NHD-5.0-800480TF-34 Controller Board

TFT Controller Evaluation Board

NHD-	Newhaven Display
5.0-	5.0” Diagonal
800480-	800xRGBx480 pixels
TF-	Model
34-	34-POS FFC interface (16-bit data) SSD1963 Controller

Newhaven Display International, Inc.
2511 Technology Drive, Suite 101
Elgin IL, 60124
Ph: 847-844-8795 Fax: 847-844-8796

www.newhavendisplay.com
nhtech@newhavendisplay.com nhsales@newhavendisplay.com

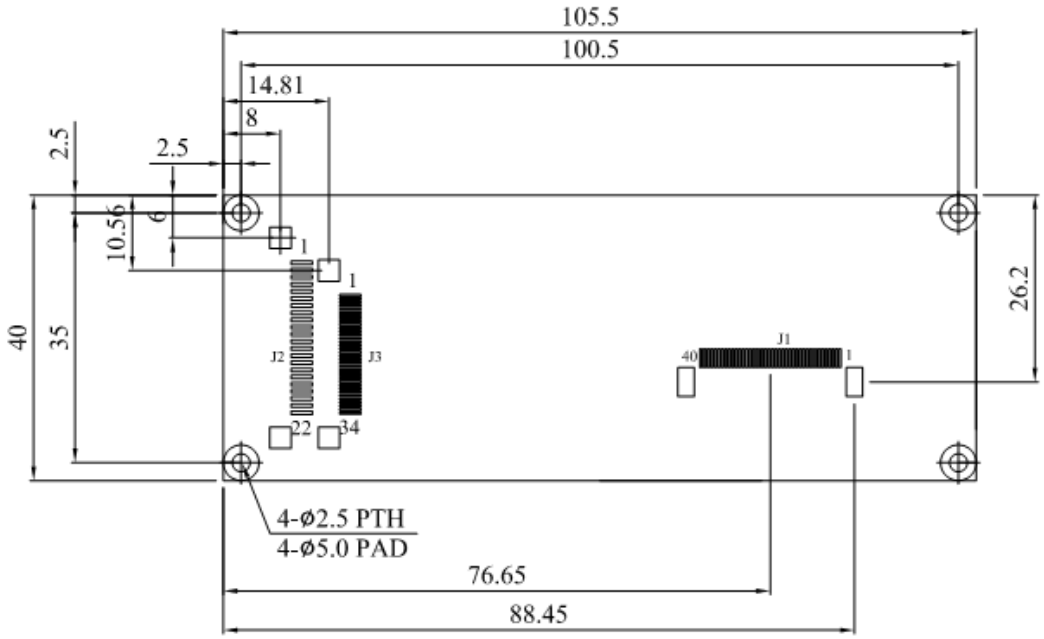
Document Revision History

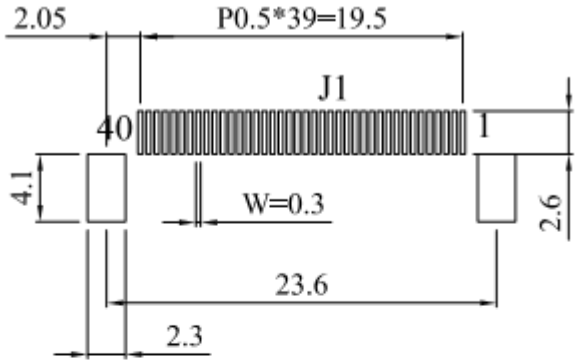
Revision	Date	Description	Changed by
0	4/3/2012	Initial Release	-
1	4/27/2012	J3 pin description updated	AK

Functions and Features

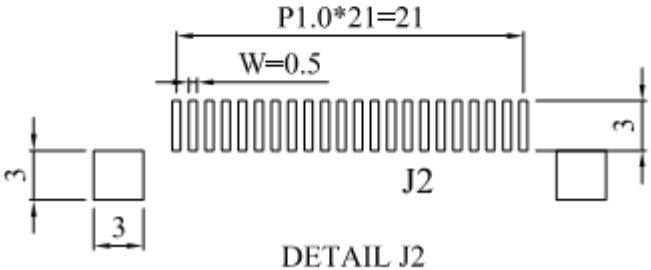
- **To use for testing, evaluating, or in final production with NHD-5.0-800480TF-A displays.**

Mechanical Drawing NHD-5.0-800480TF Test Board

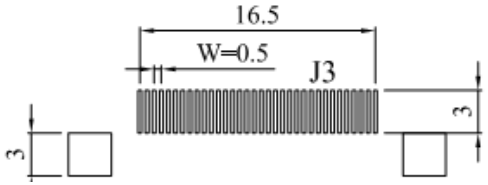




DETAIL J1
SCALE 2/1



DETAIL J2
SCALE 2/1



Note: J3 has a 34-POS FFC connector assembled.

Pin Description: J1 (SSD1963 output to display panel)

Pin No.	Symbol	External Connection	Function Description
1	LED-	LED Power Supply	Ground for Backlight
2	LED+	LED Power Supply	Backlight Power Supply (20mA @ ~23.1V)
3	GND	Power Supply	Ground
4	VDD	Power Supply	Power supply for LCD and logic (3.3V)
5-12	[R0-R7]	MPU	Red Data Signals
13-20	[G0-G7]	MPU	Green Data Signals
21-28	[B0-B7]	MPU	Blue Data Signals
29	GND	Power Supply	Ground
30	CLKIN	MPU	Clock for input data (Rising Edge)
31	STBYB	MPU	1: Normal Operation; 0: Standby Mode
32	HSYNC	MPU	Line synchronization signal
33	VSYNC	MPU	Frame synchronization signal
34	DE	MPU	Data Enable signal
35	NC	-	No Connect
36	GND	Power Supply	Ground
37	XR	Touch Panel MPU	No Connect
38	YD	Touch Panel MPU	No Connect
39	XL	Touch Panel MPU	No Connect
40	YU	Touch Panel MPU	No Connect

Pin Description: J3 (SSD1963 input from user's MPU)

Pin No.	Symbol	External Connection	Function Description
1	GND	Power Supply	Ground
2	VDD	Power Supply	Power supply for LCD and logic (3.3V)
3	B/L Enable	Power Supply	Backlight Enable
4	RS	MPU	Register Select. RS=0: Command, RS=1: Data
5	WR	MPU	8080 MPU Write Signal active LOW
6	RD	MPU	8080 MPU Read Signal active LOW
7-22	DB0-DB15	MPU	16-bit bidirectional data bus
23	NC	-	No Connect
24	NC	-	No Connect
25	CS	MPU	Active LOW Chip Select signal
26	REST	MPU	Active LOW Reset signal
27	NC	-	No Connect
28	XR	Touch Panel MPU	No Connect
29	YD	Touch Panel MPU	No Connect
30	XL	Touch Panel MPU	No Connect
31	YU	Touch Panel MPU	No Connect
32	DISP	MPU	Display On signal
33	NC	-	No Connect
34	NC	-	No Connect

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	VDD		3.0	3.3	3.6	V
Input High Voltage	VIH		0.8*VDD	-	VDD	V
Input Low Voltage	VIL		0	-	0.2*VDD	V
Supply Current	IVCI		-	285	-	mA
Power Consumption	PLCD		-	940.5	-	mW

Controller Information

Built-in SSD1963

For specific timing and color information, please download specification at
http://www.newhavendisplay.com/app_notes/SSD1963.pdf

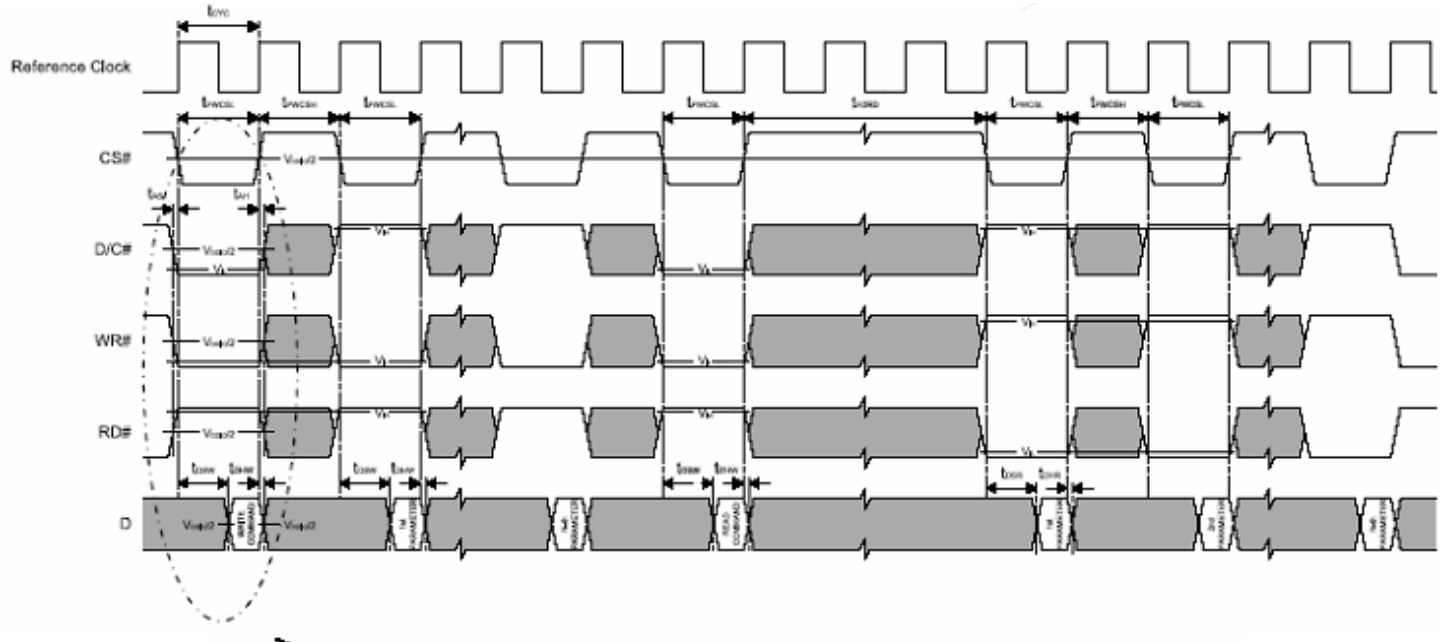
Pixel Data Format

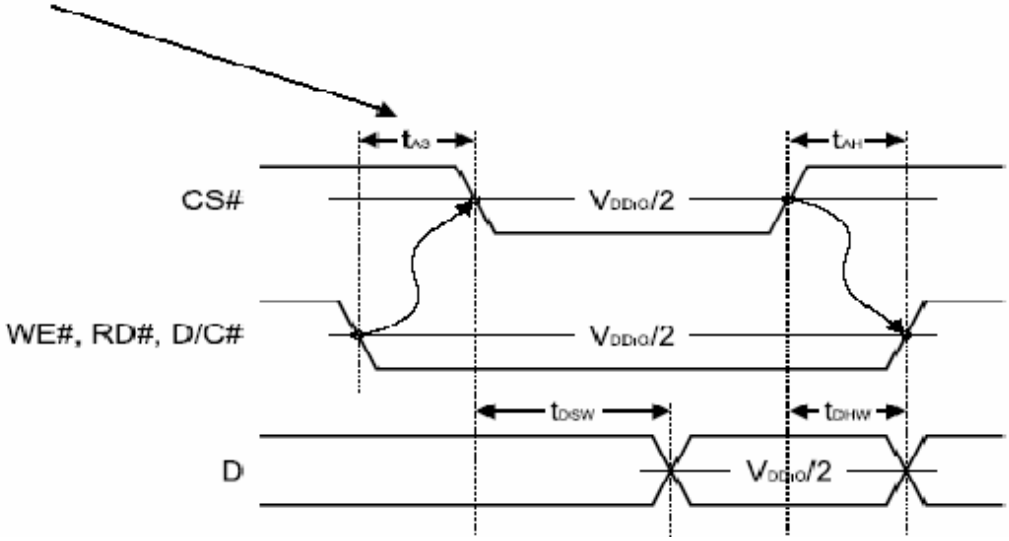
Both 6800 and 8080 support 8-bit, 9-bit, 16-bit, 18-bit and 24-bit data bus. Depending on the width of the data bus, the display data are packed into the data bus in different ways.

Interface	Cycle	D[23]	D[22]	D[21]	D[20]	D[19]	D[18]	D[17]	D[16]	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]
24 bits	1st	R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
18 bits	1st							R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
16 bits (565 format)	1st									R5	R4	R3	R2	R1	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1
16 bits	1st									R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0
	2nd									B7	B6	B5	B4	B3	B2	B1	B0	R7	R6	R5	R4	R3	R2	R1	R0
	3rd									G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
12 bits	1st													R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4
	2nd													G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
9 bits	1st																R5	R4	R3	R2	R1	R0	G5	G4	G3
	2nd																G2	G1	G0	B5	B4	B3	B2	B1	B0
8 bits	1st																	R7	R6	R5	R4	R3	R2	R1	R0
	2nd																	G7	G6	G5	G4	G3	G2	G1	G0
	3rd																	B7	B6	B5	B4	B3	B2	B1	B0

8080 Mode Timing:

Symbol	Parameter	Min	Typ	Max	Unit
tcyc	Reference Clock Cycle Time	9	-	-	ns
tPWCSL	Pulse width CS# low	1	-	-	tCYC
tPWCSH	Pulse width CS# high	1	-	-	tCYC
tFDRD	First Read Data Delay	5	-	-	tCYC
tAS	Address Setup Time	1	-	-	ns
tAH	Address Hold Time	1	-	-	ns
tDSW	Data Setup Time	4	-	-	ns
tDHW	Data Hold Time	1	-	-	ns
tDSR	Data Access Time	-	-	5	ns
tDHR	Output Hold time	1	-	-	ns





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 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

Warranty Information and Terms & Conditions

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