NHD-2.8-25664UCY2

Graphic OLED Display Module

NHD-	Newhaven Display
2.8-	2.8” diagonal size
25664-	256 x 64 pixel resolution
UC-	Model
Y-	Emitting Color: Yellow
2-	+2.95V power supply

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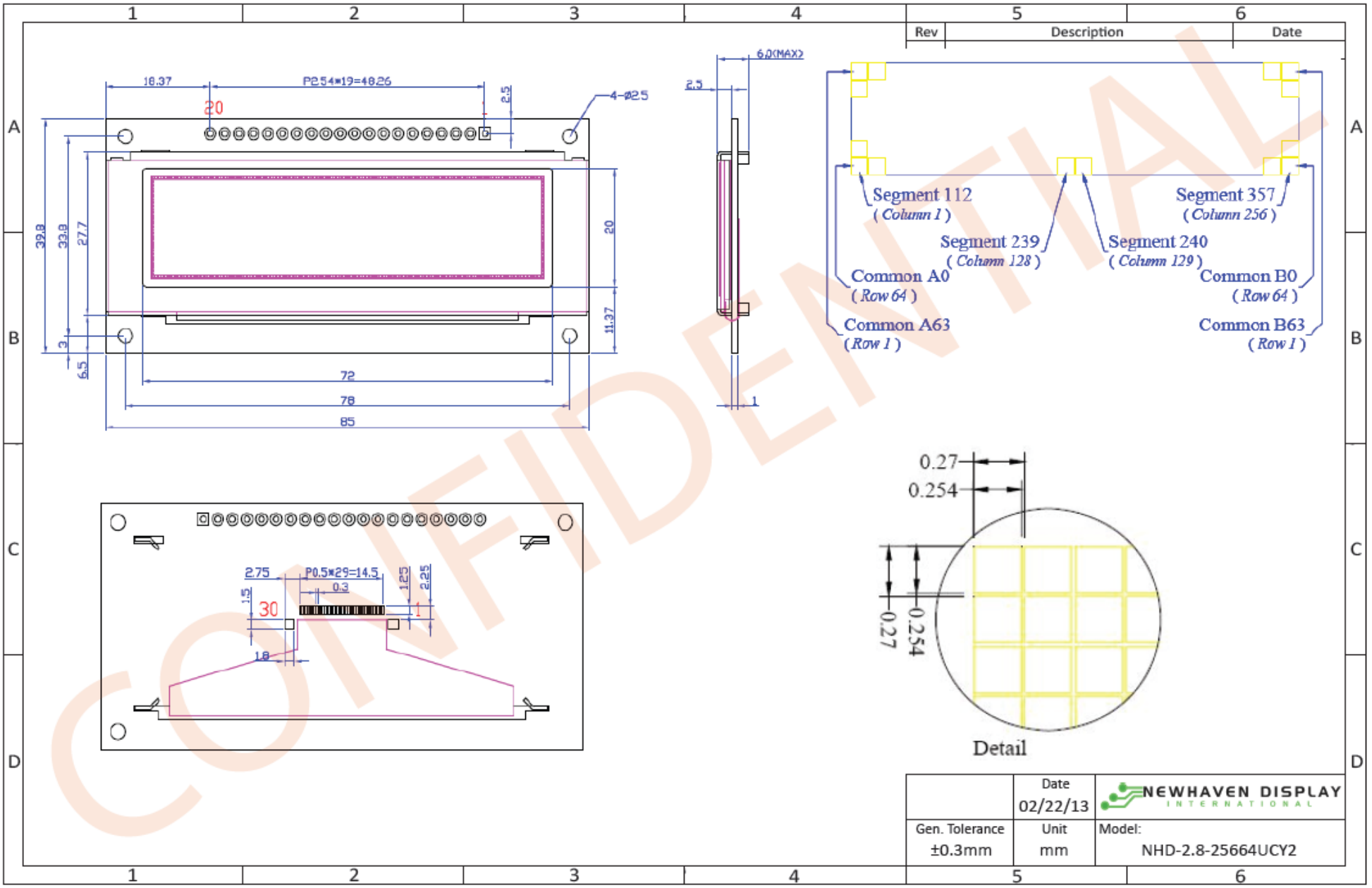
Document Revision History

Revision	Date	Description	Changed by
0	5/1/2011	Initial Product Release	-
1	2/22/2013	Electrical characteristics and mechanical drawing updated	JN

Functions and Features

- **256 x 64 pixel resolution**
- **Built-in SSD1322 controller**
- **Parallel or serial MPU interface**
- **Single, low voltage power supply**
- **RoHS compliant**

Mechanical Drawing



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Interface Description

Parallel Interface:

Pin No.	Symbol	External Connection	Function Description
1	VSS	Power Supply	Ground
2	VDD	Power Supply	Supply Voltage for OLED and logic.
3	NC	-	No Connect
4	D/C	MPU	Register select signal. D/C=0: Command, D/C=1: Data
5	R/W or /WR	MPU	**6800-interface:** Read/Write select signal, R/W=1: Read R/W: =0: Write **8080-interface:** Active LOW Write signal.
6	E or /RD	MPU	**6800-interface:** Operation enable signal. Falling edge triggered. **8080-interface:** Active LOW Read signal.
7-14	DB0 – DB7	MPU	8-bit Bi-directional data bus lines.
15	NC	-	No Connect
16	/RES	MPU	Active LOW Reset signal.
17	/CS	MPU	Active LOW Chip Select signal.
18	NC	-	No Connect
19	BS1	MPU	MPU Interface Select signal.
20	BS0	MPU	MPU Interface Select signal.

Serial Interface:

Pin No.	Symbol	External Connection	Function Description
1	VSS	Power Supply	Ground
2	VDD	Power Supply	Supply Voltage for OLED and logic.
3	NC	-	No Connect
4	D/C	MPU	Register select signal. D/C=0: Command, D/C=1: Data Tie LOW for 3-wire Serial Interface.
5-6	VSS	Power Supply	Ground
7	SCLK	MPU	Serial Clock signal.
8	SDIN	MPU	Serial Data Input signal.
9	NC	-	No Connect
10-14	VSS	Power Supply	Ground
15	NC	-	No Connect
16	/RES	MPU	Active LOW Reset signal.
17	/CS	MPU	Active LOW Chip Select signal.
18	NC	-	No Connect
19	BS1	MPU	MPU Interface Select signal.
20	BS0	MPU	MPU Interface Select signal.

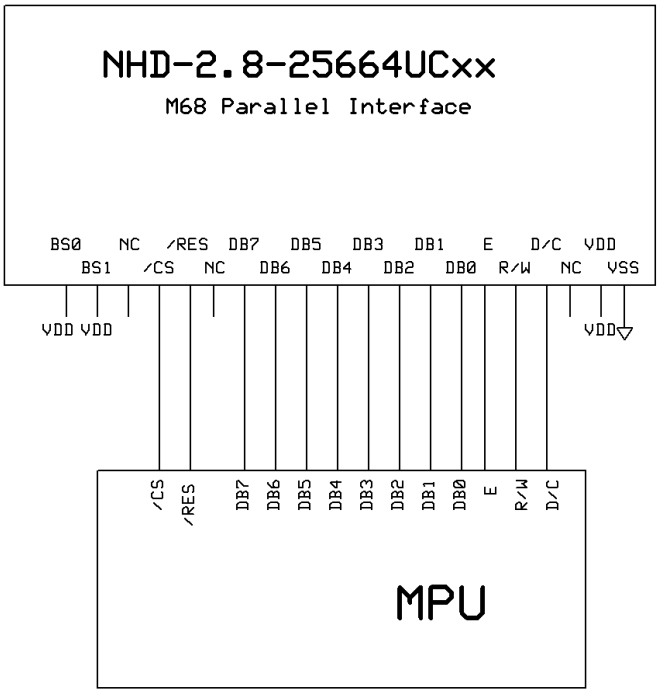
MPU Interface Pin Selections

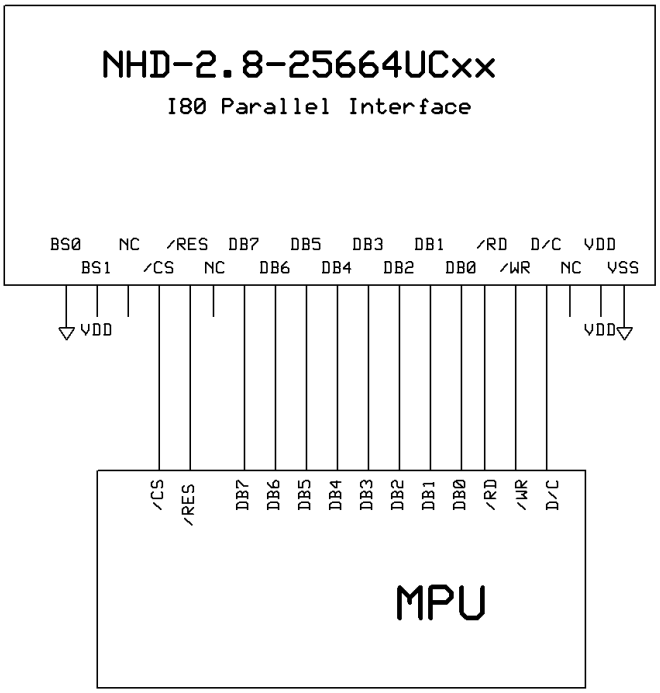
Pin Name	6800 Parallel 8-bit interface	8080 Parallel 8-bit interface	3-wire Serial Interface	4-wire Serial Interface
BS1	1	1	0	0
BS0	1	0	1	0

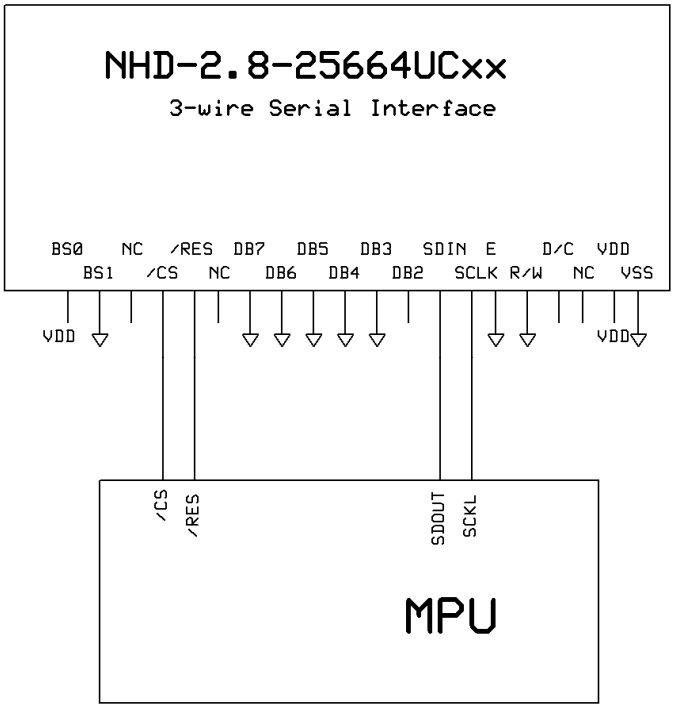
MPU Interface Pin Assignment Summery

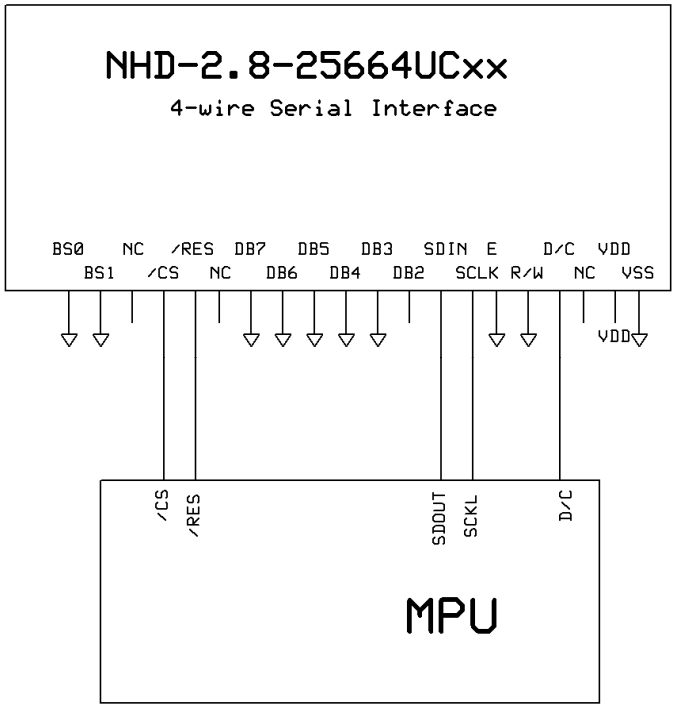
Bus Interface	Data/Command Interface								Control Signals				
	D7	D6	D5	D4	D3	D2	D1	D0	E	R/W	/CS	D/C	/RES
8-bit 6800	D[7:0]								E	R/W	/CS	D/C	/RES
8-bit 8080	D[7:0]								/RD	/WR	/CS	D/C	/RES
3-wire SPI	Tie LOW					NC	SDIN	SCLK	Tie LOW		/CS	Tie LOW	/RES
4-wire SPI	Tie LOW					NC	SDIN	SCLK	Tie LOW		/CS	D/C	/RES

Wiring Diagrams









Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating Temperature Range	Top	Absolute Max	-40	-	+85	°C
Storage Temperature Range	Tst	Absolute Max	-40	-	+90	°C
Supply Voltage	VDD		2.95	-	3.3	V
Supply Current (logic)	IDD	Ta=25°C	5	-	5	mA
Supply Current (display)	ICC	50% ON	148	-	130	mA
		100% ON	244	-	215	mA
Sleep Mode Current	$IDD+ICC_{SLEEP}$		-	-	10	µA
"H" Level input	Vih		0.8*VDD	-	VDD	V
"L" Level input	Vil		VSS	-	0.2*VDD	V
"H" Level output	Voh		0.9*VDD	-	VDD	V
"L" Level output	Vol		VSS	-	0.1*VDD	V

Optical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle - Top	AV		-	80	-	º
Viewing Angle – Bottom	AV		-	80	-	º
Viewing Angle – Left	AH		-	80	-	º
Viewing Angle – Right	AH		-	80	-	º
Contrast Ratio	Cr		2000:1	-	-	-
Response Time (rise)	Tr	-	-	10	-	us
Response Time (fall)	Tf	-	-	10	-	us
Brightness		50% checkerboard	60	80	-	cd/m^2
Lifetime		Ta=25°C, 50% checkerboard	40,000	-	-	Hrs

Note: Lifetime at typical temperature is based on accelerated high-temperature operation. Lifetime is tested at average 50% pixels on and is rated as Hours until **Half-Brightness**. The Display OFF command can be used to extend the lifetime of the display.

Luminance of active pixels will degrade faster than inactive pixels. Residual (burn-in) images may occur. To avoid this, every pixel should be illuminated uniformly.

Built-in SSD1322 controller
Instruction Table

Instruction	Code										Description	RESET value
	D/C	HEX	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0		
Enable Grayscale Table	0	**00**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	Enable the Grayscale table settings. (see command 0xB8)	
Set Column Address	0 1 1	**15** **A[6:0]** **B[6:0]**	**0** * *	**0** **A6** **B6**	**0** **A5** **B5**	**1** **A4** **B4**	**0** **A3** **B3**	**1** **A2** **B2**	**0** **A1** **B1**	**1** **A0** **B0**	Set column start and end address A[6:0]: Column start address. Range: 0-119d B[6:0]: Column end address. Range: 0-119d	 0 119d
Write RAM Command	0	**5C**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	Enable MCU to write Data into RAM	
Read RAM Command	0	**5D**	**0**	**1**	**0**	**1**	**1**	**1**	**0**	**1**	Enable MCU to read Data from RAM	
Set Row Address	0 1 1	**75** **A[6:0]** **B[6:0]**	**0** * *	**1** **A6** **B6**	**1** **A5** **B5**	**1** **A4** **B4**	**0** **A3** **B3**	**1** **A2** **B2**	**0** **A1** **B1**	**1** **A0** **B0**	Set row start and end address A[6:0]: Row start address. Range: 0-127d B[6:0]: Row end address. Range: 0-127d	 0 127d
Set Remap	0 1 1	**A0** **A[5:0]** **B[4]**	**1** **0** *	**0** **0** *	**1** **A5** **0**	**0** **A4** **B4**	**0** **0** **0**	**0** **A2** **0**	**0** **A1** **0**	**0** **A0** **1**	A[0] = 0; Horizontal Address Increment A[0] = 1; Vertical Address Increment A[1] = 0; Disable Column Address remap A[1] = 1; Enable Column Address remap A[2] = 0; Disable Nibble remap A[2] = 1; Enable Nibble remap A[4] = 0; Scan from COM0 to COM[N-1] A[4] = 1; Scan from COM[N-1] to COM0 A[5] = 0; Disable COM split Odd/Even A[5] = 1; Enable COM split Odd/Even B[4] = 0; Disable Dual COM mode B[4] = 1; Enable Dual COM mode Note: A[5] must be 0 if B[4] is 1.	0 0 0 0 0 0
Set Display Start Line	0 1	**A1** **A[6:0]**	**1** *	**0** **A6**	**1** **A5**	**0** **A4**	**0** **A3**	**0** **A2**	**0** **A1**	**1** **A0**	Set display RAM display start line register from 0-127.	0
Set Display Offset	0 1	**A2** **A[6:0]**	**1** *	**0** **A6**	**1** **A5**	**0** **A4**	**0** **A3**	**0** **A2**	**1** **A1**	**0** **A0**	Set vertical shift by COM from 0~127.	0
Display Mode	0	**A4/A7**	**1**	**0**	**1**	**0**	**0**	**X2**	**X1**	**X0**	0xA4 = Entire display OFF 0xA5 = Entire display ON, all pixels Grayscale level 15 0xA6 = Normal display 0xA7 = Inverse display	0xA6
Enable Partial Display	0 1 1	**A8** **A[6:0]** **B[6:0]**	**1** **0** **0**	**0** **A6** **B6**	**1** **A5** **B5**	**0** **A4** **B4**	**1** **A3** **B3**	**0** **A2** **B2**	**0** **A1** **B1**	**0** **A0** **B0**	Turns ON partial mode. A[6:0] = Address of start row B[6:0] = Address of end row (B[6:0] > A[6:0])	

Exit Partial Display	0	**A9**	**1**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	Exit Partial Display mode	
Function Selection	0	**AB**	**1**	**0**	**1**	**0**	**1**	**0**	**1**	**1**	A[0] = 0; External VDD	
	1	**A[0]**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**A0**	A[0] = 1; Internal VDD regulator	1
Set Sleep Mode ON/OFF	0	**AE~AF**	**1**	**0**	**1**	**0**	**1**	**1**	**1**	**X0**	0xAE = Sleep Mode ON (display OFF) 0xAF = Sleep Mode OFF (display ON)	
Set Phase Length	0	**B1**	**1**	**0**	**1**	**1**	**0**	**0**	**0**	**1**	A[3:0] = P1. Phase 1 period of 5-31 DCLK clocks	9
	1	**A[7:0]**	**A7**	**A6**	**A5**	**A4**	**A3**	**A2**	**A1**	**A0**	A[7:4] = P2. Phase 2 period of 3-15 DCLK clocks	7
Set Display Clock Divide Ratio / Oscillator Frequency	0	**B3**	**1**	**0**	**1**	**1**	**0**	**0**	**1**	**1**	A[3:0] = 0000; divide by 1	0
	1	**A[7:0]**	**A7**	**A6**	**A5**	**A4**	**A3**	**A2**	**A1**	**A0**	A[3:0] = 0001; divide by 2 A[3:0] = 0010; divide by 4 A[3:0] = 0011; divide by 8 A[3:0] = 0100; divide by 16 A[3:0] = 0101; divide by 32 A[3:0] = 0110; divide by 64 A[3:0] = 0111; divide by 128 A[3:0] = 1000; divide by 256 A[3:0] = 1001; divide by 512 A[3:0] = 1010; divide by 1024	
											A[3:0] >= 1011; invalid	1100b
											A[7:4] = Set the Oscillator Frequency. Frequency increases with the value of A[7:4]. Range 0000b~1111b.	
Set GPIO	0	**B5**	**1**	**0**	**1**	**1**	**0**	**1**	**0**	**1**	A[1:0] = 00; GPIO0 input disabled	
	1	**A[3:0]**	*****	*****	*****	*****	**A3**	**A2**	**A1**	**A0**	A[1:0] = 01; GPIO0 input enabled A[1:0] = 10; GPIO0 output LOW	10b
											A[1:0] = 11; GPIO0 output HIGH A[3:2] = 00; GPIO1 input disabled A[3:2] = 01; GPIO1 input enabled	
											A[3:2] = 10; GPIO1 output LOW	10b
											A[3:2] = 11; GPIO1 output HIGH	
Set Second Precharge Period	0	**B6**	**1**	**0**	**1**	**1**	**0**	**1**	**1**	**0**	Sets the second precharge period	1000b
	1	**A[3:0]**	*****	*****	*****	*****	**A3**	**A2**	**A1**	**A0**	A[3:0] = DCLKs	
Set Grayscale Table	0	**B8**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**0**	Sets the gray scale pulse width in units of DCLK. Range 0-180d.	
	1	**A1[7:0]**	**$A1_7$**	**$A1_6$**	**$A1_5$**	**$A1_4$**	**$A1_3$**	**$A1_2$**	**$A1_1$**	**$A1_0$**	A1[7:0] = Gamma Setting for GS1	
	1	**A2[7:0]**	**$A2_7$**	**$A2_6$**	**$A2_5$**	**$A2_4$**	**$A2_3$**	**$A2_2$**	**$A2_1$**	**$A2_0$**	A2[7:0] = Gamma Setting for GS2	
	1	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	.	
	1	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	.	
	1	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	**.**	.	
	1	**A14[7:0]**	**$A14_7$**	**$A14_6$**	**$A14_5$**	**$A14_4$**	**$A14_3$**	**$A14_2$**	**$A14_1$**	**$A14_0$**	A14[7:0] = Gamma Setting for GS14	
	1	**A15[7:0]**	**$A15_7$**	**$A15_6$**	**$A15_5$**	**$A15_4$**	**$A15_3$**	**$A15_2$**	**$A15_1$**	**$A15_0$**	A15[7:0] = Gamma Setting for GS15	
											Note: 0 < GS1 < GS2 < GS3 … < GS14 < GS15 The setting must be followed by command 0x00.	
Select Default	0	**B9**	**1**	**0**	**1**	**1**	**1**	**0**	**0**	**1**	Sets Linear Grayscale table	

Linear Gray Scale Table											GS0 pulse width = 0 GS0 pulse width = 0 GS0 pulse width = 8 GS0 pulse width = 16 . . . GS0 pulse width = 104 GS0 pulse width = 112	
Set Precharge Voltage	0 1	**BB** **A[4:0]**	**1** *	**0** *	**1** *	**1** **A4**	**1** **A3**	**0** **A2**	**1** **A1**	**1** **A0**	Set precharge voltage level. A[4:0] = 0x00; 0.20*VCC . . A[4:0] = 0x3E; 0.60*VCC	0x17
Set VCOMH Voltage	0 1	**BE** **A[3:0]**	**1** *	**0** *	**1** *	**1** *	**1** **A3**	**1** **A2**	**1** **A1**	**0** **A0**	Sets the VCOMH voltage level A[3:0] = 0x00; 0.72*VCC . . A[3:0] = 0x04; 0.8*VCC . . A[3:0] = 0x07; 0.86*VCC	0x04
Set Contrast Control	0 1	**C1** **A[7:0]**	**1** **A7**	**1** **A6**	**0** **A5**	**0** **A4**	**0** **A3**	**0** **A2**	**0** **A1**	**1** **A0**	Double byte command to select 1 out of 256 contrast steps. Contrast increases as the value increases.	0x7F
Master Contrast Control	0 1	**C7** **A[3:0]**	**1** *	**1** *	**0** *	**0** *	**0** **A3**	**1** **A2**	**1** **A1**	**1** **A0**	A[3:0] = 0x00; Reduce output for all colors to 1/16 A[3:0] = 0x01; Reduce output for all colors to 2/16 . . A[3:0] = 0x0E; Reduce output for all colors to 15/16 A[3:0] = 0x0F; no change	0x0f
Set Multiplex Ratio	0 1	**CA** **A[6:0]**	**1** *	**1** **A6**	**0** **A5**	**0** **A4**	**1** **A3**	**0** **A2**	**1** **A1**	**0** **A0**	Set MUX ratio to N+1 MUX N=A[6:0]; from 16MUX to 128MUX (0 to 14 are invalid)	127d
Set Command Lock	0 1	**FD** **A[2]**	**1** **0**	**1** **0**	**1** **0**	**1** **1**	**1** **0**	**1** **A2**	**0** **1**	**1** **0**	A[2] = 0; Unlock OLED to enable commands A[2] = 1; Lock OLED from entering commands	0x12

For detailed instruction information, see datasheet: http://www.newhavendisplay.com/app_notes/SSD1322.pdf

MPU Interface

For detailed timing information, see datasheet: http://www.newhavendisplay.com/app_notes/SSD1322.pdf

6800-MPU Parallel Interface

The parallel interface consists of 8 bi-directional data pins, R/W, D/C, E, and /CS.
A LOW on R/W indicates write operation, and HIGH on R/W indicates read operation.
A LOW on D/C indicates "Command" read or write, and HIGH on D/C indicates "Data" read or write.
The E input serves as data latch signal, while /CS is LOW. Data is latched at the falling edge of E signal.

Function	E	R/W	/CS	D/C
Write Command	↓	0	0	0
Read Status	↓	1	0	0
Write Data	↓	0	0	1
Read Data	↓	1	0	1

8080-MPU Parallel Interface

The parallel interface consists of 8 bi-directional data pins, /RD, /WR, D/C, and /CS.
A LOW on D/C indicates "Command" read or write, and HIGH on D/C indicates "Data" read or write.
A rising edge of /RS input serves as a data read latch signal while /CS is LOW.
A rising edge of /WR input serves as a data/command write latch signal while /CS is LOW.

Function	/RD	/WR	/CS	D/C
Write Command	1	↑	0	0
Read Status	↑	1	0	0
Write Data	1	↑	0	1
Read Data	↑	1	0	1

Alternatively, /RD and /WR can be kept stable while /CS serves as the data/command latch signal.

Function	/RD	/WR	/CS	D/C
Write Command	1	0	↑	0
Read Status	0	1	↑	0
Write Data	1	0	↑	1
Read Data	0	1	↑	1

Serial Interface (4-wire)

The 4-wire serial interface consists of serial clock SCLK, serial data SDIN, D/C, and /CS.
D0 acts as SCLK and D1 acts as SDIN. D2 should be left open. D3~D7, E, and R/W should be connected to GND.

Function	/RD	/WR	/CS	D/C	D0
Write Command	Tie LOW	Tie LOW	0	0	↑
Write Data	Tie LOW	Tie LOW	0	1	↑

SDIN is shifted into an 8-bit shift register on every rising edge of SCLK in the order of D7, D6,…D0.
D/C is sampled on every eighth clock and the data byte in the shift register is written to the GDRAM or command register in the same clock.
Note: Read is not available in serial mode.

Serial Interface (3-wire)

The 3-wire serial interface consists of serial clock SCLK, serial data SDIN, and /CS.
D0 acts as SCLK and D1 acts as SDIN. D2 should be left open. D3~D7, E, R/W, and D/C should be connected to GND.

Function	/RD	/WR	/CS	D/C	D0
Write Command	Tie LOW	Tie LOW	0	Tie LOW	↑
Write Data	Tie LOW	Tie LOW	0	Tie LOW	↑

SDIN is shifted into an 9-bit shift register on every rising edge of SCLK in the order of D/C, D7, D6,…D0.
D/C (first bit of the sequential data) will determine if the following data byte is written to the Display Data RAM (D/C = 1) or the command register (D/C = 0).
Note: Read is not available in serial mode.

For detailed protocol information, see datasheet: http://www.newhavendisplay.com/app_notes/SSD1322.pdf

Example Initialization Sequence:

```
Set_Command_Lock(0x12);                 // Unlock Basic Commands (0x12/0x16)
Set_Display_On_Off(0x00);               // Display Off (0x00/0x01)
Set_Column_Address(0x1C,0x5B);
Set_Row_Address(0x00,0x3F);
Set_Display_Clock(0x91);                // Set Clock as 80 Frames/Sec
Set_Multiplex_Ratio(0x3F);              // 1/64 Duty (0x0F~0x3F)
Set_Display_Offset(0x00);               // Shift Mapping RAM Counter (0x00~0x3F)
Set_Start_Line(0x00);                   // Set Mapping RAM Display Start Line (0x00~0x7F)
Set_Remap_Format(0x14);                 // Set Horizontal Address Increment
                                        //    Column Address 0 Mapped to SEG0
                                        //    Disable Nibble Remap
                                        //    Scan from COM[N-1] to COM0
                                        //    Disable COM Split Odd Even
                                        //    Enable Dual COM Line Mode
Set_GPIO(0x00);                         // Disable GPIO Pins Input
Set_Function_Selection(0x01);           // Enable Internal VDD Regulator
Set_Display_Enhancement_A(0xA0,0xFD);       // Enable External VSL
Set_Contrast_Current(0x9F);             // Set Segment Output Current
Set_Master_Current(0x0F);               // Set Scale Factor of Segment Output Current Control
//Set_Gray_Scale_Table();               // Set Pulse Width for Gray Scale Table
Set_Linear_Gray_Scale_Table();          //set default linear gray scale table
Set_Phase_Length(0xE2);                 // Set Phase 1 as 5 Clocks & Phase 2 as 14 Clocks
Set_Display_Enhancement_B(0x20);        // Enhance Driving Scheme Capability (0x00/0x20)
Set_Precharge_Voltage(0x1F);            // Set Pre-Charge Voltage Level as 0.60*VCC
Set_Precharge_Period(0x08);             // Set Second Pre-Charge Period as 8 Clocks
Set_VCOMH(0x07);                        // Set Common Pins Deselect Voltage Level as 0.86*VCC
Set_Display_Mode(0x02);                 // Normal Display Mode (0x00/0x01/0x02/0x03)
Set_Partial_Display(0x01,0x00,0x00);    // Disable Partial Display
Set_Display_On_Off(0x01);
```

Quality Information

Test Item	Content of Test	Test Condition	Note
High Temperature storage	Test the endurance of the display at high storage temperature.	+90°C , 240hrs	2
Low Temperature storage	Test the endurance of the display at low storage temperature.	-40°C , 240hrs	1,2
High Temperature Operation	Test the endurance of the display by applying electric stress (voltage & current) at high temperature.	+85°C 240hrs	2
Low Temperature Operation	Test the endurance of the display by applying electric stress (voltage & current) at low temperature.	-40°C , 240hrs	1,2
High Temperature / Humidity Operation	Test the endurance of the display by applying electric stress (voltage & current) at high temperature with high humidity.	+60°C , 90% RH , 240hrs	1,2
Thermal Shock resistance	Test the endurance of the display by applying electric stress (voltage & current) during a cycle of low and high temperatures.	-40°C,30min -> 25°C,5min -> 85°C,30min = 1 cycle 100 cycles	
Vibration test	Test the endurance of the display by applying vibration to simulate transportation and use.	10-22Hz , 15mm amplitude. 22-500Hz, 1.5G 30min in each of 3 directions X,Y,Z	3
Atmospheric Pressure test	Test the endurance of the display by applying atmospheric pressure to simulate transportation by air.	115mbar, 40hrs	3
Static electricity test	Test the endurance of the display by applying electric static discharge.	VS=800V, RS=1.5kΩ, CS=100pF One time	

Note 1: No condensation to be observed.
Note 2: Conducted after 2 hours of storage at 25°C, 0%RH.
Note 3: Test performed on product itself, not inside a container.
Evaluation Criteria:
1: Display is fully functional during operational tests and after all tests, at room temperature.
2: No observable defects.
3: Luminance >50% of initial value.
4: Current consumption within 50% of initial value

Precautions for using OLEDs/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

Newhaven Display International, Inc. reserves the right to alter this product or specification at any time without notification.

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «**JONHON**», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «**FORSTAR**».

AVIC JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

FORSTAR®

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