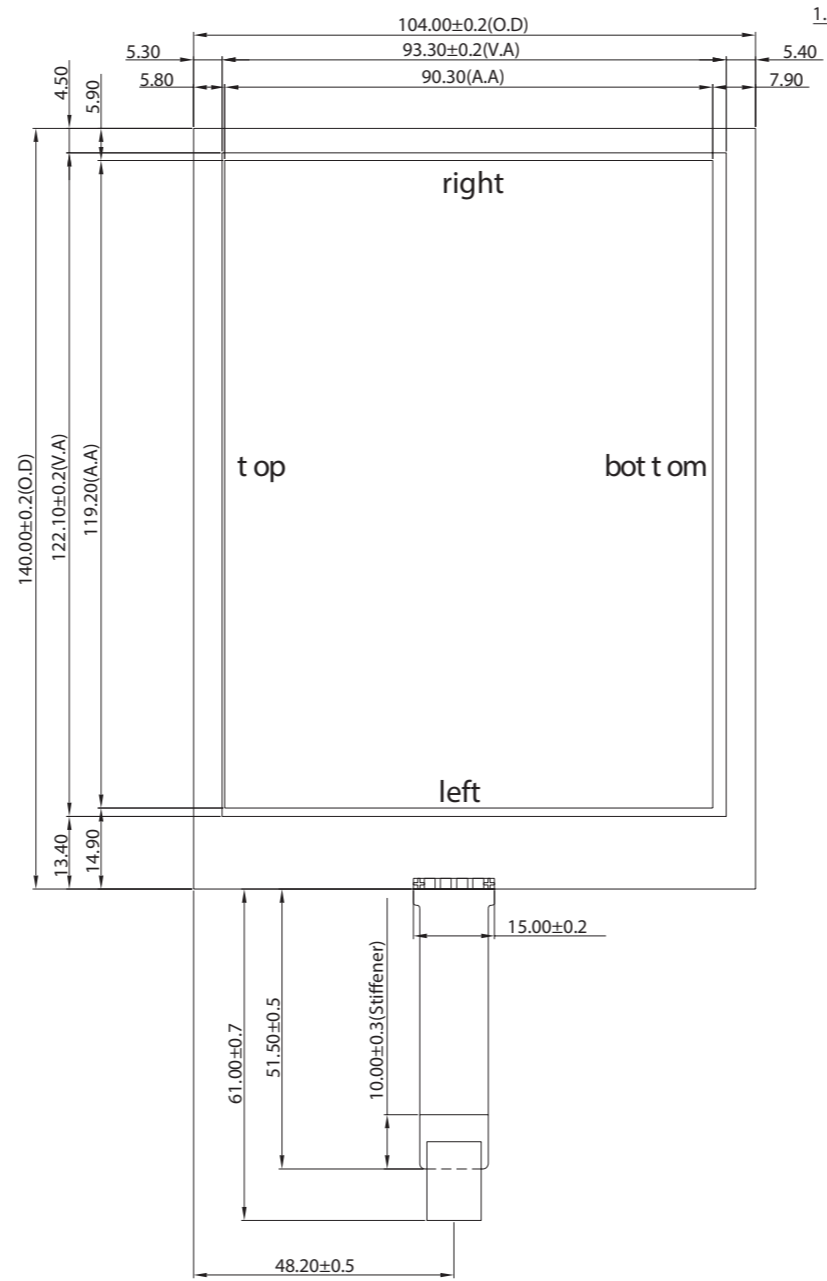
1	2	3	4	5	6	7	8	
				SYMBOL	REVISION			DATE



SEC:A" SCALE:2X
Back plate



Housing Drawing



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)		
LINEAR: ±0.3mm	DRAWING/PART NUMBER: NHD-5.7-320240WFB-CTXI#-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: 5/29/19	APPROVED DATE: 5/29/19
	DO NOT SCALE DRAWING	
	SHEET 2 OF 2	
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Pin Description

CON2:

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	Ground
2	V _{DD}	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
7-14	[DB0-DB7]	MPU	Bi-directional data bus lines
15	CS#	MPU	Active LOW Chip Select signal
16	RES#	MPU	Active LOW Reset signal
17	NC	-	No Connect
18	R/L	-	Scan direction 1: Right (Tied internally)
19	U/D	-	Scan direction 0: Down (Tied internally)
20	NC	-	No Connect

Recommended LCD connector: 1.0mm pitch 20-Conductor FFC. Molex 015167-0365

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	60	120	180	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	175	mA
Backlight Supply Voltage	V _{LED}	I _{LED} = 140mA	9.0	9.9	10.5	V
Backlight Lifetime*	-	T _{OP} = 25°C	-	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	CR ≥ 10	-	70	-	°
	Bottom		-	50	-	°
	Left		-	70	-	°
	Right		-	70	-	°
Contrast Ratio	CR	-	150	250	-	-
Luminance	L _V	I _{LED} = 140 mA	310	390	-	cd/m ²
Response Time	Rise	T _{OP} = 25°C	-	15	30	ms
	Fall		-	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.	Air: ±800V, R _s =330Ω, C _s =150pF Contact: ±600V, R _s =330Ω, C _s =150pF For 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.

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