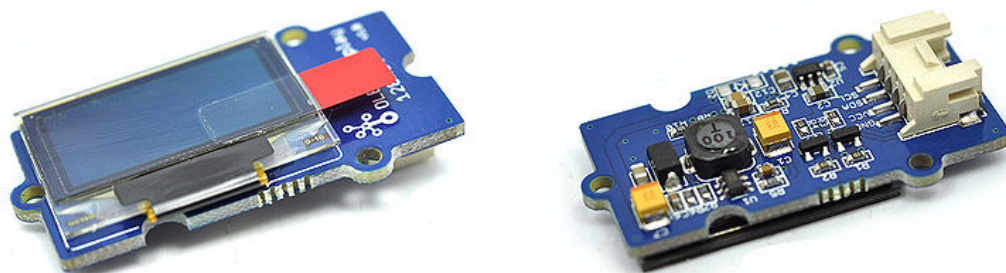


Grove - OLED Display 0.96 inch



Grove - OLED Display 0.96" module is an OLED monochrome 128×64dot matrix display module with Grove 4pin I2C Interface. Comparing to LCD, OLED screens are more competitive, which has a number of advantages such as high brightness, self-emission, high contrast ratio, slim / thin outline, wide viewing angle, wide temperature range, and low power consumption. It has bigger screen so that it can display more contents than the OLED 96×96.

[Get One Now](https://www.seeedstudio.com/item_detail.html?p_id=781) 

[https://www.seeedstudio.com/item_detail.html?p_id=781]

Version

Product Version	Changes	Released Date
Grove - OLED Display 0.96 inch V1.1	Initial	Oct 2015

Features

- Grove compatible interface

- Communicate Mode:I2C
- Low power consumption
- Display Color: White
- Wide range of operating temperature:-20°C~70°C
- I2C Address 0x3C

**Note**

If you want to use multiplue I2C devices, please refer to [Software I2C](https://wiki.seeedstudio.com/Arduino_Software_I2C_user_guide/) [https://wiki.seeedstudio.com/Arduino_Software_I2C_user_guide/].

**Warning**

Please notice: heavy impact or stress on the OLED will cause the breakdown of screen.

**Tip**

More details about Grove modules please refer to [Grove System](https://wiki.seeedstudio.com/Grove_System/) [https://wiki.seeedstudio.com/Grove_System/]

Specifications

Items	Min	Norm	Max	Unit
Power Voltage (VCC)	3.3	5.0	5.5	V
Driver IC	-	SSD1308Z	-	-
Display Color	-	White	-	-
Dot Matrix	-	128×64	-	-
Panel Size	-	26.7(W)×19.26(H)	-	mm
Active Area	-	21.74(W)×11.175 (H)	-	mm
Dot Pitch	-	0.17(W)×0.175 (H)	-	mm
Dot Size	-	0.15(W)×0.15 (H)	-	mm
Wide range of operating temperature	-	-20~70	-	°C

**Tip**

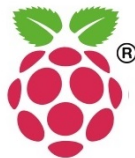
More details about Grove modules please refer to [Grove System](https://wiki.seeedstudio.com/Grove_System/) [https://wiki.seeedstudio.com/Grove_System/]

Platforms Supported

Arduino



Raspberry Pi

**Caution**

The platforms mentioned above as supported is/are an indication of the module's software or theoretical compatibility. We only provide software library or code examples for Arduino platform in most cases. It is not possible to provide software library / demo code for all possible MCU platforms. Hence, users have to write their own software library.

Getting Started



Note

If this is the first time you work with Arduino, we firmly recommend you to see [Getting Started with Arduino](https://wiki.seeedstudio.com/Getting_Started_with_Arduino/) [https://wiki.seeedstudio.com/Getting_Started_with_Arduino/] before the start.


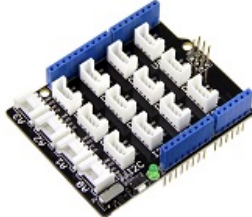
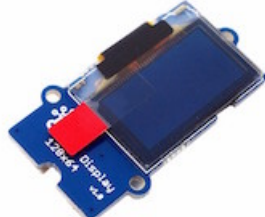
Play With Arduino

Demonstration

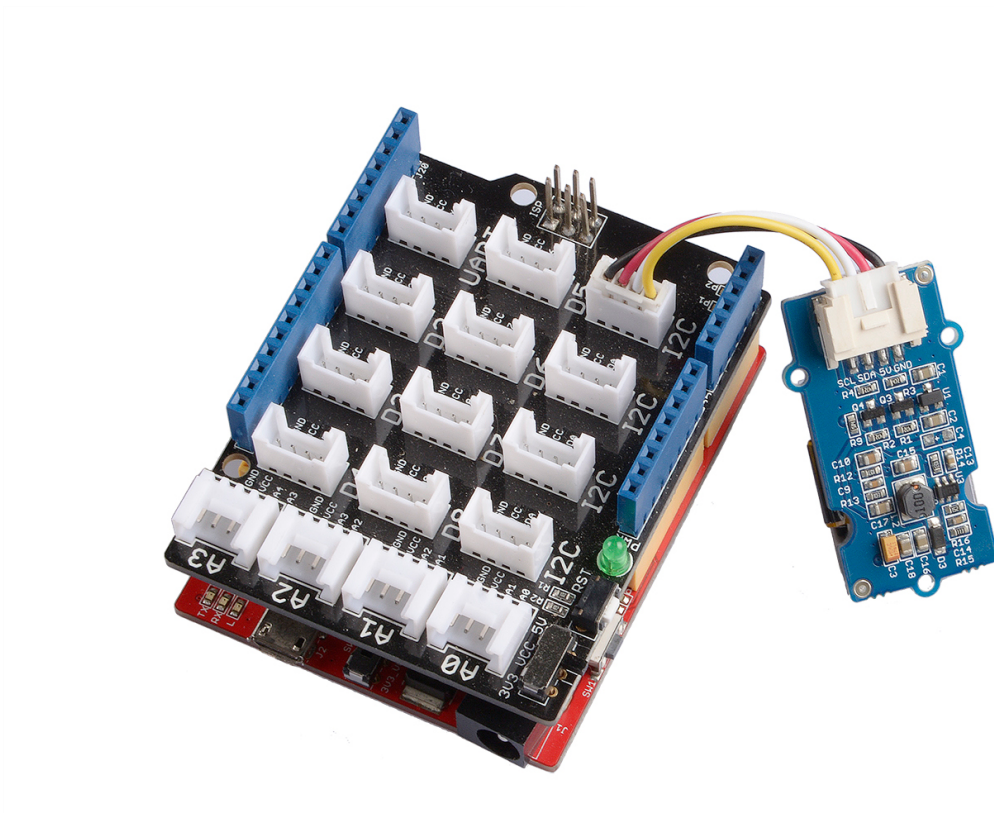
The OLED128*64 uses all the pins of SSD1308 chip, the default original point is on the top left corner. You can also change the original point by adjusting the program and in order to display your desired patterns. For more details, please refer [SSD1308_1.0.pdf](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/SSD1308_1.0.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/SSD1308_1.0.pdf] and [LY190-128064.pdf](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/LY190-128064.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/LY190-128064.pdf].

Hardware

- **Step 1.** Prepare the below stuffs:

Seeeduino V4	Base Shield	Grove - OLED Display 0.96inch
		
Get ONE Now [https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html]	Get ONE Now [https://www.seeedstudio.com/Base-Shield-V2-p-1378.html]	Get ONE Now [https://www.seeedstudio.com/Grove-OLED-Display-0.96inch-p-781.html]

- **Step 2.** Plug the Grove OLED Display 128*64 onto the I2C port on Grove Base Shield.
- **Step 3.** Plug Grove - Base Shield into Seeeduino.
- **Step 4.** Connect Seeeduino to PC via a USB cable.

**Note**

If we don't have Grove Base Shield, We also can directly connect Grove - OLED Display 0.96 inch to Seeeduino as below.

Seeeduino	Grove - OLED Display 0.96 inch
5V	Red
GND	Black
SDA	White
SCL	Yellow

Software

- **Step 1.** Download the [U8G2 128*64 library](https://github.com/olikraus/u8g2) [https://github.com/olikraus/u8g2] from

Github.

- **Step 2.** Refer [How to install library](https://wiki.seeedstudio.com/How_to_install_Arduino_Library) [https://wiki.seeedstudio.com/How_to_install_Arduino_Library] to install library for Arduino.
- **Step 3.** Copy the code into Arduino IDE and upload. If you do not know how to upload the code, please check [how to upload code](https://wiki.seeedstudio.com/Upload_Code/) [https://wiki.seeedstudio.com/Upload_Code/].

```


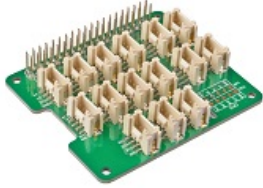
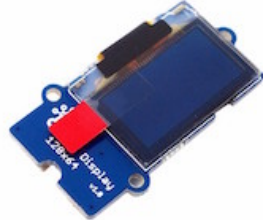
1  #include <Arduino.h>
2  #include <U8g2lib.h>
3
4  #ifdef U8X8_HAVE_HW_SPI
5  #include <SPI.h>
6  #endif
7  #ifdef U8X8_HAVE_HW_I2C
8  #include <Wire.h>
9  #endif
10
11 U8G2_SSD1306_128X64_ALT0_F_HW_I2C u8g2(U8G2_R0, /* reset=*/ U8X8_PIN_NONE
12
13 // U8G2_SSD1306_128X64_NONAME_F_SW_I2C u8g2(U8G2_R0, /* clock=*/ SCL, /*
14
15 void setup(void) {
16     u8g2.begin();
17 }
18
19 void loop(void) {
20     u8g2.clearBuffer();           // clear the internal memory
21     u8g2.setFont(u8g2_font_ncenB08_tr); // choose a suitable font
22     u8g2.drawStr(0,10,"Hello World!"); // write something to the interna
23     u8g2.sendBuffer();           // transfer internal memory to th
24     delay(1000);
25 }
```

- **Step 3.** We can see "Hello World!" on screen.

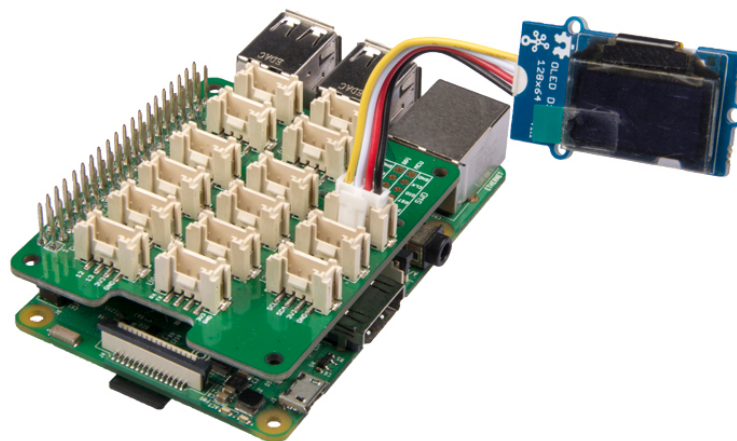
Play With Raspberry Pi (With Grove Base Hat for Raspberry Pi)

Hardware

- **Step 1.** Things used in this project:

Raspberry pi	Grove Base Hat for RasPi	Grove - OLED Display 0.96 inch
		
Get ONE Now [https://www.seeedstudio.com/Raspberry-Pi-3-Model-B-p-2625.html]	Get ONE Now [https://www.seeedstudio.com/Grove-Base-Hat-for-Raspberry-Pi-p-3186.html]	Get ONE Now [https://www.seeedstudio.com/Grove-OLED-Display-0.96inch-p-781.html]

- **Step 2.** Plug the Grove Base Hat into Raspberry.
- **Step 3.** Connect the OLED display to the **I²C** port of the Base Hat.
- **Step 4.** Connect the Raspberry Pi to PC through USB cable.



Software



Attention

If you are using **Raspberry Pi with Raspberrypi OS >= Bullseye**, you have to use this command line **only with Python3**.

- **Step 1.** Follow [Setting Software](https://wiki.seeedstudio.com/Grove_Base_Hat_for_Raspberry_Pi/#installation) [https://wiki.seeedstudio.com/Grove_Base_Hat_for_Raspberry_Pi/#installation] to configure the development environment.
- **Step 2.** Download the source file by cloning the grove.py library.

```
1 cd ~
2 git clone https://github.com/Seeed-Studio/grove.py
```



- **Step 3.** Excute below command to run the code.

```
1 cd grove.py/grove
2 python3 grove_oled_display_128x64.py
```



Following is the grove_oled_display_128x64.py code.

```
1 import time
2
3 from grove.i2c import Bus
4
5 _COMMAND_MODE = 0x80
6 _DATA_MODE = 0x40
7 _NORMAL_DISPLAY = 0xA6
8
9 _DISPLAY_OFF = 0xAE
10 _DISPLAY_ON = 0xAF
11 _INVERSE_DISPLAY = 0xA7
12 _SET_BRIGHTNESS = 0x81
13
14
15 BasicFont = [[0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00],
16              [0x00, 0x00, 0x5F, 0x00, 0x00, 0x00, 0x00, 0x00],
17              [0x00, 0x00, 0x07, 0x00, 0x07, 0x00, 0x00, 0x00],
18              [0x00, 0x14, 0x7F, 0x14, 0x7F, 0x14, 0x00, 0x00],
19              [0x00, 0x24, 0x2A, 0x7F, 0x2A, 0x12, 0x00, 0x00],
20              [0x00, 0x23, 0x13, 0x08, 0x64, 0x62, 0x00, 0x00],
```



```
21      [0x00, 0x36, 0x49, 0x55, 0x22, 0x50, 0x00, 0x00],
22      [0x00, 0x00, 0x05, 0x03, 0x00, 0x00, 0x00, 0x00],
23      [0x00, 0x1C, 0x22, 0x41, 0x00, 0x00, 0x00, 0x00],
24      [0x00, 0x41, 0x22, 0x1C, 0x00, 0x00, 0x00, 0x00],
25      [0x00, 0x08, 0x2A, 0x1C, 0x2A, 0x08, 0x00, 0x00],
26      [0x00, 0x08, 0x08, 0x3E, 0x08, 0x08, 0x00, 0x00],
27      [0x00, 0xA0, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
28      [0x00, 0x08, 0x08, 0x08, 0x08, 0x08, 0x00, 0x00],
29      [0x00, 0x60, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
30      [0x00, 0x20, 0x10, 0x08, 0x04, 0x02, 0x00, 0x00],
31      [0x00, 0x3E, 0x51, 0x49, 0x45, 0x3E, 0x00, 0x00],
32      [0x00, 0x00, 0x42, 0x7F, 0x40, 0x00, 0x00, 0x00],
33      [0x00, 0x62, 0x51, 0x49, 0x49, 0x46, 0x00, 0x00],
34      [0x00, 0x22, 0x41, 0x49, 0x49, 0x36, 0x00, 0x00],
35      [0x00, 0x18, 0x14, 0x12, 0x7F, 0x10, 0x00, 0x00],
36      [0x00, 0x27, 0x45, 0x45, 0x45, 0x39, 0x00, 0x00],
37      [0x00, 0x3C, 0x4A, 0x49, 0x49, 0x30, 0x00, 0x00],
38      [0x00, 0x01, 0x71, 0x09, 0x05, 0x03, 0x00, 0x00],
39      [0x00, 0x36, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
40      [0x00, 0x06, 0x49, 0x49, 0x29, 0x1E, 0x00, 0x00],
41      [0x00, 0x00, 0x36, 0x36, 0x00, 0x00, 0x00, 0x00],
42      [0x00, 0x00, 0xAC, 0x6C, 0x00, 0x00, 0x00, 0x00],
43      [0x00, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00, 0x00],
44      [0x00, 0x14, 0x14, 0x14, 0x14, 0x14, 0x00, 0x00],
45      [0x00, 0x41, 0x22, 0x14, 0x08, 0x00, 0x00, 0x00],
46      [0x00, 0x02, 0x01, 0x51, 0x09, 0x06, 0x00, 0x00],
47      [0x00, 0x32, 0x49, 0x79, 0x41, 0x3E, 0x00, 0x00],
48      [0x00, 0x7E, 0x09, 0x09, 0x09, 0x7E, 0x00, 0x00],
49      [0x00, 0x7F, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
50      [0x00, 0x3E, 0x41, 0x41, 0x41, 0x22, 0x00, 0x00],
51      [0x00, 0x7F, 0x41, 0x41, 0x22, 0x1C, 0x00, 0x00],
52      [0x00, 0x7F, 0x49, 0x49, 0x49, 0x41, 0x00, 0x00],
53      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x01, 0x00, 0x00],
54      [0x00, 0x3E, 0x41, 0x41, 0x51, 0x72, 0x00, 0x00],
55      [0x00, 0x7F, 0x08, 0x08, 0x08, 0x7F, 0x00, 0x00],
56      [0x00, 0x41, 0x7F, 0x41, 0x00, 0x00, 0x00, 0x00],
57      [0x00, 0x20, 0x40, 0x41, 0x3F, 0x01, 0x00, 0x00],
58      [0x00, 0x7F, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00],
59      [0x00, 0x7F, 0x40, 0x40, 0x40, 0x40, 0x00, 0x00],
60      [0x00, 0x7F, 0x02, 0x0C, 0x02, 0x7F, 0x00, 0x00],
61      [0x00, 0x7F, 0x04, 0x08, 0x10, 0x7F, 0x00, 0x00],
62      [0x00, 0x3E, 0x41, 0x41, 0x41, 0x3E, 0x00, 0x00],
63      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x06, 0x00, 0x00],
64      [0x00, 0x3E, 0x41, 0x51, 0x21, 0x5E, 0x00, 0x00],
65      [0x00, 0x7F, 0x09, 0x19, 0x29, 0x46, 0x00, 0x00],
66      [0x00, 0x26, 0x49, 0x49, 0x49, 0x32, 0x00, 0x00],
67      [0x00, 0x01, 0x01, 0x7F, 0x01, 0x01, 0x00, 0x00],
68      [0x00, 0x3F, 0x40, 0x40, 0x40, 0x3F, 0x00, 0x00],
69      [0x00, 0x1F, 0x20, 0x40, 0x20, 0x1F, 0x00, 0x00],
```

```

70         [0x00, 0x3F, 0x40, 0x38, 0x40, 0x3F, 0x00, 0x00],
71         [0x00, 0x63, 0x14, 0x08, 0x14, 0x63, 0x00, 0x00],
72         [0x00, 0x03, 0x04, 0x78, 0x04, 0x03, 0x00, 0x00],
73         [0x00, 0x61, 0x51, 0x49, 0x45, 0x43, 0x00, 0x00],
74         [0x00, 0x7F, 0x41, 0x41, 0x00, 0x00, 0x00, 0x00],
75         [0x00, 0x02, 0x04, 0x08, 0x10, 0x20, 0x00, 0x00],
76         [0x00, 0x41, 0x41, 0x7F, 0x00, 0x00, 0x00, 0x00],
77         [0x00, 0x04, 0x02, 0x01, 0x02, 0x04, 0x00, 0x00],
78         [0x00, 0x80, 0x80, 0x80, 0x80, 0x80, 0x00, 0x00],
79         [0x00, 0x01, 0x02, 0x04, 0x00, 0x00, 0x00, 0x00],
80         [0x00, 0x20, 0x54, 0x54, 0x54, 0x78, 0x00, 0x00],
81         [0x00, 0x7F, 0x48, 0x44, 0x44, 0x38, 0x00, 0x00],
82         [0x00, 0x38, 0x44, 0x44, 0x28, 0x00, 0x00, 0x00],
83         [0x00, 0x38, 0x44, 0x44, 0x48, 0x7F, 0x00, 0x00],
84         [0x00, 0x38, 0x54, 0x54, 0x54, 0x18, 0x00, 0x00],
85         [0x00, 0x08, 0x7E, 0x09, 0x02, 0x00, 0x00, 0x00],
86         [0x00, 0x18, 0xA4, 0xA4, 0xA4, 0x7C, 0x00, 0x00],
87         [0x00, 0x7F, 0x08, 0x04, 0x04, 0x78, 0x00, 0x00],
88         [0x00, 0x00, 0x7D, 0x00, 0x00, 0x00, 0x00, 0x00],
89         [0x00, 0x80, 0x84, 0x7D, 0x00, 0x00, 0x00, 0x00],
90         [0x00, 0x7F, 0x10, 0x28, 0x44, 0x00, 0x00, 0x00],
91         [0x00, 0x41, 0x7F, 0x40, 0x00, 0x00, 0x00, 0x00],
92         [0x00, 0x7C, 0x04, 0x18, 0x04, 0x78, 0x00, 0x00],
93         [0x00, 0x7C, 0x08, 0x04, 0x7C, 0x00, 0x00, 0x00],
94         [0x00, 0x38, 0x44, 0x44, 0x38, 0x00, 0x00, 0x00],
95         [0x00, 0xFC, 0x24, 0x24, 0x18, 0x00, 0x00, 0x00],
96         [0x00, 0x18, 0x24, 0x24, 0xFC, 0x00, 0x00, 0x00],
97         [0x00, 0x00, 0x7C, 0x08, 0x04, 0x00, 0x00, 0x00],
98         [0x00, 0x48, 0x54, 0x54, 0x24, 0x00, 0x00, 0x00],
99         [0x00, 0x04, 0x7F, 0x44, 0x00, 0x00, 0x00, 0x00],
100        [0x00, 0x3C, 0x40, 0x40, 0x7C, 0x00, 0x00, 0x00],
101        [0x00, 0x1C, 0x20, 0x40, 0x20, 0x1C, 0x00, 0x00],
102        [0x00, 0x3C, 0x40, 0x30, 0x40, 0x3C, 0x00, 0x00],
103        [0x00, 0x44, 0x28, 0x10, 0x28, 0x44, 0x00, 0x00],
104        [0x00, 0x1C, 0xA0, 0xA0, 0x7C, 0x00, 0x00, 0x00],
105        [0x00, 0x44, 0x64, 0x54, 0x4C, 0x44, 0x00, 0x00],
106        [0x00, 0x08, 0x36, 0x41, 0x00, 0x00, 0x00, 0x00],
107        [0x00, 0x00, 0x7F, 0x00, 0x00, 0x00, 0x00, 0x00],
108        [0x00, 0x41, 0x36, 0x08, 0x00, 0x00, 0x00, 0x00],
109        [0x00, 0x02, 0x01, 0x01, 0x02, 0x01, 0x00, 0x00],
110        [0x00, 0x02, 0x05, 0x05, 0x02, 0x00, 0x00, 0x00]]
111
112
113 class GroveOledDisplay128x64(object):
114     HORIZONTAL = 0x00
115     VERTICAL = 0x01
116     PAGE = 0x02
117
118     def __init__(self, bus=None, address=0x3C):

```

```
119         self.bus = Bus(bus)
120         self.address = address
121
122         self.off()
123         self.inverse = False
124         self.mode = self.HORIZONTAL
125
126         self.clear()
127         self.on()
128
129     def on(self):
130         self.send_command(_DISPLAY_ON)
131
132     def off(self):
133         self.send_command(_DISPLAY_OFF)
134
135     def send_command(self, command):
136         self.bus.write_byte_data(self.address, _COMMAND_MODE, command)
137
138     def send_data(self, data):
139         self.bus.write_byte_data(self.address, _DATA_MODE, data)
140
141     def send_commands(self, commands):
142         for c in commands:
143             self.send_command(c)
144
145     def clear(self):
146         self.off()
147         for i in range(8):
148             self.set_cursor(i, 0)
149             self.puts(' ' * 16)
150
151         self.on()
152         self.set_cursor(0, 0)
153
154     @property
155     def inverse(self):
156         return self._inverse
157
158     @inverse.setter
159     def inverse(self, enable):
160         self.send_command(_INVERSE_DISPLAY if enable else _NORMAL_DISPLA
161         self._inverse = enable
162
163     @property
164     def mode(self):
165         return self._mode
166
167     @mode.setter
```

```
168     def mode(self, mode):
169         self.send_command(0x20)
170         self.send_command(mode)
171         self._mode = mode
172
173     def set_cursor(self, row, column):
174         self.send_command(0xB0 + row)
175         self.send_command(0x00 + (8*column & 0x0F))
176         self.send_command(0x10 + ((8*column>>4)&0x0F))
177
178     def putc(self, c):
179         C_add = ord(c)
180         if C_add < 32 or C_add > 127:      # Ignore non-printable ASCII c
181             c = ' '
182             C_add = ord(c)
183
184         for i in range(0, 8):
185             self.send_data(BasicFont[C_add-32][i])
186
187     def puts(self, text):
188         for c in text:
189             self.putc(c)
190
191     def show_image(self, image):
192         from PIL import Image
193         import numpy as np
194
195         im = Image.open(image)
196
197         bw = im.convert('1')
198         pixels = np.array(bw.getdata())
199         page_size = 128 * 8
200
201         self.set_cursor(0, 0)
202         for page in range(8):
203             start = page_size * page
204             end = start + page_size
205
206             for i in range(start, start + 128):
207                 data = np.packbits(pixels[i:end:128][::-1])[0]
208                 self.send_data(data)
209
210
211 def main():
212     display = GroveOledDisplay128x64()
213
214     display.set_cursor(0, 0)
215     display.puts('hello')
216     display.set_cursor(1, 4)
```

```
217     display.puts('world')
218
219 if __name__ == "__main__":
220     main()
```

It seems nothing happened in terminal, however you can find the most famous sentence in the cyber world if you check your oled. 😊

**Note**

If you use the I2C tool to scan the I2C address of the grove module, you may find two or more address. 0x04 is the address of the *Grove Base Hat for Raspberry Pi*.

Play With Raspberry Pi (with GrovePi_Plus)

The python script for BeagleBone Green below also works for Raspberry Pi, But the I2C bus is different. On Raspberry Pi 3, the I2C bus is 1. The script with changing `bus=2` to `bus=1` will work on Pi.

Hardware

- **Step 1.** Prepare the below stuffs:

Raspberry pi



GrovePi_Plus



Grove - OLED Display 0.96 inch



[Get One Now](https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html)

[<https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html>]

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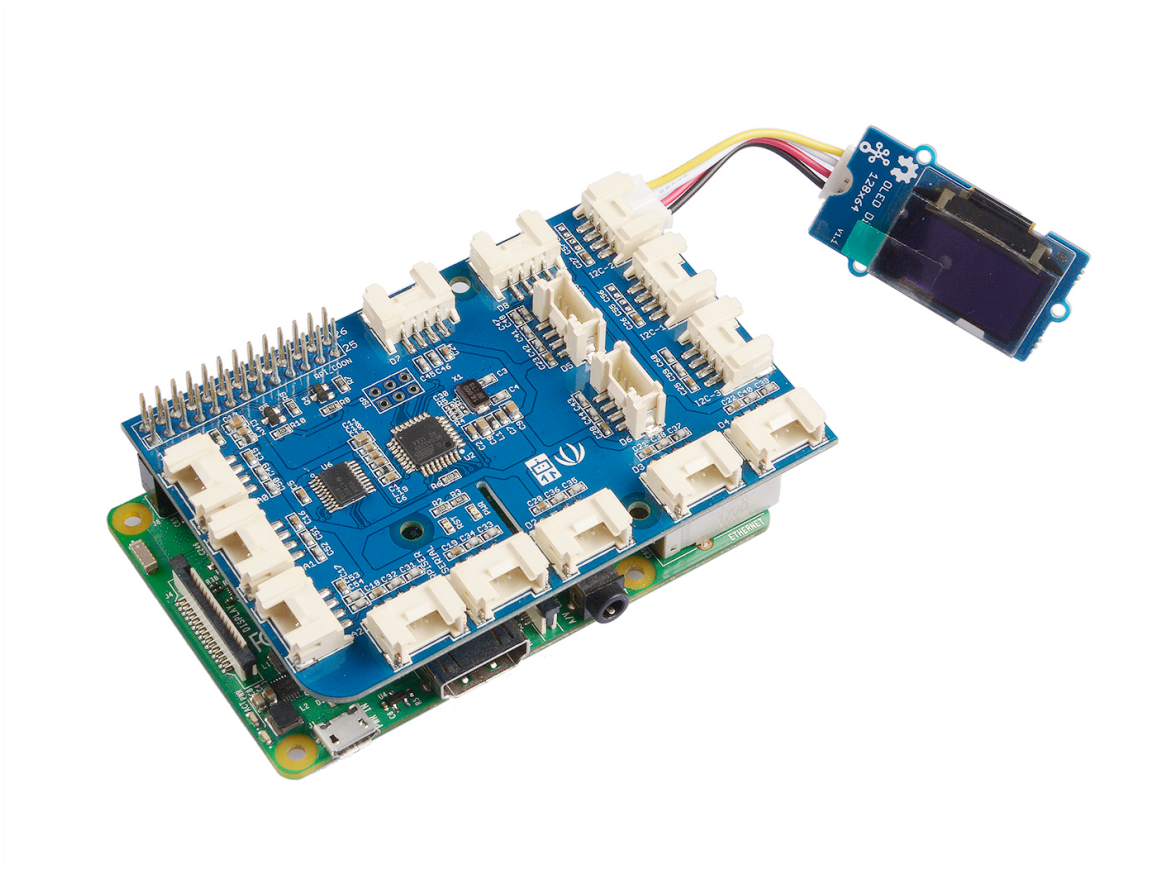
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[Get One Now](https://www.seeedstudio.com/Grove-OLED-Display-0.96-inch-p-781.html)

[<https://www.seeedstudio.com/Grove-OLED-Display-0.96-inch-p-781.html>]

- **Step 2.** Plug the GrovePi_Plus into Raspberry.
- **Step 3.** Connect Grove - OLED Display 0.96 inch ranger to **I2C-2** port of GrovePi_Plus.

- **Step 4.** Connect the Raspberry to PC through USB cable.



Software

- **Step 1.** Follow [Setting Software](https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/) [https://www.dexterindustries.com/GrovePi/get-started-with-the-grovepi/setting-software/] to configure the development environment.
- **Step 2.** Navigate to the demos' directory:

```
cd yourpath/GrovePi/Software/Python/
```



- **Step 3.** To see the code

```
nano Grove-OLED_Display_0.96inch.py # "Ctrl+x" to exit #
```



```
1 import time
2 import smbus2 as smbus
```



```
3
4  _COMMAND_MODE = 0x80
5  _DATA_MODE = 0x40
6  _NORMAL_DISPLAY = 0xA6
7
8  _DISPLAY_OFF = 0xAE
9  _DISPLAY_ON = 0xAF
10 _INVERSE_DISPLAY = 0xA7
11 _SET_BRIGHTNESS = 0x81
12
13
14 BasicFont = [[0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00],
15              [0x00, 0x00, 0x5F, 0x00, 0x00, 0x00, 0x00, 0x00],
16              [0x00, 0x00, 0x07, 0x00, 0x07, 0x00, 0x00, 0x00],
17              [0x00, 0x14, 0x7F, 0x14, 0x7F, 0x14, 0x00, 0x00],
18              [0x00, 0x24, 0x2A, 0x7F, 0x2A, 0x12, 0x00, 0x00],
19              [0x00, 0x23, 0x13, 0x08, 0x64, 0x62, 0x00, 0x00],
20              [0x00, 0x36, 0x49, 0x55, 0x22, 0x50, 0x00, 0x00],
21              [0x00, 0x00, 0x05, 0x03, 0x00, 0x00, 0x00, 0x00],
22              [0x00, 0x1C, 0x22, 0x41, 0x00, 0x00, 0x00, 0x00],
23              [0x00, 0x41, 0x22, 0x1C, 0x00, 0x00, 0x00, 0x00],
24              [0x00, 0x08, 0x2A, 0x1C, 0x2A, 0x08, 0x00, 0x00],
25              [0x00, 0x08, 0x08, 0x3E, 0x08, 0x08, 0x00, 0x00],
26              [0x00, 0xA0, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
27              [0x00, 0x08, 0x08, 0x08, 0x08, 0x08, 0x00, 0x00],
28              [0x00, 0x60, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
29              [0x00, 0x20, 0x10, 0x08, 0x04, 0x02, 0x00, 0x00],
30              [0x00, 0x3E, 0x51, 0x49, 0x45, 0x3E, 0x00, 0x00],
31              [0x00, 0x00, 0x42, 0x7F, 0x40, 0x00, 0x00, 0x00],
32              [0x00, 0x62, 0x51, 0x49, 0x49, 0x46, 0x00, 0x00],
33              [0x00, 0x22, 0x41, 0x49, 0x49, 0x36, 0x00, 0x00],
34              [0x00, 0x18, 0x14, 0x12, 0x7F, 0x10, 0x00, 0x00],
35              [0x00, 0x27, 0x45, 0x45, 0x45, 0x39, 0x00, 0x00],
36              [0x00, 0x3C, 0x4A, 0x49, 0x49, 0x30, 0x00, 0x00],
37              [0x00, 0x01, 0x71, 0x09, 0x05, 0x03, 0x00, 0x00],
38              [0x00, 0x36, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
39              [0x00, 0x06, 0x49, 0x49, 0x29, 0x1E, 0x00, 0x00],
40              [0x00, 0x00, 0x36, 0x36, 0x00, 0x00, 0x00, 0x00],
41              [0x00, 0x00, 0xAC, 0x6C, 0x00, 0x00, 0x00, 0x00],
42              [0x00, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00, 0x00],
43              [0x00, 0x14, 0x14, 0x14, 0x14, 0x14, 0x00, 0x00],
44              [0x00, 0x41, 0x22, 0x14, 0x08, 0x00, 0x00, 0x00],
45              [0x00, 0x02, 0x01, 0x51, 0x09, 0x06, 0x00, 0x00],
46              [0x00, 0x32, 0x49, 0x79, 0x41, 0x3E, 0x00, 0x00],
47              [0x00, 0x7E, 0x09, 0x09, 0x09, 0x7E, 0x00, 0x00],
48              [0x00, 0x7F, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
49              [0x00, 0x3E, 0x41, 0x41, 0x41, 0x22, 0x00, 0x00],
50              [0x00, 0x7F, 0x41, 0x41, 0x22, 0x1C, 0x00, 0x00],
51              [0x00, 0x7F, 0x49, 0x49, 0x49, 0x41, 0x00, 0x00],
```



```
52      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x01, 0x00, 0x00],
53      [0x00, 0x3E, 0x41, 0x41, 0x51, 0x72, 0x00, 0x00],
54      [0x00, 0x7F, 0x08, 0x08, 0x08, 0x7F, 0x00, 0x00],
55      [0x00, 0x41, 0x7F, 0x41, 0x00, 0x00, 0x00, 0x00],
56      [0x00, 0x20, 0x40, 0x41, 0x3F, 0x01, 0x00, 0x00],
57      [0x00, 0x7F, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00],
58      [0x00, 0x7F, 0x40, 0x40, 0x40, 0x40, 0x00, 0x00],
59      [0x00, 0x7F, 0x02, 0x0C, 0x02, 0x7F, 0x00, 0x00],
60      [0x00, 0x7F, 0x04, 0x08, 0x10, 0x7F, 0x00, 0x00],
61      [0x00, 0x3E, 0x41, 0x41, 0x41, 0x3E, 0x00, 0x00],
62      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x06, 0x00, 0x00],
63      [0x00, 0x3E, 0x41, 0x51, 0x21, 0x5E, 0x00, 0x00],
64      [0x00, 0x7F, 0x09, 0x19, 0x29, 0x46, 0x00, 0x00],
65      [0x00, 0x26, 0x49, 0x49, 0x49, 0x32, 0x00, 0x00],
66      [0x00, 0x01, 0x01, 0x7F, 0x01, 0x01, 0x00, 0x00],
67      [0x00, 0x3F, 0x40, 0x40, 0x40, 0x3F, 0x00, 0x00],
68      [0x00, 0x1F, 0x20, 0x40, 0x20, 0x1F, 0x00, 0x00],
69      [0x00, 0x3F, 0x40, 0x38, 0x40, 0x3F, 0x00, 0x00],
70      [0x00, 0x63, 0x14, 0x08, 0x14, 0x63, 0x00, 0x00],
71      [0x00, 0x03, 0x04, 0x78, 0x04, 0x03, 0x00, 0x00],
72      [0x00, 0x61, 0x51, 0x49, 0x45, 0x43, 0x00, 0x00],
73      [0x00, 0x7F, 0x41, 0x41, 0x00, 0x00, 0x00, 0x00],
74      [0x00, 0x02, 0x04, 0x08, 0x10, 0x20, 0x00, 0x00],
75      [0x00, 0x41, 0x41, 0x7F, 0x00, 0x00, 0x00, 0x00],
76      [0x00, 0x04, 0x02, 0x01, 0x02, 0x04, 0x00, 0x00],
77      [0x00, 0x80, 0x80, 0x80, 0x80, 0x80, 0x00, 0x00],
78      [0x00, 0x01, 0x02, 0x04, 0x00, 0x00, 0x00, 0x00],
79      [0x00, 0x20, 0x54, 0x54, 0x54, 0x78, 0x00, 0x00],
80      [0x00, 0x7F, 0x48, 0x44, 0x44, 0x38, 0x00, 0x00],
81      [0x00, 0x38, 0x44, 0x44, 0x28, 0x00, 0x00, 0x00],
82      [0x00, 0x38, 0x44, 0x44, 0x48, 0x7F, 0x00, 0x00],
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86      [0x00, 0x7F, 0x08, 0x04, 0x04, 0x78, 0x00, 0x00],
87      [0x00, 0x00, 0x7D, 0x00, 0x00, 0x00, 0x00, 0x00],
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89      [0x00, 0x7F, 0x10, 0x28, 0x44, 0x00, 0x00, 0x00],
90      [0x00, 0x41, 0x7F, 0x40, 0x00, 0x00, 0x00, 0x00],
91      [0x00, 0x7C, 0x04, 0x18, 0x04, 0x78, 0x00, 0x00],
92      [0x00, 0x7C, 0x08, 0x04, 0x7C, 0x00, 0x00, 0x00],
93      [0x00, 0x38, 0x44, 0x44, 0x38, 0x00, 0x00, 0x00],
94      [0x00, 0xFC, 0x24, 0x24, 0x18, 0x00, 0x00, 0x00],
95      [0x00, 0x18, 0x24, 0x24, 0xFC, 0x00, 0x00, 0x00],
96      [0x00, 0x00, 0x7C, 0x08, 0x04, 0x00, 0x00, 0x00],
97      [0x00, 0x48, 0x54, 0x54, 0x24, 0x00, 0x00, 0x00],
98      [0x00, 0x04, 0x7F, 0x44, 0x00, 0x00, 0x00, 0x00],
99      [0x00, 0x3C, 0x40, 0x40, 0x7C, 0x00, 0x00, 0x00],
100     [0x00, 0x1C, 0x20, 0x40, 0x20, 0x1C, 0x00, 0x00],
```

```
101         [0x00, 0x3C, 0x40, 0x30, 0x40, 0x3C, 0x00, 0x00],
102         [0x00, 0x44, 0x28, 0x10, 0x28, 0x44, 0x00, 0x00],
103         [0x00, 0x1C, 0xA0, 0xA0, 0x7C, 0x00, 0x00, 0x00],
104         [0x00, 0x44, 0x64, 0x54, 0x4C, 0x44, 0x00, 0x00],
105         [0x00, 0x08, 0x36, 0x41, 0x00, 0x00, 0x00, 0x00],
106         [0x00, 0x00, 0x7F, 0x00, 0x00, 0x00, 0x00, 0x00],
107         [0x00, 0x41, 0x36, 0x08, 0x00, 0x00, 0x00, 0x00],
108         [0x00, 0x02, 0x01, 0x01, 0x02, 0x01, 0x00, 0x00],
109         [0x00, 0x02, 0x05, 0x05, 0x02, 0x00, 0x00, 0x00]]
110
111
112 class GroveOledDisplay128x64(object):
113     HORIZONTAL = 0x00
114     VERTICAL = 0x01
115     PAGE = 0x02
116
117     def __init__(self, bus=2, address=0x3C):
118         self.bus = smbus.SMBus(bus)
119         self.address = address
120
121         self.off()
122         self.inverse = False
123         self.mode = self.HORIZONTAL
124
125         self.clear()
126         self.on()
127
128     def on(self):
129         self.send_command(_DISPLAY_ON)
130
131     def off(self):
132         self.send_command(_DISPLAY_OFF)
133
134     def send_command(self, command):
135         self.bus.write_byte_data(self.address, _COMMAND_MODE, command)
136
137     def send_data(self, data):
138         self.bus.write_byte_data(self.address, _DATA_MODE, data)
139
140     def send_commands(self, commands):
141         for c in commands:
142             self.send_command(c)
143
144     def clear(self):
145         self.off()
146         for i in range(8):
147             self.set_cursor(i, 0)
148             self.puts(' ' * 16)
149
```

```
150         self.on()
151         self.set_cursor(0, 0)
152
153     @property
154     def inverse(self):
155         return self._inverse
156
157     @inverse.setter
158     def inverse(self, enable):
159         self.send_command(_INVERSE_DISPLAY if enable else _NORMAL_DISPLA
160         self._inverse = enable
161
162     @property
163     def mode(self):
164         return self._mode
165
166     @mode.setter
167     def mode(self, mode):
168         self.send_command(0x20)
169         self.send_command(mode)
170         self._mode = mode
171
172     def set_cursor(self, row, column):
173         self.send_command(0xB0 + row)
174         self.send_command(0x00 + (8*column & 0x0F))
175         self.send_command(0x10 + ((8*column>>4)&0x0F))
176
177     def putc(self, c):
178         C_add = ord(c)
179         if C_add < 32 or C_add > 127:      # Ignore non-printable ASCII c
180             c = ' '
181             C_add = ord(c)
182
183         for i in range(0, 8):
184             self.send_data(BasicFont[C_add-32][i])
185
186     def puts(self, text):
187         for c in text:
188             self.putc(c)
189
190     def show_image(self, image):
191         from PIL import Image
192         import numpy as np
193
194         im = Image.open(image)
195
196         bw = im.convert('1')
197         pixels = np.array(bw.getdata())
198         page_size = 128 * 8
```

```
199
200     self.set_cursor(0, 0)
201     for page in range(8):
202         start = page_size * page
203         end = start + page_size
204
205         for i in range(start, start + 128):
206             data = np.packbits(pixels[i:end:128][::-1])[0]
207             self.send_data(data)
208
209
210 if __name__ == "__main__":
211     display = GroveOledDisplay128x64(bus=1)
212
213     display.set_cursor(0, 0)
214     display.puts('hello')
215     display.set_cursor(1, 4)
216     display.puts('world')
```

- **Step 4:** Install smbus2 library `sudo pip install smbus2`
- **Step 5:** Run the code. We'll find that the Grove - OLED outputs "Hello World".

```
sudo python Grove-OLED_Display_0.96inch.py
```



Play With Beaglebone Green

To begin editing programs that live on BBG, you can use the [Cloud9 IDE \[https://c9.io\]](https://c9.io) and refer [Beaglebone Green Wiki \[https://wiki.seeedstudio.com/BeagleBone_Green/\]](https://wiki.seeedstudio.com/BeagleBone_Green/).

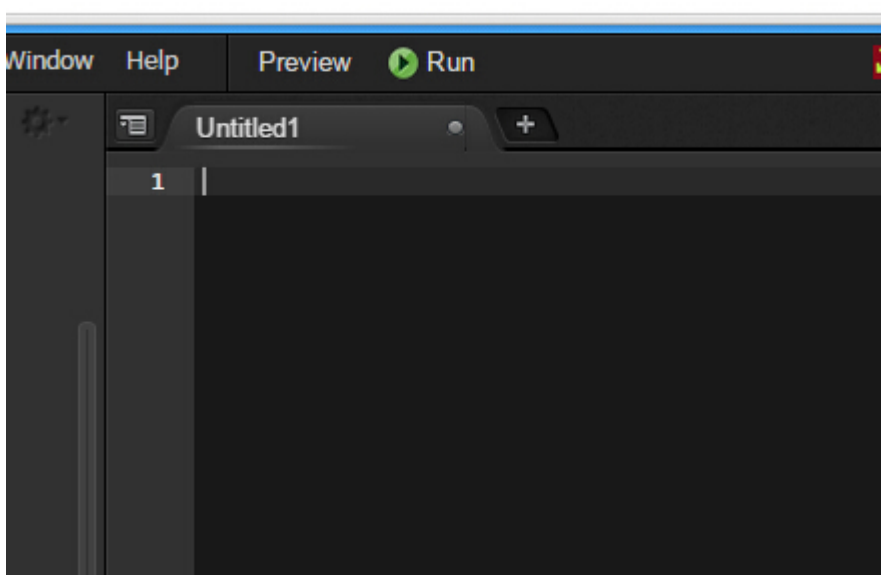
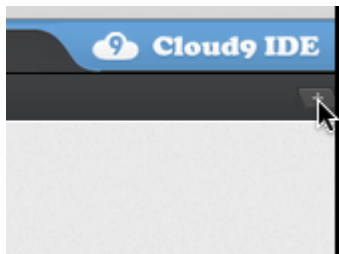
Here are the steps how to display "Hello World" on OLED.

Hardware

- **Step 1.** Connect Grove - OLED to Grove I2C socket on BBG.
- **Step 2.** Connect Seeeduino to PC via a USB cable.

Software

- **Step 1:** Click the "+" in the top-right to create a new file.



- **Step 2:** Copy and paste the following code into the new tab

```
1  import time
2  import smbus2 as smbus
3
4  _COMMAND_MODE = 0x80
5  _DATA_MODE = 0x40
6  _NORMAL_DISPLAY = 0xA6
7
8  _DISPLAY_OFF = 0xAE
9  _DISPLAY_ON = 0xAF
10 _INVERSE_DISPLAY = 0xA7
11 _SET_BRIGHTNESS = 0x81
12
13
14 BasicFont = [[0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00],
15              [0x00, 0x00, 0x5F, 0x00, 0x00, 0x00, 0x00, 0x00],
16              [0x00, 0x00, 0x07, 0x00, 0x07, 0x00, 0x00, 0x00],
17              [0x00, 0x14, 0x7F, 0x14, 0x7F, 0x14, 0x00, 0x00],
```



```
18      [0x00, 0x24, 0x2A, 0x7F, 0x2A, 0x12, 0x00, 0x00],
19      [0x00, 0x23, 0x13, 0x08, 0x64, 0x62, 0x00, 0x00],
20      [0x00, 0x36, 0x49, 0x55, 0x22, 0x50, 0x00, 0x00],
21      [0x00, 0x00, 0x05, 0x03, 0x00, 0x00, 0x00, 0x00],
22      [0x00, 0x1C, 0x22, 0x41, 0x00, 0x00, 0x00, 0x00],
23      [0x00, 0x41, 0x22, 0x1C, 0x00, 0x00, 0x00, 0x00],
24      [0x00, 0x08, 0x2A, 0x1C, 0x2A, 0x08, 0x00, 0x00],
25      [0x00, 0x08, 0x08, 0x3E, 0x08, 0x08, 0x00, 0x00],
26      [0x00, 0xA0, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
27      [0x00, 0x08, 0x08, 0x08, 0x08, 0x08, 0x00, 0x00],
28      [0x00, 0x60, 0x60, 0x00, 0x00, 0x00, 0x00, 0x00],
29      [0x00, 0x20, 0x10, 0x08, 0x04, 0x02, 0x00, 0x00],
30      [0x00, 0x3E, 0x51, 0x49, 0x45, 0x3E, 0x00, 0x00],
31      [0x00, 0x00, 0x42, 0x7F, 0x40, 0x00, 0x00, 0x00],
32      [0x00, 0x62, 0x51, 0x49, 0x49, 0x46, 0x00, 0x00],
33      [0x00, 0x22, 0x41, 0x49, 0x49, 0x36, 0x00, 0x00],
34      [0x00, 0x18, 0x14, 0x12, 0x7F, 0x10, 0x00, 0x00],
35      [0x00, 0x27, 0x45, 0x45, 0x45, 0x39, 0x00, 0x00],
36      [0x00, 0x3C, 0x4A, 0x49, 0x49, 0x30, 0x00, 0x00],
37      [0x00, 0x01, 0x71, 0x09, 0x05, 0x03, 0x00, 0x00],
38      [0x00, 0x36, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
39      [0x00, 0x06, 0x49, 0x49, 0x29, 0x1E, 0x00, 0x00],
40      [0x00, 0x00, 0x36, 0x36, 0x00, 0x00, 0x00, 0x00],
41      [0x00, 0x00, 0xAC, 0x6C, 0x00, 0x00, 0x00, 0x00],
42      [0x00, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00, 0x00],
43      [0x00, 0x14, 0x14, 0x14, 0x14, 0x14, 0x00, 0x00],
44      [0x00, 0x41, 0x22, 0x14, 0x08, 0x00, 0x00, 0x00],
45      [0x00, 0x02, 0x01, 0x51, 0x09, 0x06, 0x00, 0x00],
46      [0x00, 0x32, 0x49, 0x79, 0x41, 0x3E, 0x00, 0x00],
47      [0x00, 0x7E, 0x09, 0x09, 0x09, 0x7E, 0x00, 0x00],
48      [0x00, 0x7F, 0x49, 0x49, 0x49, 0x36, 0x00, 0x00],
49      [0x00, 0x3E, 0x41, 0x41, 0x41, 0x22, 0x00, 0x00],
50      [0x00, 0x7F, 0x41, 0x41, 0x22, 0x1C, 0x00, 0x00],
51      [0x00, 0x7F, 0x49, 0x49, 0x49, 0x41, 0x00, 0x00],
52      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x01, 0x00, 0x00],
53      [0x00, 0x3E, 0x41, 0x41, 0x51, 0x72, 0x00, 0x00],
54      [0x00, 0x7F, 0x08, 0x08, 0x08, 0x7F, 0x00, 0x00],
55      [0x00, 0x41, 0x7F, 0x41, 0x00, 0x00, 0x00, 0x00],
56      [0x00, 0x20, 0x40, 0x41, 0x3F, 0x01, 0x00, 0x00],
57      [0x00, 0x7F, 0x08, 0x14, 0x22, 0x41, 0x00, 0x00],
58      [0x00, 0x7F, 0x40, 0x40, 0x40, 0x40, 0x00, 0x00],
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60      [0x00, 0x7F, 0x04, 0x08, 0x10, 0x7F, 0x00, 0x00],
61      [0x00, 0x3E, 0x41, 0x41, 0x41, 0x3E, 0x00, 0x00],
62      [0x00, 0x7F, 0x09, 0x09, 0x09, 0x06, 0x00, 0x00],
63      [0x00, 0x3E, 0x41, 0x51, 0x21, 0x5E, 0x00, 0x00],
64      [0x00, 0x7F, 0x09, 0x19, 0x29, 0x46, 0x00, 0x00],
65      [0x00, 0x26, 0x49, 0x49, 0x49, 0x32, 0x00, 0x00],
66      [0x00, 0x01, 0x01, 0x7F, 0x01, 0x01, 0x00, 0x00],
```

```

67         [0x00, 0x3F, 0x40, 0x40, 0x40, 0x3F, 0x00, 0x00],
68         [0x00, 0x1F, 0x20, 0x40, 0x20, 0x1F, 0x00, 0x00],
69         [0x00, 0x3F, 0x40, 0x38, 0x40, 0x3F, 0x00, 0x00],
70         [0x00, 0x63, 0x14, 0x08, 0x14, 0x63, 0x00, 0x00],
71         [0x00, 0x03, 0x04, 0x78, 0x04, 0x03, 0x00, 0x00],
72         [0x00, 0x61, 0x51, 0x49, 0x45, 0x43, 0x00, 0x00],
73         [0x00, 0x7F, 0x41, 0x41, 0x00, 0x00, 0x00, 0x00],
74         [0x00, 0x02, 0x04, 0x08, 0x10, 0x20, 0x00, 0x00],
75         [0x00, 0x41, 0x41, 0x7F, 0x00, 0x00, 0x00, 0x00],
76         [0x00, 0x04, 0x02, 0x01, 0x02, 0x04, 0x00, 0x00],
77         [0x00, 0x80, 0x80, 0x80, 0x80, 0x80, 0x00, 0x00],
78         [0x00, 0x01, 0x02, 0x04, 0x00, 0x00, 0x00, 0x00],
79         [0x00, 0x20, 0x54, 0x54, 0x54, 0x78, 0x00, 0x00],
80         [0x00, 0x7F, 0x48, 0x44, 0x44, 0x38, 0x00, 0x00],
81         [0x00, 0x38, 0x44, 0x44, 0x28, 0x00, 0x00, 0x00],
82         [0x00, 0x38, 0x44, 0x44, 0x48, 0x7F, 0x00, 0x00],
83         [0x00, 0x38, 0x54, 0x54, 0x54, 0x18, 0x00, 0x00],
84         [0x00, 0x08, 0x7E, 0x09, 0x02, 0x00, 0x00, 0x00],
85         [0x00, 0x18, 0xA4, 0xA4, 0xA4, 0x7C, 0x00, 0x00],
86         [0x00, 0x7F, 0x08, 0x04, 0x04, 0x78, 0x00, 0x00],
87         [0x00, 0x00, 0x7D, 0x00, 0x00, 0x00, 0x00, 0x00],
88         [0x00, 0x80, 0x84, 0x7D, 0x00, 0x00, 0x00, 0x00],
89         [0x00, 0x7F, 0x10, 0x28, 0x44, 0x00, 0x00, 0x00],
90         [0x00, 0x41, 0x7F, 0x40, 0x00, 0x00, 0x00, 0x00],
91         [0x00, 0x7C, 0x04, 0x18, 0x04, 0x78, 0x00, 0x00],
92         [0x00, 0x7C, 0x08, 0x04, 0x7C, 0x00, 0x00, 0x00],
93         [0x00, 0x38, 0x44, 0x44, 0x38, 0x00, 0x00, 0x00],
94         [0x00, 0xFC, 0x24, 0x24, 0x18, 0x00, 0x00, 0x00],
95         [0x00, 0x18, 0x24, 0x24, 0xFC, 0x00, 0x00, 0x00],
96         [0x00, 0x00, 0x7C, 0x08, 0x04, 0x00, 0x00, 0x00],
97         [0x00, 0x48, 0x54, 0x54, 0x24, 0x00, 0x00, 0x00],
98         [0x00, 0x04, 0x7F, 0x44, 0x00, 0x00, 0x00, 0x00],
99         [0x00, 0x3C, 0x40, 0x40, 0x7C, 0x00, 0x00, 0x00],
100        [0x00, 0x1C, 0x20, 0x40, 0x20, 0x1C, 0x00, 0x00],
101        [0x00, 0x3C, 0x40, 0x30, 0x40, 0x3C, 0x00, 0x00],
102        [0x00, 0x44, 0x28, 0x10, 0x28, 0x44, 0x00, 0x00],
103        [0x00, 0x1C, 0xA0, 0xA0, 0x7C, 0x00, 0x00, 0x00],
104        [0x00, 0x44, 0x64, 0x54, 0x4C, 0x44, 0x00, 0x00],
105        [0x00, 0x08, 0x36, 0x41, 0x00, 0x00, 0x00, 0x00],
106        [0x00, 0x00, 0x7F, 0x00, 0x00, 0x00, 0x00, 0x00],
107        [0x00, 0x41, 0x36, 0x08, 0x00, 0x00, 0x00, 0x00],
108        [0x00, 0x02, 0x01, 0x01, 0x02, 0x01, 0x00, 0x00],
109        [0x00, 0x02, 0x05, 0x05, 0x02, 0x00, 0x00, 0x00]]
110
111
112    class GroveOledDisplay128x64(object):
113        HORIZONTAL = 0x00
114        VERTICAL = 0x01
115        PAGE = 0x02

```

```
116
117     def __init__(self, bus=2, address=0x3C):
118         self.bus = smbus.SMBus(bus)
119         self.address = address
120
121         self.off()
122         self.inverse = False
123         self.mode = self.HORIZONTAL
124
125         self.clear()
126         self.on()
127
128     def on(self):
129         self.send_command(_DISPLAY_ON)
130
131     def off(self):
132         self.send_command(_DISPLAY_OFF)
133
134     def send_command(self, command):
135         self.bus.write_byte_data(self.address, _COMMAND_MODE, command)
136
137     def send_data(self, data):
138         self.bus.write_byte_data(self.address, _DATA_MODE, data)
139
140     def send_commands(self, commands):
141         for c in commands:
142             self.send_command(c)
143
144     def clear(self):
145         self.off()
146         for i in range(8):
147             self.set_cursor(i, 0)
148             self.puts(' ' * 16)
149
150         self.on()
151         self.set_cursor(0, 0)
152
153     @property
154     def inverse(self):
155         return self._inverse
156
157     @inverse.setter
158     def inverse(self, enable):
159         self.send_command(_INVERSE_DISPLAY if enable else _NORMAL_DISPLA
160         self._inverse = enable
161
162     @property
163     def mode(self):
164         return self._mode
```



```
165
166     @mode.setter
167     def mode(self, mode):
168         self.send_command(0x20)
169         self.send_command(mode)
170         self._mode = mode
171
172     def set_cursor(self, row, column):
173         self.send_command(0xB0 + row)
174         self.send_command(0x00 + (8*column & 0x0F))
175         self.send_command(0x10 + ((8*column>>4)&0x0F))
176
177     def putc(self, c):
178         C_add = ord(c)
179         if C_add < 32 or C_add > 127:      # Ignore non-printable ASCII c
180             c = ' '
181             C_add = ord(c)
182
183         for i in range(0, 8):
184             self.send_data(BasicFont[C_add-32][i])
185
186     def puts(self, text):
187         for c in text:
188             self.putc(c)
189
190     def show_image(self, image):
191         from PIL import Image
192         import numpy as np
193
194         im = Image.open(image)
195
196         bw = im.convert('1')
197         pixels = np.array(bw.getdata())
198         page_size = 128 * 8
199
200         self.set_cursor(0, 0)
201         for page in range(8):
202             start = page_size * page
203             end = start + page_size
204
205             for i in range(start, start + 128):
206                 data = np.packbits(pixels[i:end:128][::-1])[0]
207                 self.send_data(data)
208
209
210 if __name__ == "__main__":
211     display = GroveOledDisplay128x64(bus=2)
212
213     display.set_cursor(0, 0)
```

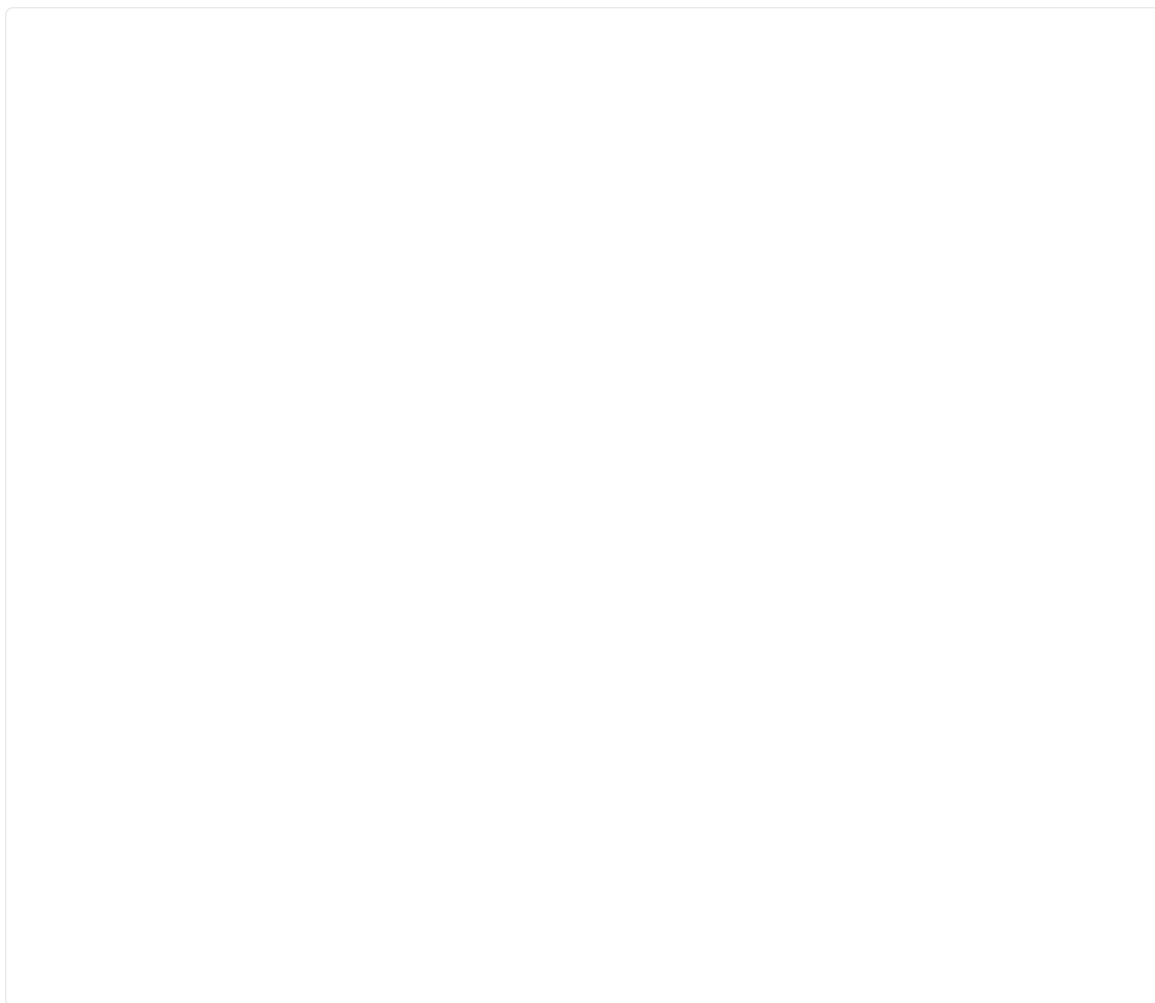
```
214     display.puts('hello')
215     display.set_cursor(1, 4)
216     display.puts('world')
```

- **Step 3:** Save the file by clicking the disk icon with with the .py extension.
- **Step 4:** Install smbus2 library `sudo pip3 install smbus2`
- **Step 5:** Run the code. We'll find that the Grove - OLED outputs "Hello World".

```
sudo python3 Grove-OLED_Display_0.96inch.py
```



Schematic Online Viewer



Resources

- **[PDF]** [Grove-OLED128x64 Schematic](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64%20SCH.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64%20SCH.pdf]
- **[PDF]** [Grove-OLED128x64 PCB](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64%20PCB.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64%20PCB.pdf]
- **[Wiki]** [Beaglebone Green Wiki](https://wiki.seeedstudio.com/BeagleBone_Green/) [https://wiki.seeedstudio.com/BeagleBone_Green/]
- **[Eagle]** [Grove-OLED128x64](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64.zip) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/OLED%20128x64.zip]
- **[Library]** [GitHub Library for OLED](https://github.com/Seeed-Studio/OLED_Display_128X64/archive/master.zip) [https://github.com/Seeed-Studio/OLED_Display_128X64/archive/master.zip]
- **[Datasheet]** [Resources of SSD1308_1.0.pdf](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/SSD1308_1.0.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/SSD1308_1.0.pdf]
- **[Datasheet]** [Resources of LY190-128064.pdf](https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/LY190-128064.pdf) [https://files.seeedstudio.com/wiki/Grove_OLED_Display_0.96/resource/LY190-128064.pdf]

Tech Support

Please submit any technical issue into our [forum](https://forum.seeedstudio.com/) [https://forum.seeedstudio.com/].



The banner features the Seeed Studio logo on the left, which includes a green stylized leaf icon and the text "seeed studio The IoT Hardware Enabler". To the right of the logo, the words "New Products" are written in white. The right side of the banner displays a collection of six different IoT hardware products: two white rectangular modules, a small blue PCB, a small green PCB with a black component, a small black PCB with a red component, and a larger green PCB with various components.

[https://www.seeedstudio.com/act-4.html?utm_source=wiki&utm_medium=wikibanner&utm_campaign=newproducts]