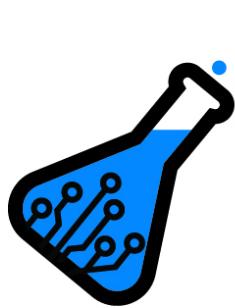


IoT Soil Sensor Build Guide



**Technology
Solutions Labs**

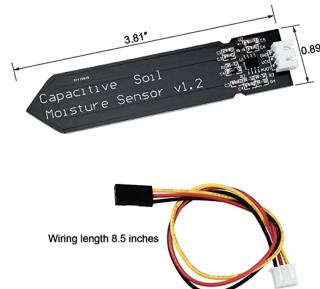
powered by CNM Ingenuity

Parts:

1. Particle Argon Wi-Fi Development Board
(Available from store.particle.io)



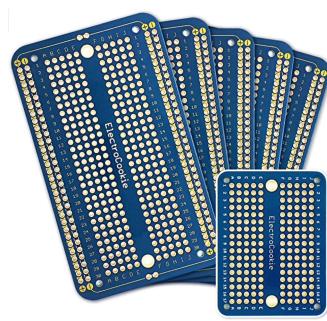
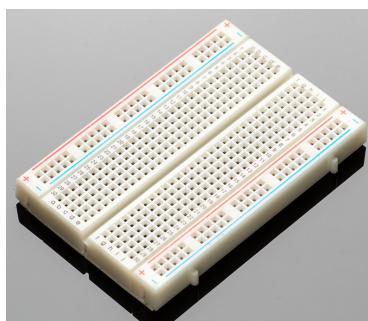
-
2. Capacitive soil moisture with jumper wires
(Available from gikfun.com or Amazon)



-
3. OLED Display - Adafruit SSD1306
(Available from [Mouser.com](https://mouser.com))



-
4. Solderless breadboard or solderboard
(Available from Amazon or a variety of electronic retailers)



5. 3.7V battery with 2-pin JST-PH connection
(Available from Amazon or a variety of electronic retailers)



6. 22 gauge jumper wire
(Available from Amazon or a variety of electronic retailers)



7. Materials for protective case(varies by use case, examples below).

Hardware Setup:

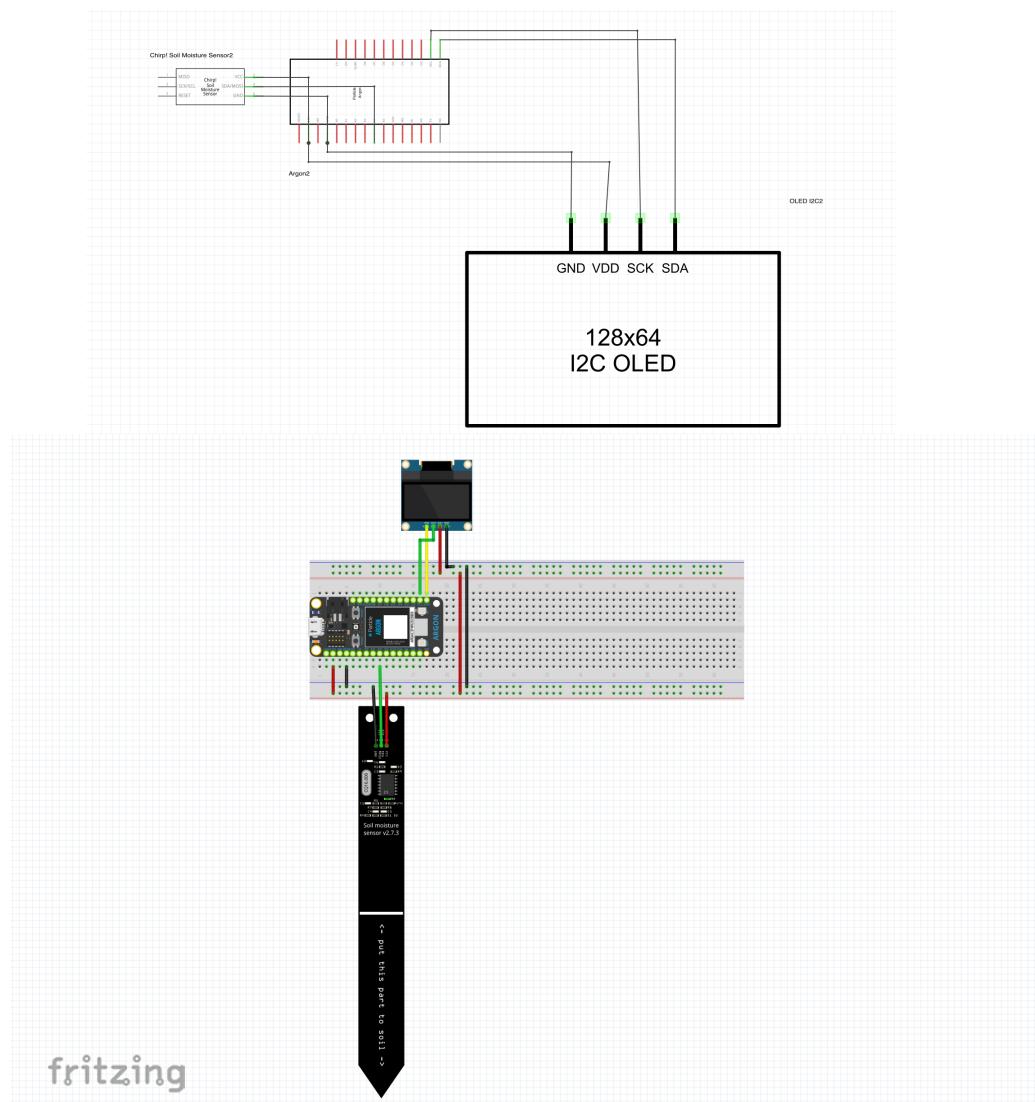
1. Wire the moisture sensor and OLED to Particle Argon as shown below.

Moisture Sensor:

AOUT - A3 pin on Argon
VCC - 3.3V power supply on Argon
GND - GND on Argon

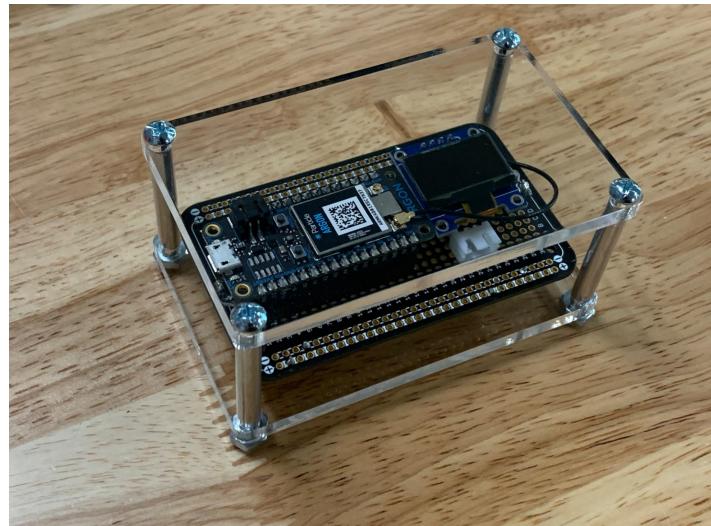
OLED:

SCL - SCL on Argon
SDA - SDA on Argon
VCC - 3.3V power supply on Argon
GND - GND on Argon



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2. Build case to protect microcontroller and moisture probe depending on use case
(Examples below).



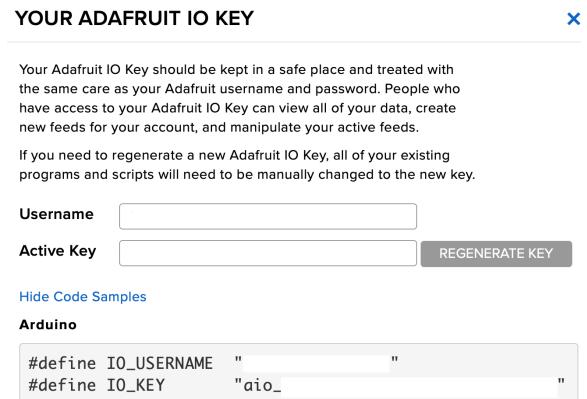
Creating an Adafruit.io Dashboard:

1. Visit Adafruit.io and create a free user account.
https://accounts.adafruit.com/users/sign_up
2. Keep note of your Username and Active Key.

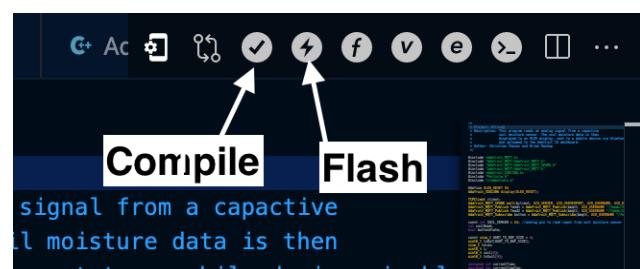
Software Setup:

1. Clone the Liquid Prep GitHub repository:
<https://github.com/Call-for-Code/Liquid-Prep.git>
2. Install Visual Studio Code:
<https://code.visualstudio.com>
3. Install the Particle Workbench for Visual Studio Code. Select all defaults during install.
<https://docs.particle.io/quickstart/workbench/>
4. Use the following documentation to set up the Particle Argon to a Particle account and to connect the device to Wi-Fi.
<https://support.particle.io/hc/en-us/articles/360045547634-How-can-I-set-up-my-Argon-or-Boron-via-USB->
5. Using Visual Studio Code, open the BLEDashboardSensor file from the CNM folder within the GitHub repository.
6. Click “File” then “New File”. Save this file as “credentials.h”
7. Navigate to the “My Key” tab within the Adafruit.io account.
8. Copy the Arduino code sample with #define AIO_USERNAME and AIO_KEY then paste into the “credentials.h” file. Also define the AIO_SERVER and AIO_SERVERPORT as shown in the example below.

```
src > C credentials.h > ...
1  #define AIO_SERVER "io.adafruit.com"
2  #define AIO_SERVERPORT 1883
3  #define AIO_USERNAME
4  #define AIO_KEY
```

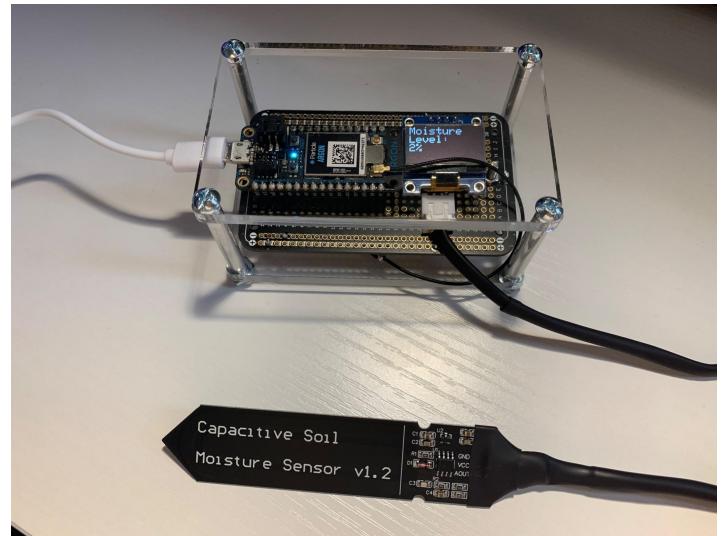


9. Ensure Particle Argon is plugged into the computer via USB. Using the toolbar in the top right corner, first Compile and then Flash code to the device.



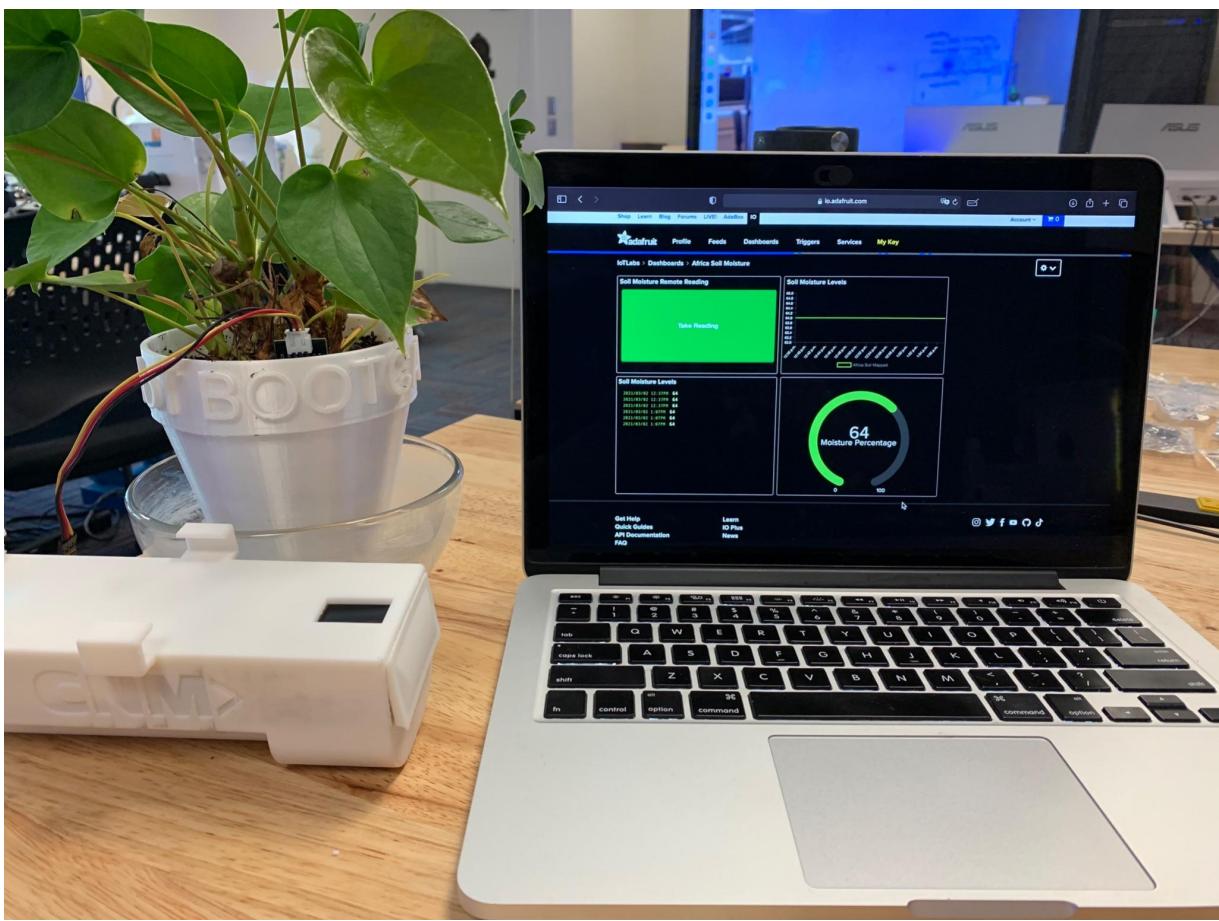
Using the Device:

1. After ensuring all previous steps are complete, supply power to the device using either a battery or USB.
2. Wait for the device to power on, then moisture data will be updated in real time on the OLED display.

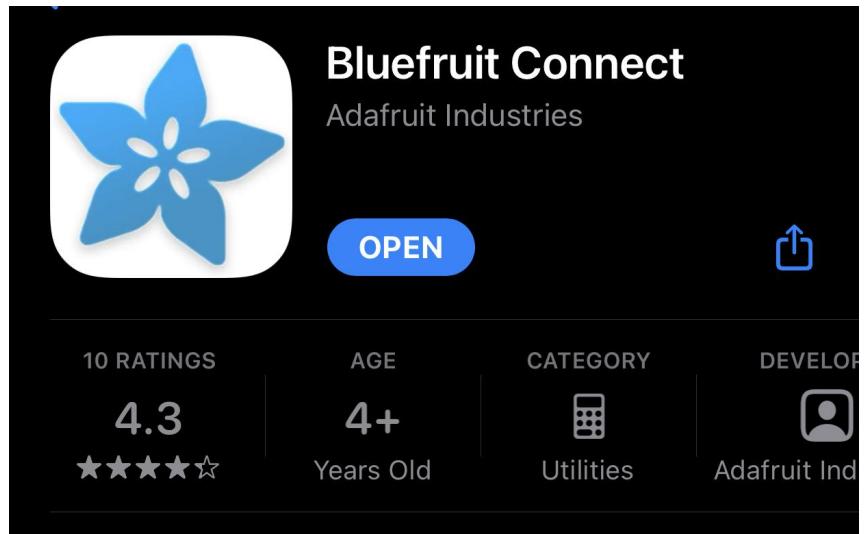


3. Log in to the Adafruit.io dashboard to view the data stream from anywhere in the world.

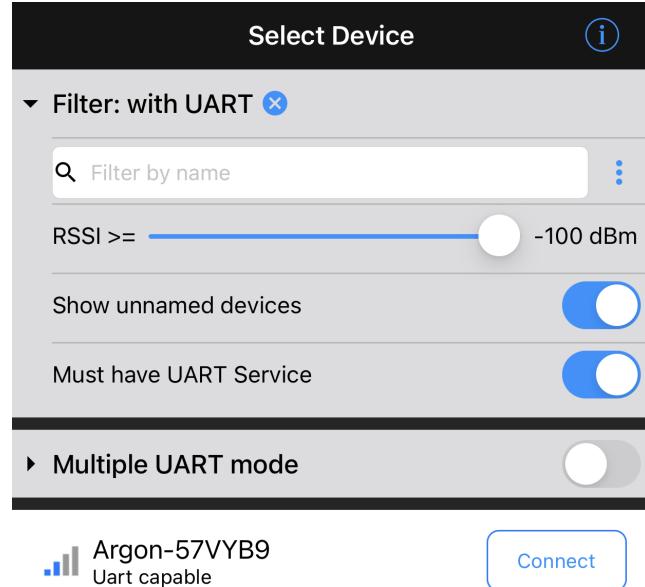
Using Bluetooth Features:



1. Download the Bluefruit Connect app for iOS or Android.



2. Open the app and select the Argon device from the list.



3. UART data will stream in real time to the mobile app.

