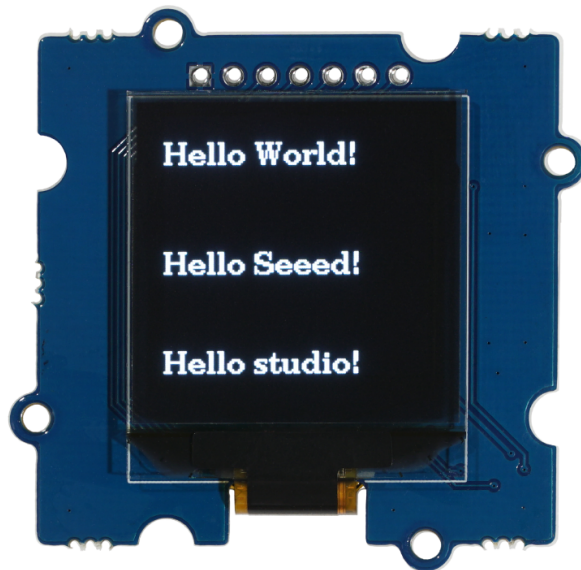


Grove - OLED Display 1.12 (SH1107) V3.0 - SPI/IIC -3.3V/5V



The Grove - OLED Display 1.12 V3.0 (SH1107) is a **monochrome** display with 128*128 resolution. Compared with LCDs, there are many advantages on OLED(Organic Light Emitting Diode) like self-emission, high contrast ratio, slim/thin outline, wide viewing angle and low power consumption. The display works on both 3.3V and

5V supply voltage. You can use either **I2C** or **SPI** interface to light up the display with your microcontroller to display words, images, and whatever you want.

Get One Now 

[<https://www.seeedstudio.com/Grove-OLED-Display-1-12-SH1107-V3-0-p-5011.html>]

Feature

- 3.3V/5V power supply compatible
- Changeable I2C address
- SPI available
- Low power consumption
- monochrome 128×128 pixels
- High contrast, high brightness
- Wide operating temperature range: -40°C ~ +85 °C

Version

Product Version	Changes	Released Date
Grove - OLED Display 1.12" V1.0	Initial	Mar 2012
Grove - OLED Display 1.12" V2.1	Change the driver IC from SSD1327 to SH1107G, upgrade the grayscale pixels from 96X96 to 128X128	Nov 2015
Grove - OLED Display 1.12" V3.0	Change the driver IC from SSD1107G to SH1107, upgrade the interface from I2C to I2C/SPI	July 2021

**Tip**

More details about Grove modules please refer to [Grove System](#)

[https://wiki.seeedstudio.com/Grove_System/]

Platforms Supported

**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.

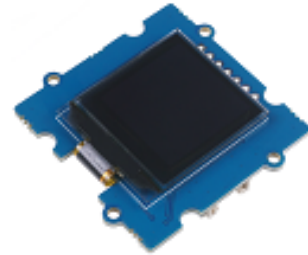
Getting Started

Hardware

Here we will show you how this Grove - OLED Display works via a simple demo. First of all, you need to prepare the below stuffs:

Seeeduino V4

Grove - OLED Display 1.12` V3.0



Get ONE Now

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

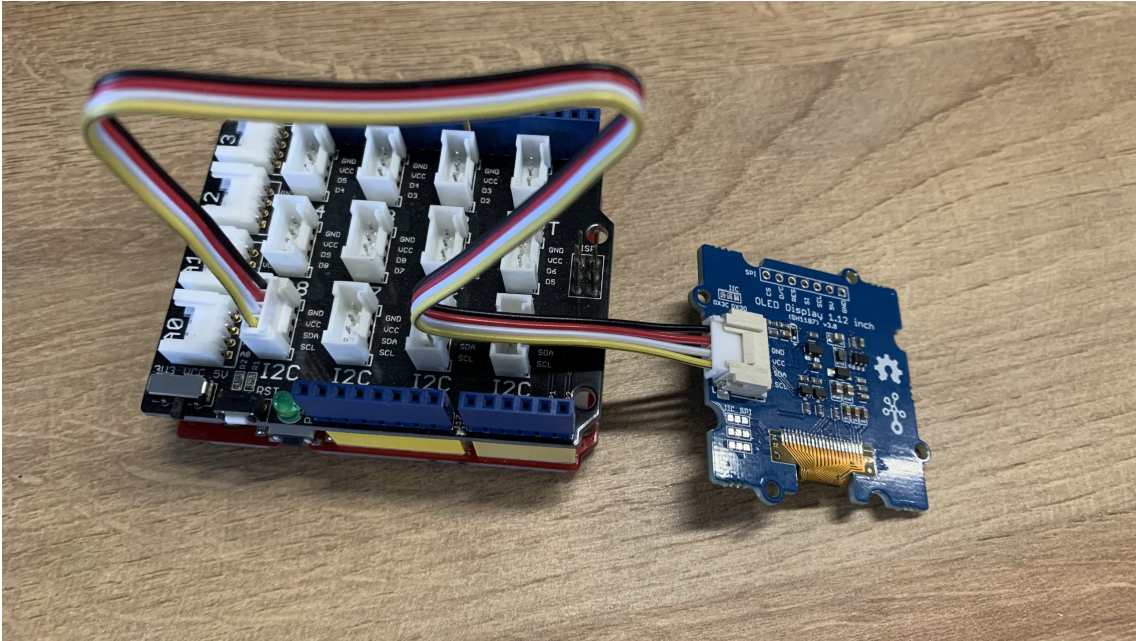
Get ONE Now

[<https://www.seeedstudio.com/Grove-OLED-Display-1-12-SH1107-V3-0-p-5011.html>]

This is an easy-to-use module, what you need to do is connect the module to I2C port of a Base Shield. There're 4 pins, defined as below.

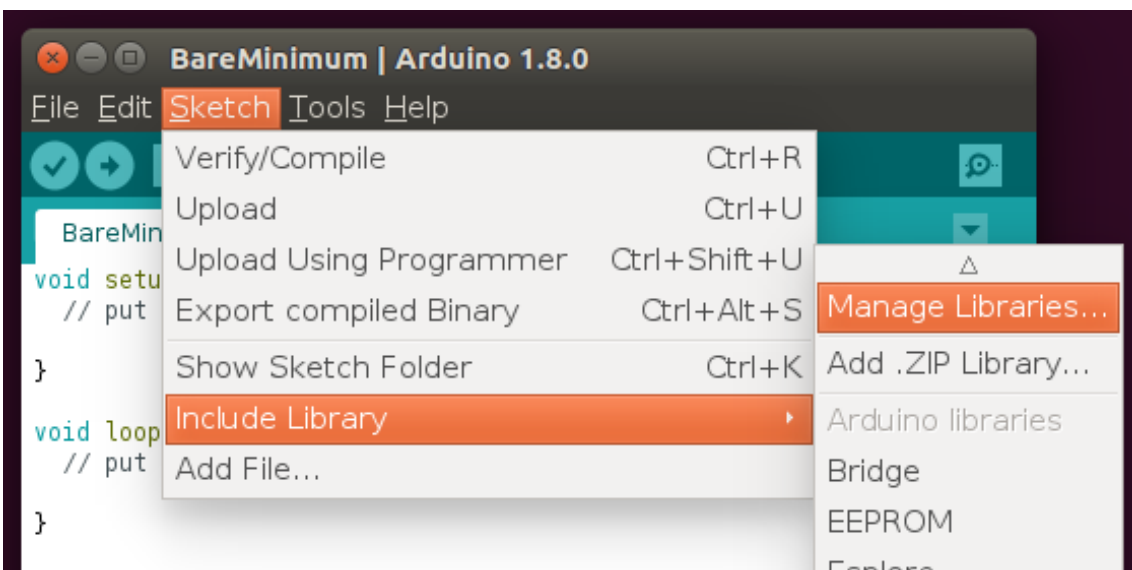
pin	Function	Note	Cable color
pin1	SCL	I2C Clock	YELLOW
pin2	SDA	I2C Data	WHITE
pin3	VCC	Power, 5V/3.3V	RED
pin4	GND	Ground	BLACK

Hardware Overview (I2C)

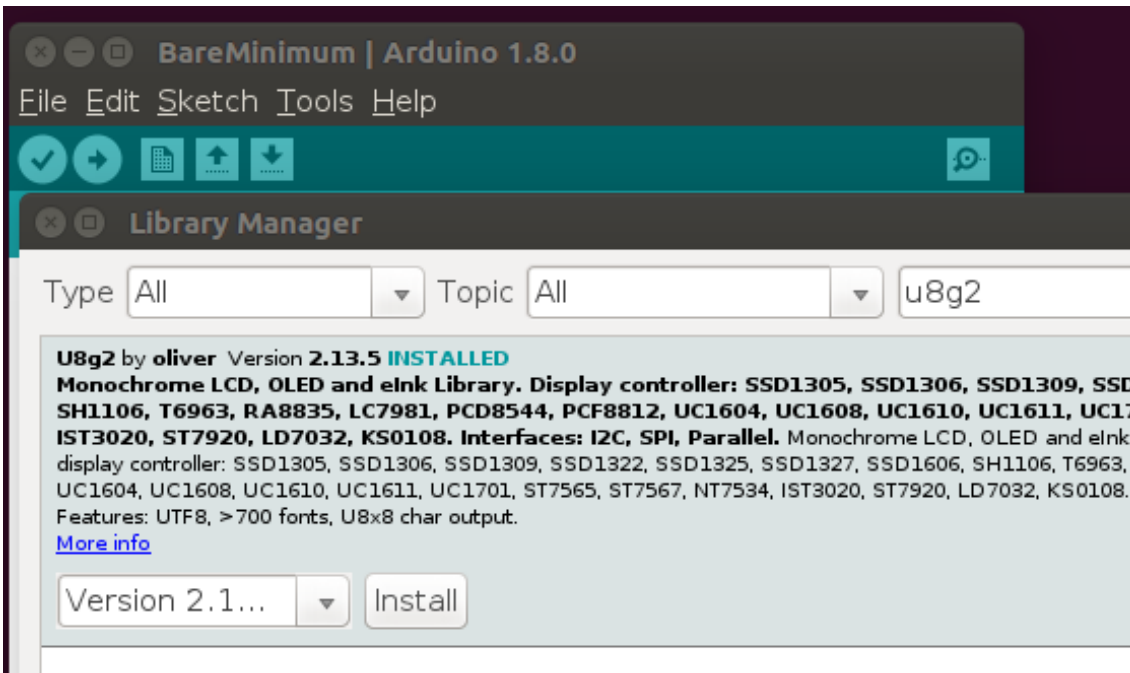


Software (I2C)

- **Step 1.** Connect Grove - OLED Display 1.12" V3.0. to I2C port of Base Shield via Grove cable.
- **Step 2.** Open Arduino IDE and the Library Manager (**Sketch > Include Library > manage Libraries**) to install the library of u8g2.



- **Step 3.** Enter "u8g2" into the search field and select latest version and Cclick "Install" button.



- **Step 4.** Upload the demo code below in your Arduino IDE.

```

1  #include <Arduino.h>
2  #include <U8g2lib.h>
3  #include <SPI.h>
4  #include <Wire.h>
5
6  U8G2_SH1107_SEEED_128X128_1_SW_I2C u8g2(U8G2_R0, /* cloc
7
8  void setup(void) {
9    u8g2.begin();
10 }
11
12 void loop(void) {
13   u8g2.firstPage();
14
15   do {
16     u8g2.setFont(u8g2_font_luBIS08_tf);
17     u8g2.drawStr(0,24,"Hello Seeed!");
18   } while ( u8g2.nextPage() );

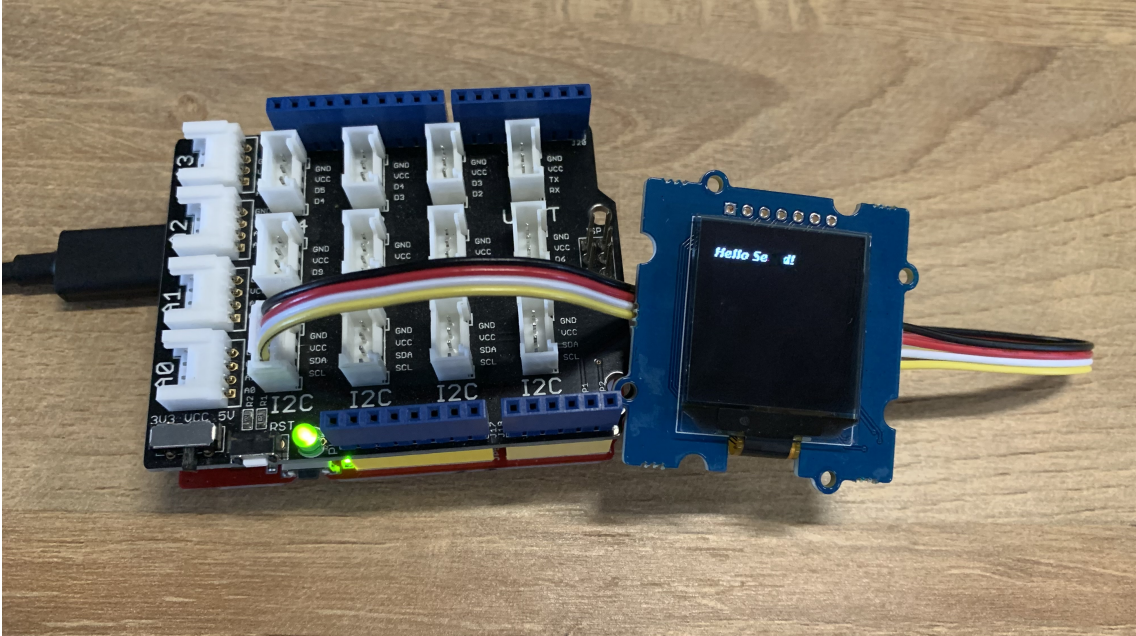
```

19 }



Success

There will be a "Hello Seeed!" displayed on the screen of Grove - OLED Display 1.12" if everything goes well.

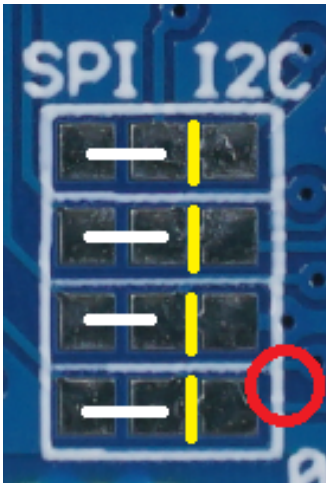


Note

If there's no Base Shield with you, [Seeeduino Vx Series](https://www.seeedstudio.com/catalogsearch/result/index/?q=Seeeduino+v&product_list_limit=all) [https://www.seeedstudio.com/catalogsearch/result/index/?q=Seeeduino+v&product_list_limit=all] with **I2C interface** do work as well.

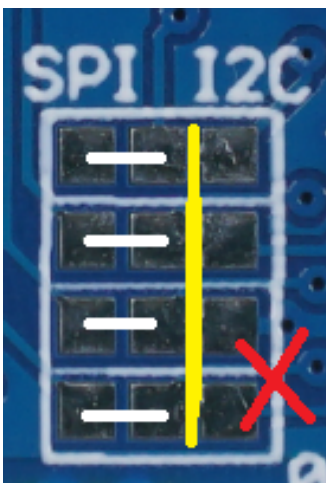
Hardware Overview (SPI)

- **Step 1.** Soldering male header and connect the wires.
- **Step 2.** Please follow the **YELLOW** line to cut down the wire on the board and follow the **WHITE** line to solder the SPI pannels and the middle pannels one by one.

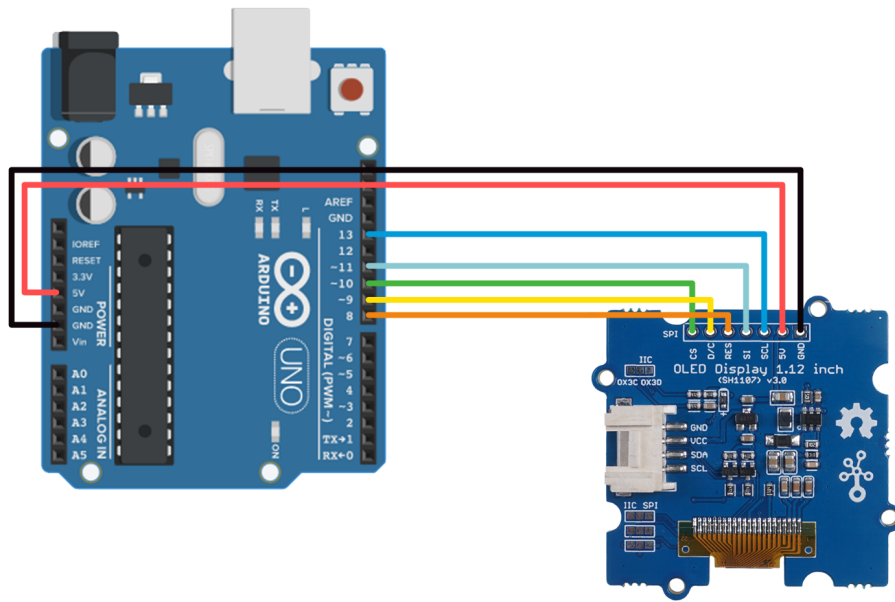
**Caution**

Please **be careful** to cut the wires one by one by following the **YELLOW** lines, otherwise you will damage all the display. We recommend you to cut the wires under magnifying glass.

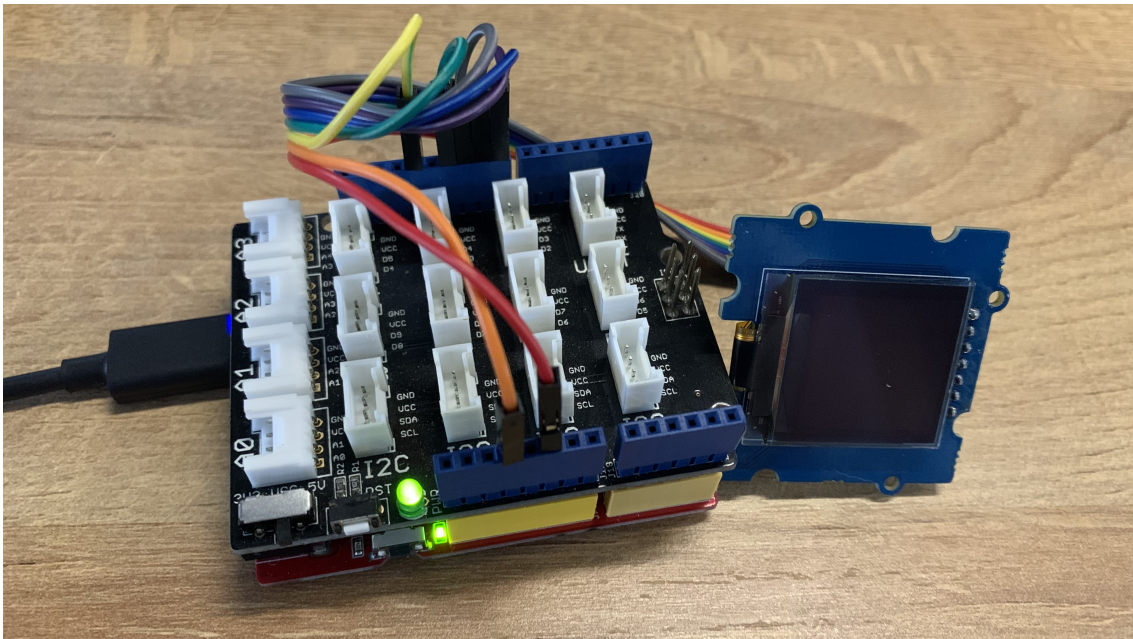
Caution: This is the wrong method to cut wires!



- **Step 3.** Follow the picture to connect the display and Seeeduino with wires.

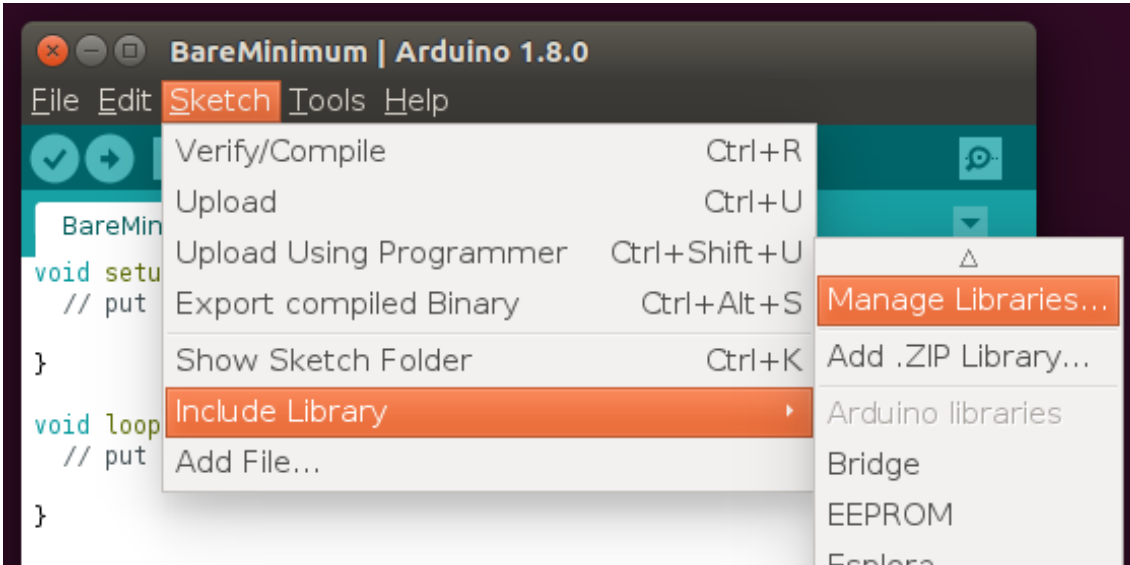


- **Step 4.** Connect Seeduino to a PC via a USB cable.

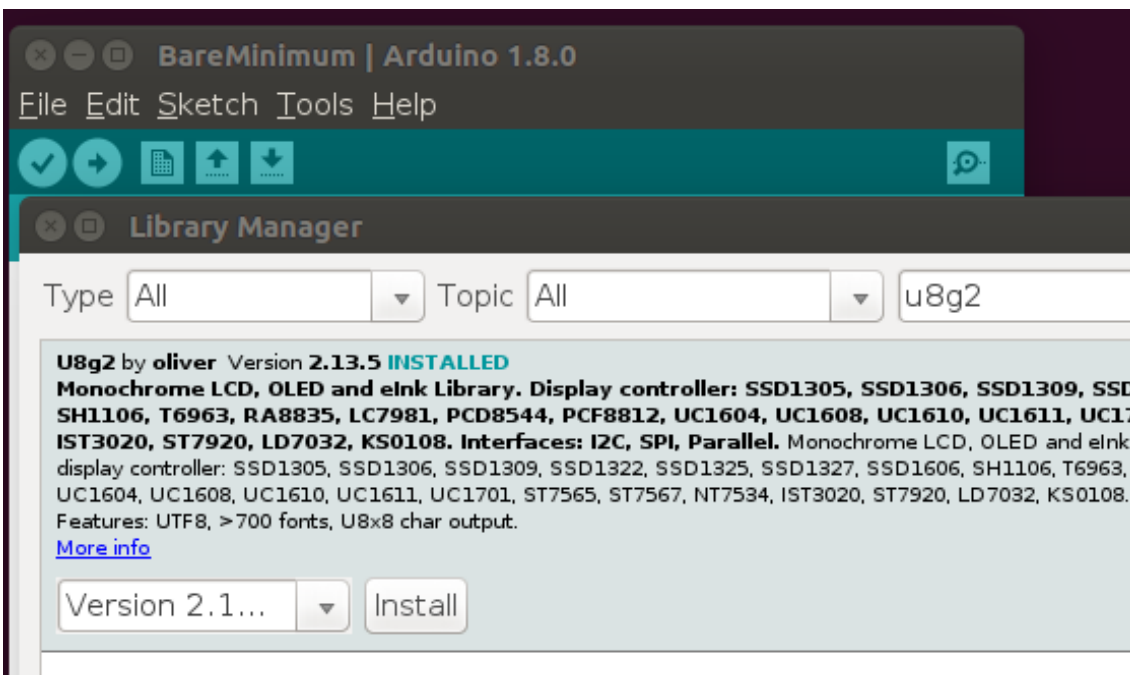


Software (SPI)

- **Step 1.** Open Arduino IDE and the Library Manager (**Sketch > Include Library > manage Libraries**) to install the library of u8g2.



- **Step 2.** Enter "u8g2" into the search field and select latest version and click "Install" button.



- **Step 3.** Upload the demo code below in your Arduino IDE.

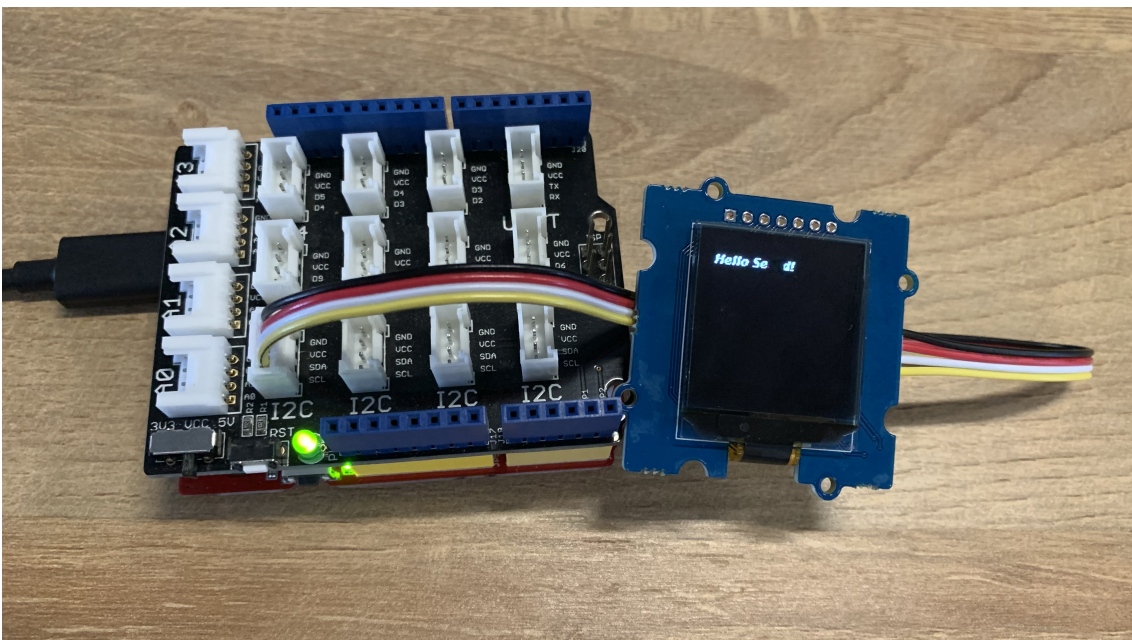


```
1 #include <Arduino.h>
2 #include <U8g2lib.h>
3 #include <SPI.h>
4 #include <Wire.h>
5
6 U8G2_SH1107_128X128_1_4W_HW_SPI u8g2(U8G2_R3, /* CS=*/ 10, /* DC=*/ 11, /* RW=*/ 12, /* RES=*/ 13);
7
8 void setup(void) {
9     u8g2.begin();
10 }
11
12 void loop(void) {
13     u8g2.firstPage();
14
15     do {
16         u8g2.setFont(u8g2_font_luBIS08_tf);
17         u8g2.drawStr(0,24,"Hello Seeed!");
18     } while ( u8g2.nextPage() );
19 }
```




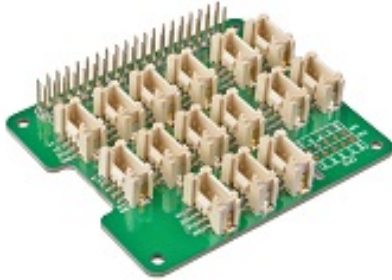
Success

There will be a "Hello Seeed!" displayed on the screen of Grove - OLED Display 1.12" if everything goes well.



Play on RaspberryPi

Materials required

Raspberry pi	Grove Base Hat for Raspberry Pi
	
<p>Get One Now [https://www.seeedstudio.com/Seeeduino-V4.2-p-2517.html]</p>	<p>Get ONE Now [https://www.seeedstudio.com/Grove-Base-Hat-for-Raspberry-Pi.html]</p>

Get ready for RaspberryPi

I2C Connection

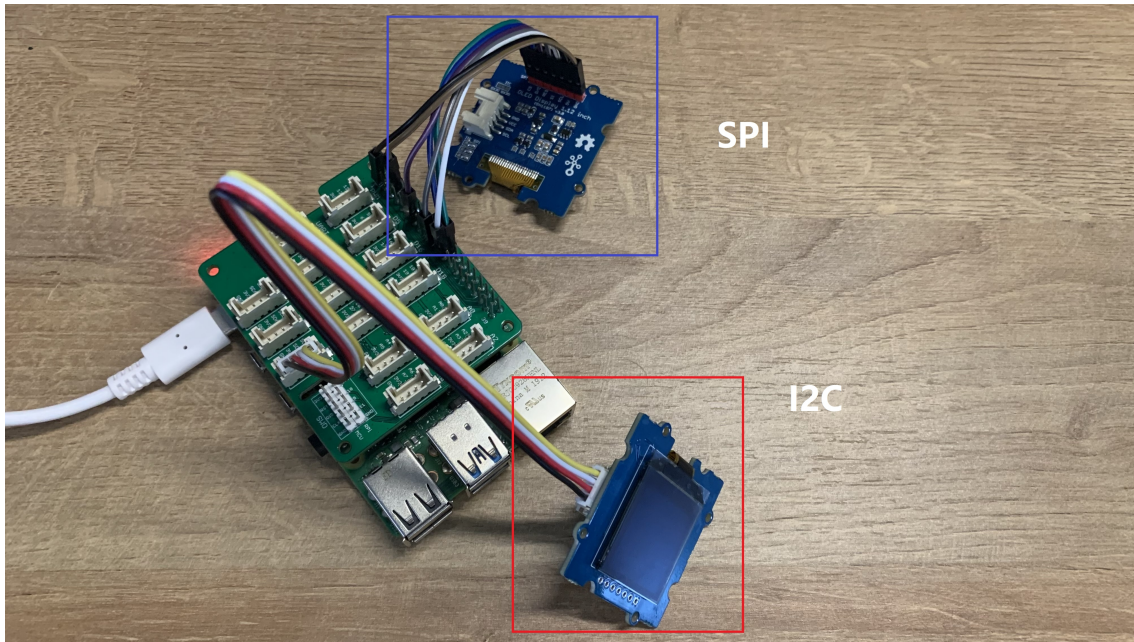
- **Step 1.** Plug OLED Yellow&Blue Display 0.96" to **I2C** port of Grove - Base Hat.
- **Step 2.** Plug Grove - Base Hat into RaspberryPi.
- **Step 3.** Connect RaspberryPi to a PC via Serial or SSH.

SPI Connection

- **Step 1.** Follow the sheet to connect the wires on Grove - Base Hat.

Grove - OLED Display 1.12" V3.0 Pins	Raspberry Pi GPIO	BCM2835 Code
VCC	3.3V	3.3V
GND	GND	GND
SI	MOSI	10
SCL	SCLK	11
CS	CE0	8
DC	GPIO.6	25
RES	GPIO.2	27

- **Step 2.** Plug Grove - Base Hat into RaspberryPi.
- **Step 3.** Connect RaspberryPi to a PC via Serial or SSH.



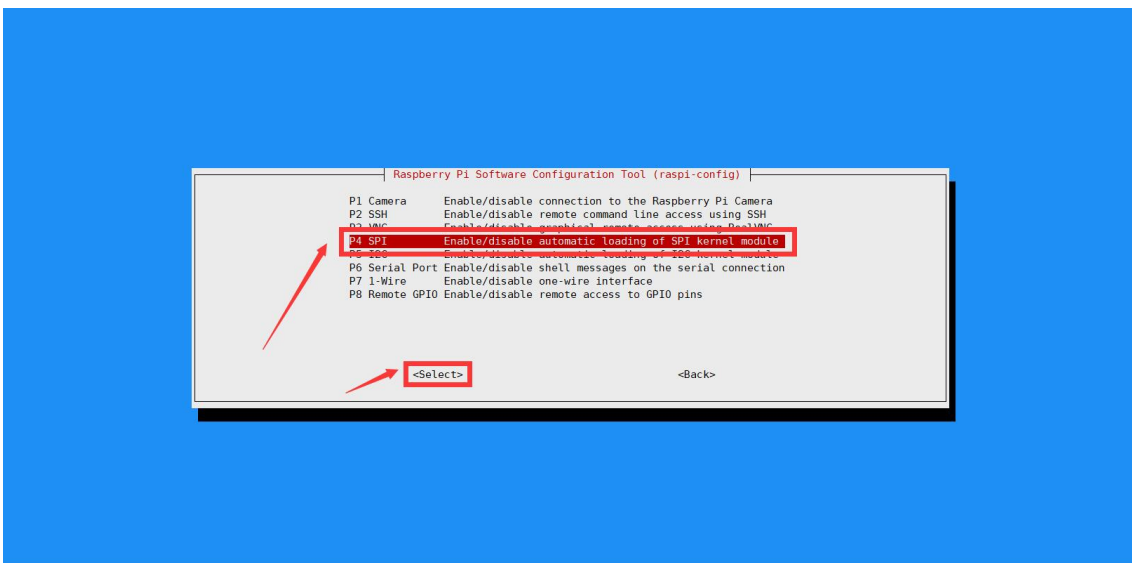
Software

- **Step 1.** Enable I2C and SPI on RaspberryPi

```
1 sudo apt-get install -y i2c-tools
2 sudo raspi-config
```



Follow the pictures to enable I2C and SPI on your RaspberryPi.





And then reboot your RaspberryPi

```
sudo reboot
```

- **Step 2.** Install necessary libraries

```
sudo apt-get install wget gcc make unzip -y
```

Install WiringPi Library

If you use WiringPi, you need to update WiringPi to version 2.52. This library may not be updated. Other libraries are recommended

```
1 cd
2 sudo apt-get install wiringpi
3 wget https://project-downloads.drogon.net/wiringpi-latest
4 sudo dpkg -i wiringpi-latest.deb
5 gpio -v
```

Install bcm2835

```
1 cd
2 wget http://www.airspayce.com/mikem/bcm2835/bcm2835-1.60.
3 tar zxvf bcm2835-1.60.tar.gz
4 cd bcm2835-1.60/
5 sudo ./configure
6 sudo make && sudo make check && sudo make install
```

For more information and the newest libraries please refer to website: [bcm2835](http://www.airspayce.com/mikem/bcm2835/) [http://www.airspayce.com/mikem/bcm2835/]

- **Step 3.** Download the demo codes

1. For **I2C** [https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/demo/RaspberryPiI2C.zip]

```
1 wget https://files.seeedstudio.com/wiki/Grove-OLED-Displa
2 mkdir I2C
3 unzip RaspberryPiI2C.zip ./I2C/
4 cd ./I2C/RaspberryPiI2C/c/
5 sudo chmod 777 test.sh
6 ./test.sh
```

2. For **SPI** [https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/demo/RaspberryPiSPI.zip]

```
1 wget https://files.seeedstudio.com/wiki/Grove-OLED-Displa
2 mkdir SPI
3 unzip RaspberryPiSPI.zip ./SPI/
4 cd ./SPI/RaspberryPiSPI/c/
5 sudo chmod 777 test.sh
6 ./test.sh
```

If you want to have more demo, we also have a little video clip.

```
1 sudo chmod 777 badapple.sh
2 ./badapple.sh
```



Grove OLED 1 12 V3



U8g2 Library Introduction

U8g2 is a monochrome graphics library for embedded devices. U8g2 supports monochrome OLEDs and LCDs, which include our chip SSD1327/SH1107G.

The Arduino library U8g2 can be installed from the library manager of the Arduino IDE. U8g2 also includes U8x8 library:

U8g2

- Includes all graphics procedures (line/box/circle draw).
- Supports many fonts. (Almost) no restriction on the font height.

- Requires some memory in the microcontroller to render the display.

U8x8

- Text output only (character) device.
- Only fonts allowed with fit into a 8x8 pixel grid.
- Writes directly to the display. No buffer in the microcontroller required.

Here provides the [U8g2 Library wiki](https://github.com/olikraus/u8g2/wiki)

[<https://github.com/olikraus/u8g2/wiki>] as well as the [U8g2 API Reference](https://github.com/olikraus/u8g2/wiki/u8g2reference) [<https://github.com/olikraus/u8g2/wiki/u8g2reference>] page.

Schematic Online Viewer



Resources

- **[Eagle]** [Grove-OLED Display 1.12inch in Eagle](https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/res/Grove%20OLED%20Display%201.12%20(SH1107)%20v3.0.zip)
[https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/res/Grove%20OLED%20Display%201.12%20(SH1107)%20v3.0.zip]
- **[PDF]** [Grove-OLED Display 1.12inch V3.0 Sch](https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/Sch)
[https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/Sch]

(SH1107)_V3.0/res/Grove%20OLED%20Display%201.12%20(SH1107)%20v3.0.pdf]

- **[Datasheet]** [SH1107_datasheet](#)

[[https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-\(SH1107\)_V3.0/res/SH1107V2.1.pdf](https://files.seeedstudio.com/wiki/Grove-OLED-Display-1.12-(SH1107)_V3.0/res/SH1107V2.1.pdf)]

Tech Support

Please submit any technical issue into our [forum](#)

[<https://forum.seeedstudio.com/>].



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