Kijani Grows MakeSF 1-Wire Project

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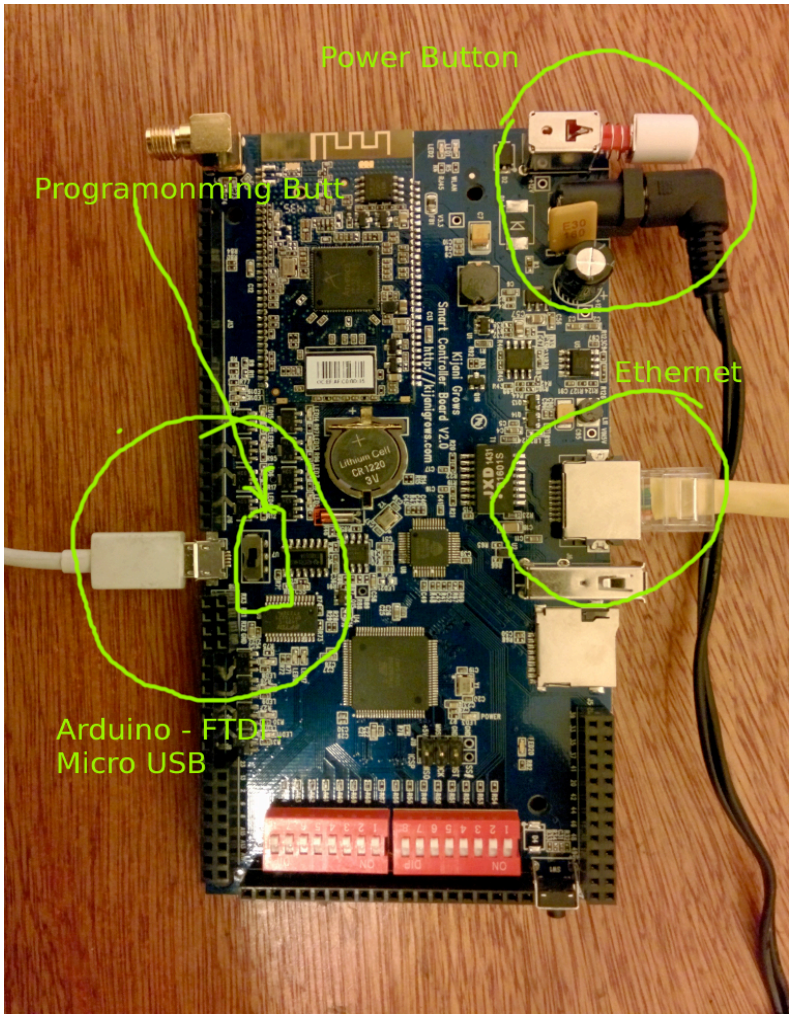
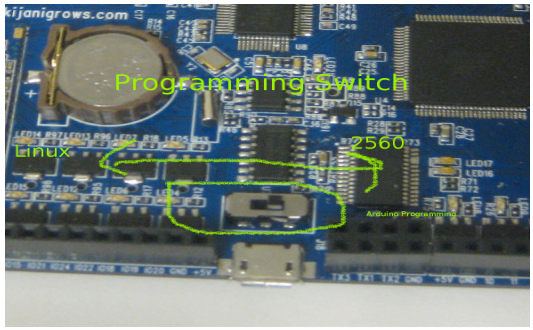
Part 1 Sensor Testing

Hello World Arduino Side

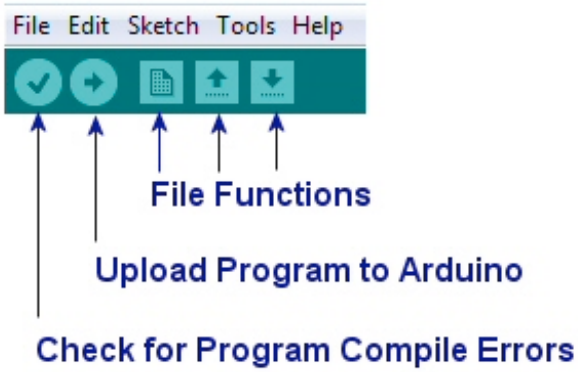
1. Power Board
2. Press on Power Button
3. Plug in micro USB
4. Open Arduino IDE
5. In the IDE go to Tools → Board and select “Arduino Mega Arduino Mega2560”
6. Go to Tools → Port and select “usbserial-XXXXXXX” where “XXXXXXX” is the serial number of the board



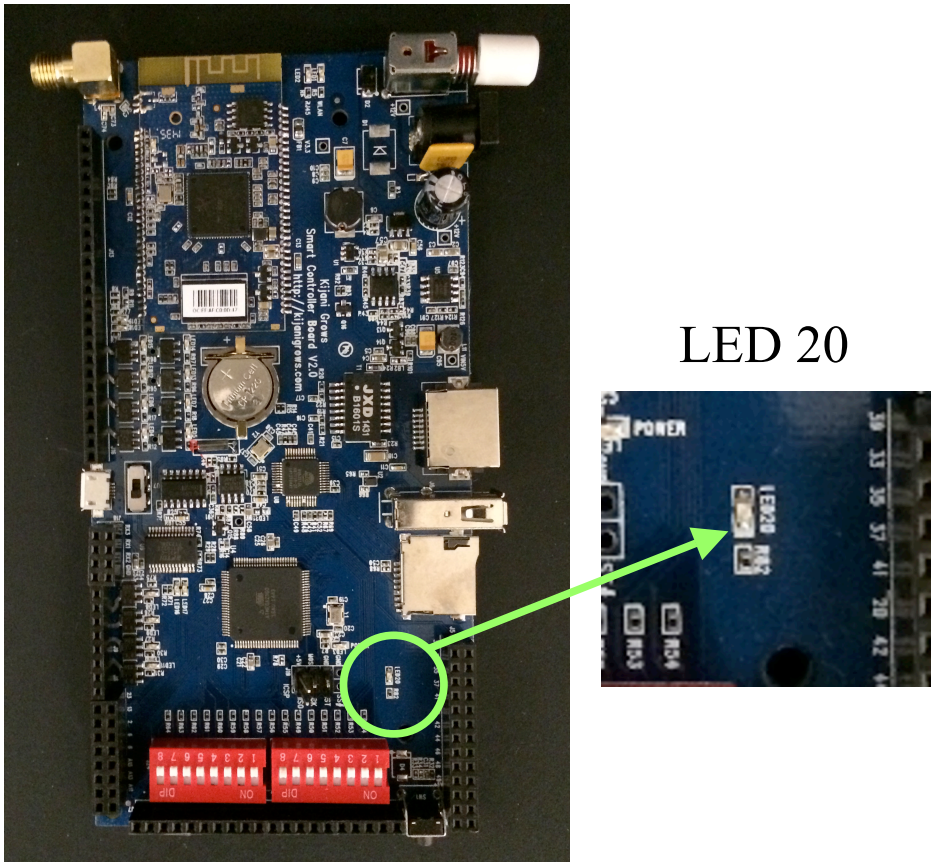
7. Switch Programming Switch to the Arduino side



8. Open Example → Basics → Blink
9. Press the Upload Button to load the program

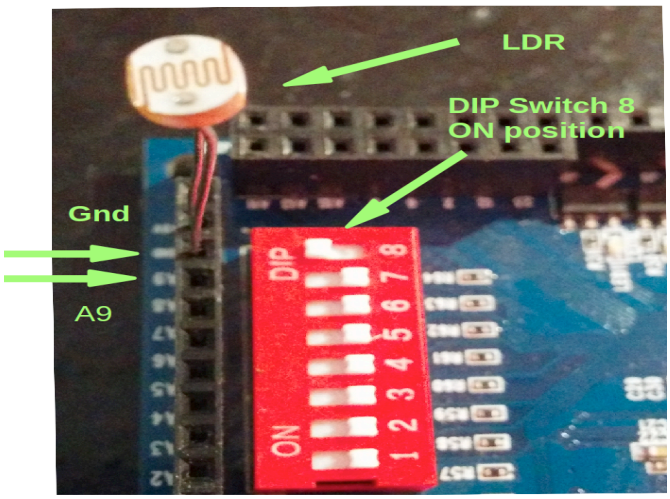


10. LED20 should start blinking



Analogue Sensors – Photocell light Sensor Test

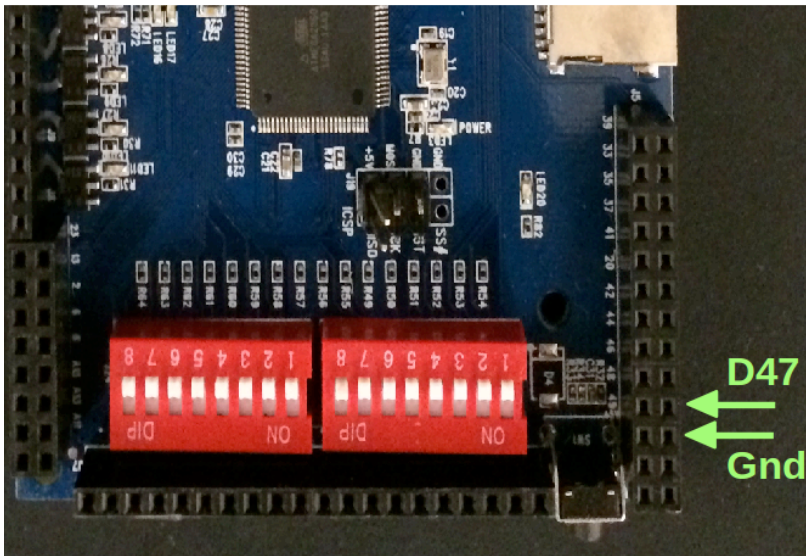
11. Insert Light into GND and A9
12. On the Analog Header turn Switch 8 to ON



13. Open Example → Analog → AnalogIn
14. Change sensor pin from A0 to A9
15. Upload the program in the same way as before
16. LED 20 should start blinking. Cover the sensor with your finger to make it blink slower or shine phone light on it to make it blink faster.

Digital Sensors - Float Switch Test

17. Insert Float Switch into GND and Pin 47



18. Open Example → Digital → DigitalInputPullUp
19. Change line 28 of the code from

    pinMode(2, INPUT_PULLUP);

    to

    pinMode(47, INPUT_PULLUP);

20. Change line 35 of the code from

    int sensorVal = digitalRead(2);

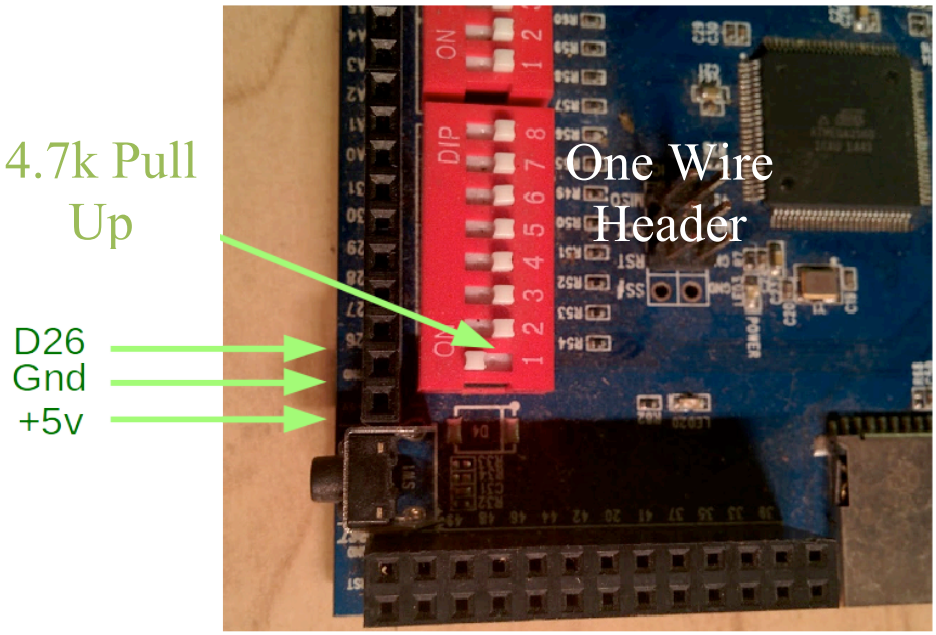
    to

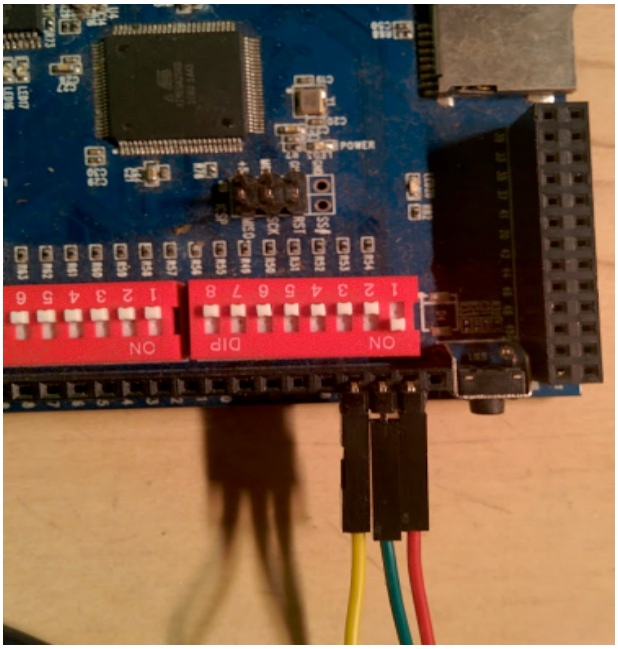
    int sensorVal = digitalRead(47)

21. Upload the program
22. Test by turning the float switch up and down. LED20 should turn and off.

Set Up Sensor Hardware

23. On One Wire Header turn switch 1 to ON
24. Insert probe data (Yellow) into pin26
25. Insert probe GND (Blue) into GND
26. Insert probe power (red) into 5V





Add Libraries

27. Navigate to http://www.kijanigrows.com/support/downloads/
28. Download zip file libraries.zip
29. Uncompress Zip file
30. Install the Dallas Temperature and One Wire libraries by copying all folders into the following directories
    1. For Mac - Documents/Arduino/libraries
    2. PC - My Documents\Arduino\libraries
31. Restart Arduino
32. Open Examples → OneWire → DS18X20 Temperature to confirm libraries are loaded

Serial Sensors – 1-Wire Temperature Sensor Test

33. In DS18X20 Temperature change line 10 of the code from

    OneWire ds(10); // on pin 10 (a 4.7K resistor is necessary)

    to

    OneWire ds(26); // on pin 10 (a 4.7K resistor is necessary)

34. Upload Code
35. Open Serial Monitor

36. You should see a result that looks something like this

```
ROM = 28 71 53 C9 4 0 0 5E
  Chip = DS18B20
  Data = 1 A1 1 4B 46 7F FF F 10 D9  CRC=D9
  Temperature = 26.06 Celsius, 78.91 Fahrenheit
```

Part 2 Kijani Setup

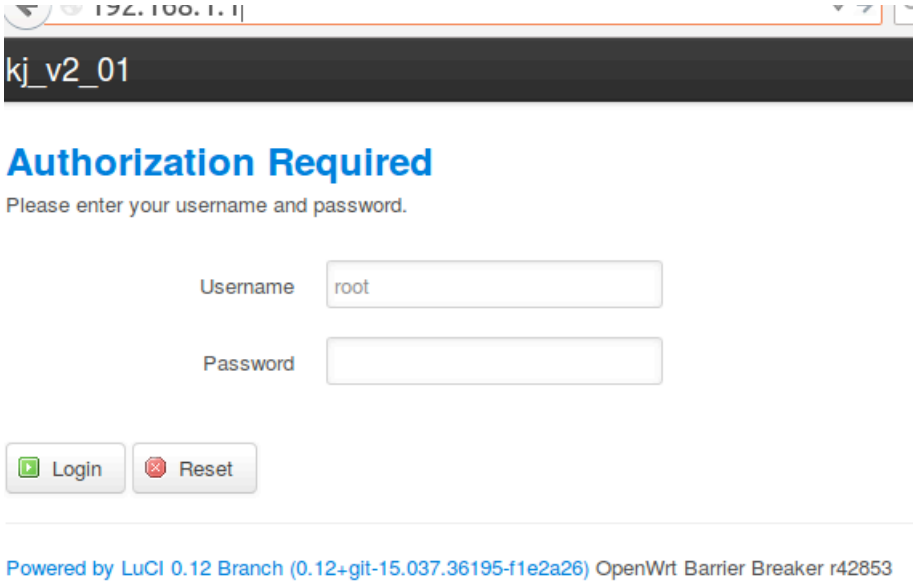
Arduino Side

37. Open Load v2_json_io
38. Load Code
39. Open Serial Monitor
40. Set buad rate to 115200
41. Confirm sensor work as expected

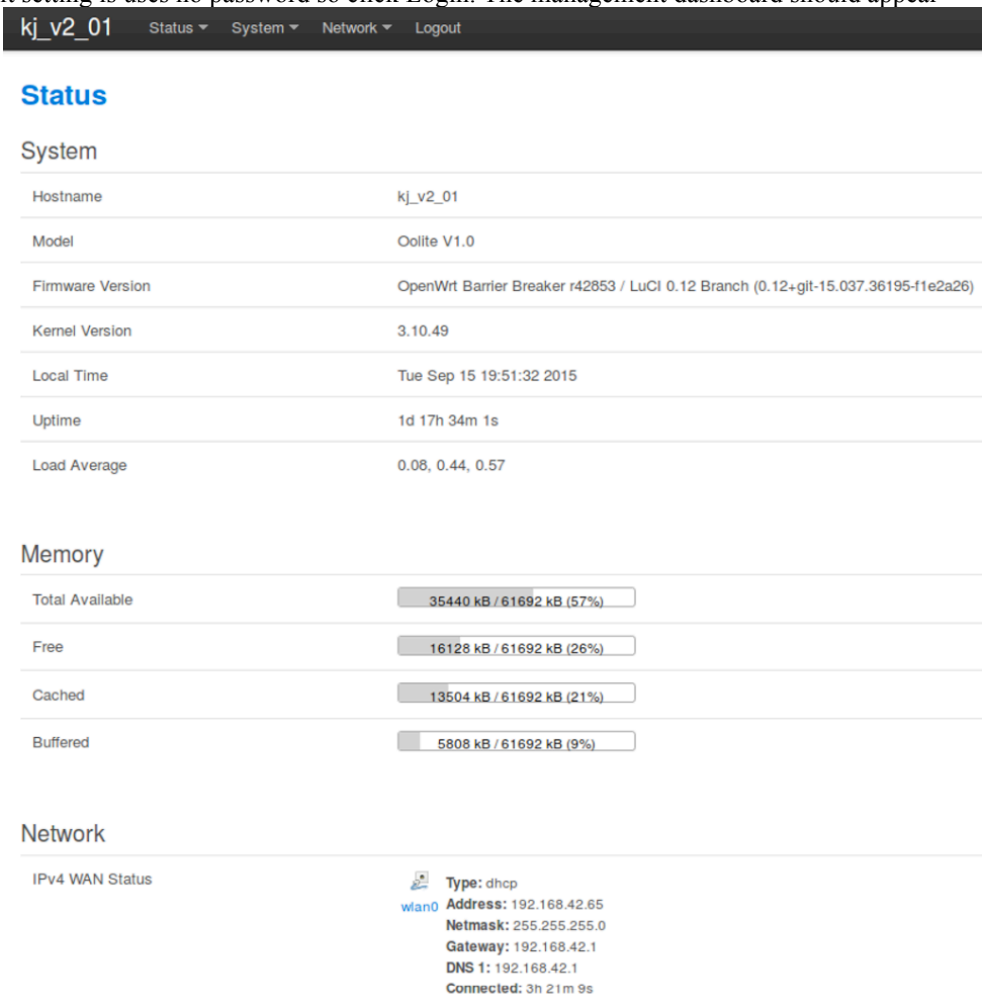
Getting Online

http://www.kijanigrows.com/faqs/how-do-i-assign-a-unique-host-name-to-a-v2-controller/
http://www.kijanigrows.com/kb/v2_board-how-to-connect-to-a-new-wifi-network/

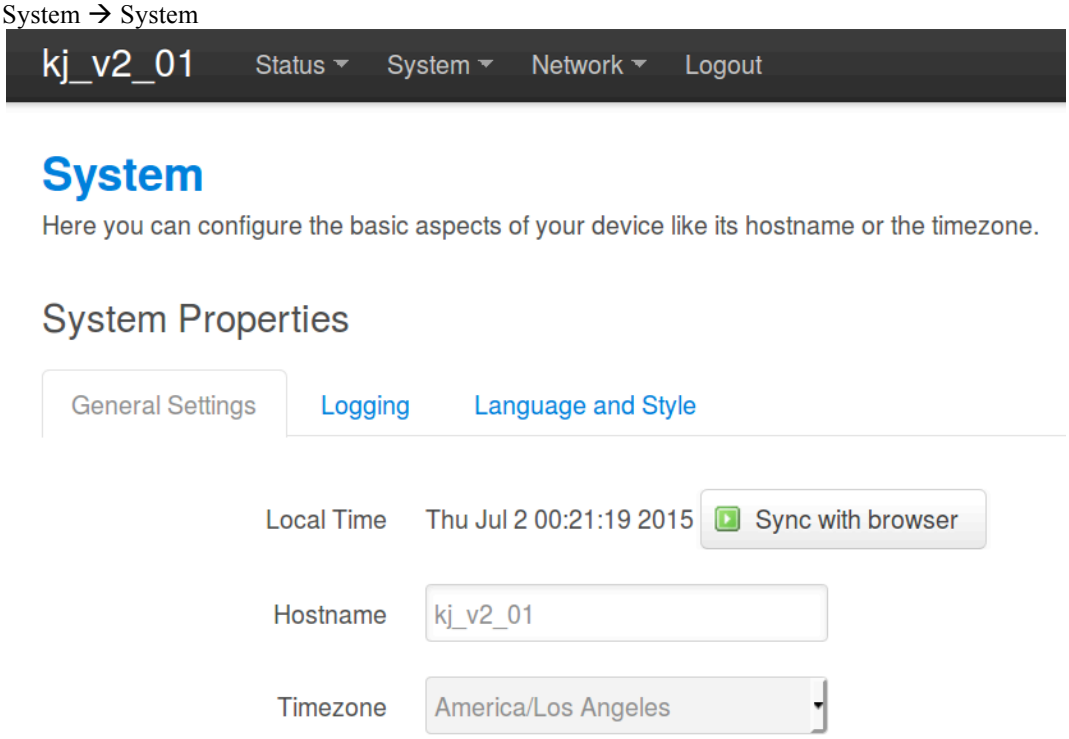
42. Remove micro USB
43. Set Up Ethernet Connection
    1. Steps for Mac
        1. Open System Preferences —> Network
        2. Click the “+” sign to create a new service
        3. Select “USB Ethernet” from the drop down menu
        4. Click Create
    2. Steps for PC
        1. None needed. The Ethernet should automatically register the Ethernet port
44. Connect in Ethernet cable
45. In a browser enter to 192.168.73.1 in the navigation bar
46. Wait for the login webpage to load



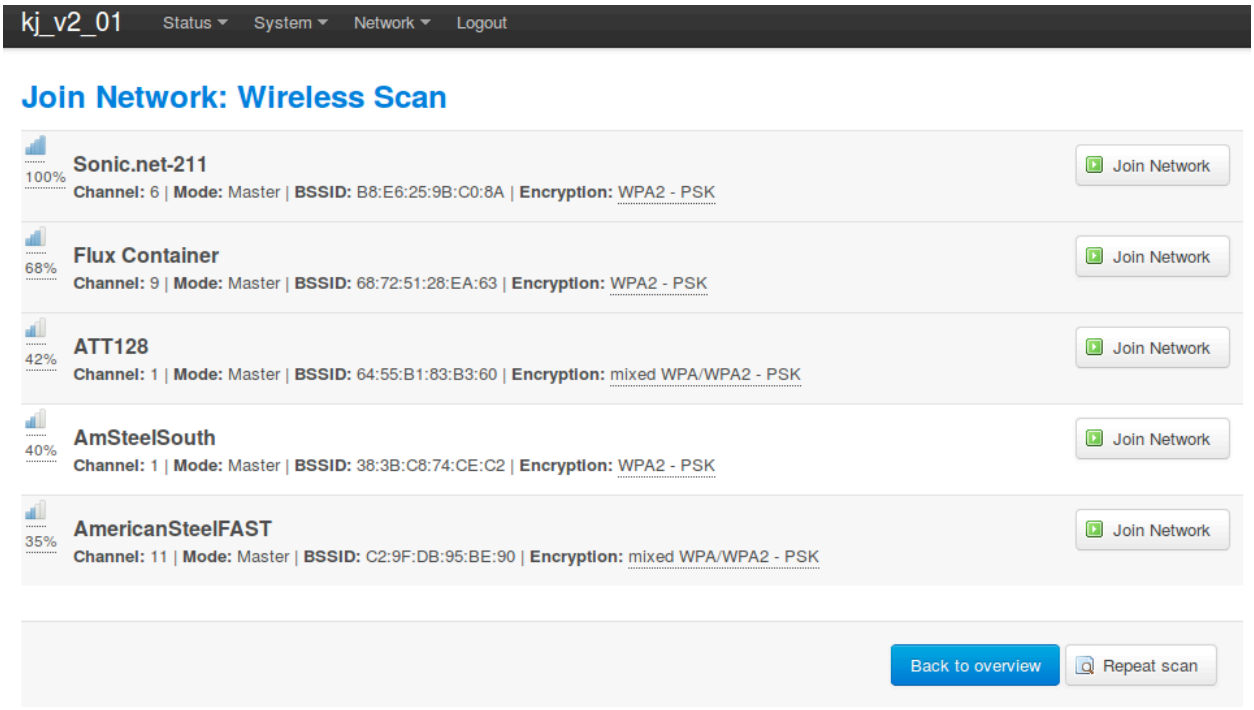
47. The default setting is uses no password so click Login. The management dashboard should appear



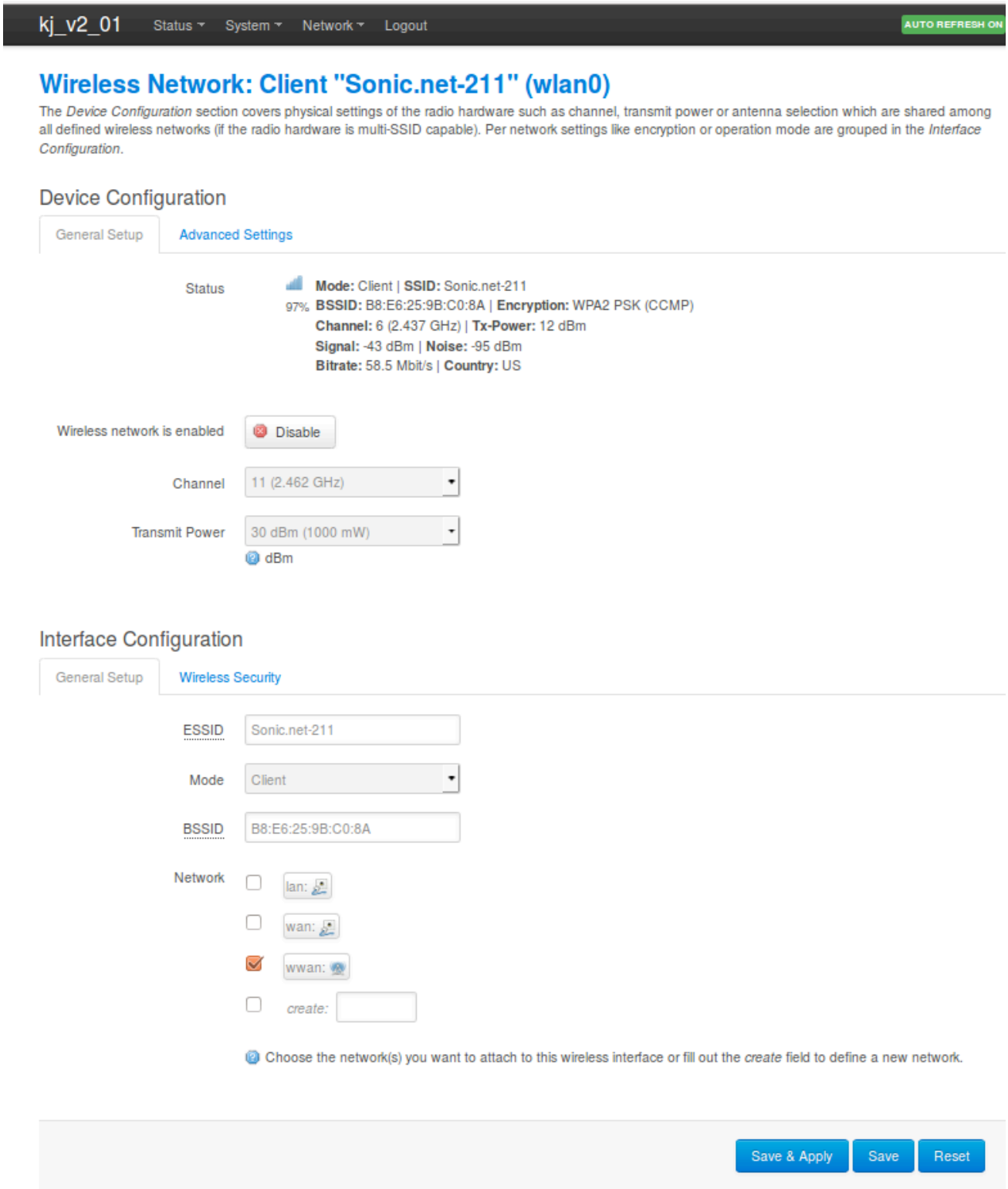
48. Go to System → System



49. Change Host Name
50. Go to Network —> Wifi
51. Click Scan
52. Click Join Network on for the network you want to join

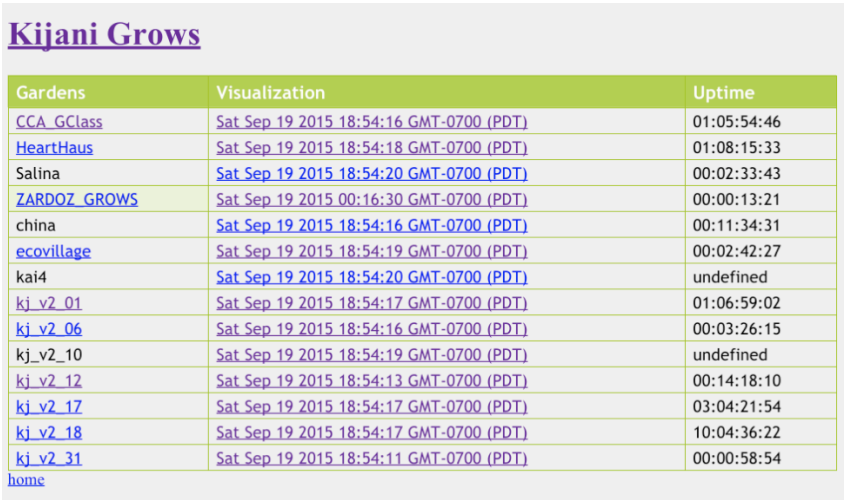


53. Click Save and Apply
54. Wireless Network page will appear
55. Network icon will turn blue if it is working



Registering on the Database

56. In a browser navigate to http://api.kijanigrows.com/v2/devices/list. You should see your host name in the device list



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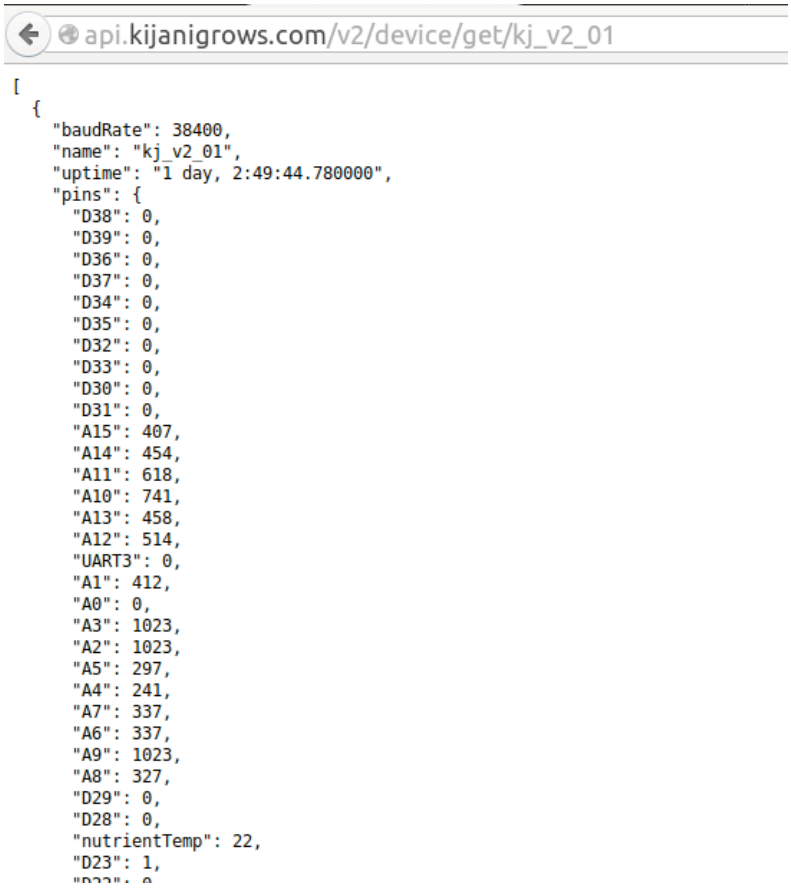
Gardens	Visualization	Uptime
CCA_GClass	Sat Sep 19 2015 18:54:16 GMT-0700 (PDT)	01:05:54:46
HeartHaus	Sat Sep 19 2015 18:54:18 GMT-0700 (PDT)	01:08:15:33
Salina	Sat Sep 19 2015 18:54:20 GMT-0700 (PDT)	00:02:33:43
ZARDOZ_GROWS	Sat Sep 19 2015 00:16:30 GMT-0700 (PDT)	00:00:13:21
china	Sat Sep 19 2015 18:54:16 GMT-0700 (PDT)	00:11:34:31
ecovillage	Sat Sep 19 2015 18:54:19 GMT-0700 (PDT)	00:02:42:27
kai4	Sat Sep 19 2015 18:54:20 GMT-0700 (PDT)	undefined
kj_v2_01	Sat Sep 19 2015 18:54:17 GMT-0700 (PDT)	01:06:59:02
kj_v2_06	Sat Sep 19 2015 18:54:16 GMT-0700 (PDT)	00:03:26:15
kj_v2_10	Sat Sep 19 2015 18:54:19 GMT-0700 (PDT)	undefined
kj_v2_12	Sat Sep 19 2015 18:54:13 GMT-0700 (PDT)	00:14:18:10
kj_v2_17	Sat Sep 19 2015 18:54:17 GMT-0700 (PDT)	03:04:21:54
kj_v2_18	Sat Sep 19 2015 18:54:17 GMT-0700 (PDT)	10:04:36:22
kj_v2_31	Sat Sep 19 2015 18:54:11 GMT-0700 (PDT)	00:00:58:54

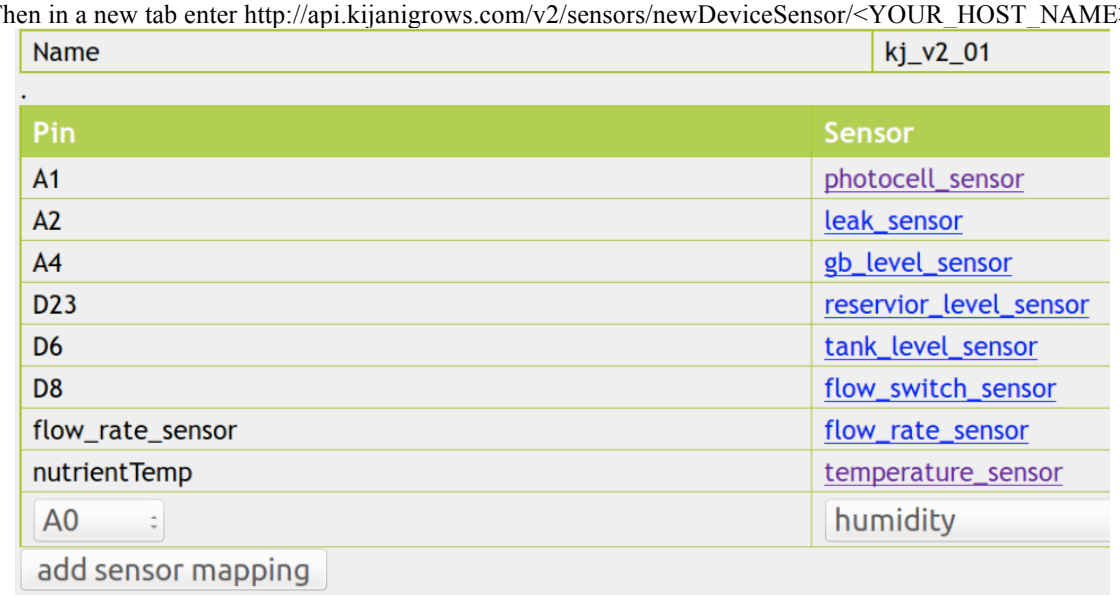
home

57. In a new tab enter http://api.kijanigrows.com/v2/device/get/<YOUR_HOST_NAME>. You will taken to a webpage that displays the raw JSON string that the database is receiving. Confirm that the data is updating correctly



Adding Sensor Mapping

58. Then in a new tab enter http://api.kijanigrows.com/v2/sensors/newDeviceSensor/<YOUR_HOST_NAME>



59. Select the Pin and sensor type from the drop down menu
60. Click the "add sensor mapping" button to add the sensor your have connected
61. Repeat for all sensors connected

Viewing Sensor Readings

62. In a new tab enter http://api.kijanigrows.com/v2/device/sensors/jade/<YOUR_HOST_NAME>. You will see a webpage that display the sensor data converted to the appropriate units
63. To change the set points and conversion factors go back to http://api.kijanigrows.com/v2/sensors/newDeviceSensor/<YOUR_HOST_NAME>
64. In the Sensor column, click on the link for the sensor you want to adjust. You will be take to a new window where you can adjust all the setting for that sensor

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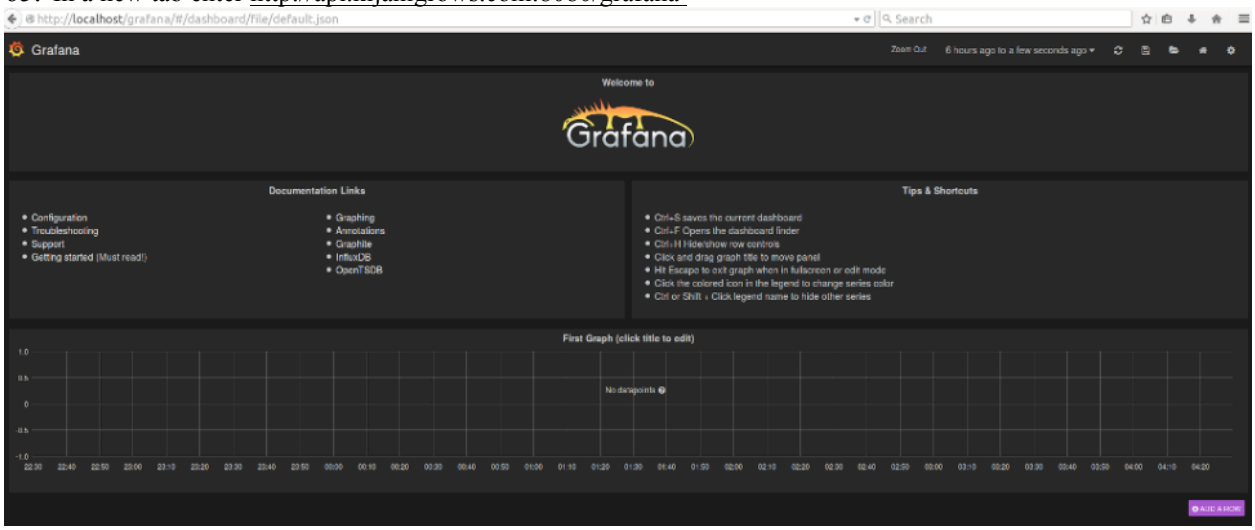
Update

Name	pH
Type	analogue
Units	pH
Key	atlasPH
High setpoint	8
higher than setpoint message	pH is high
Low setpoint	2
lower than setpoint message	ph is low
Coversion code	

home

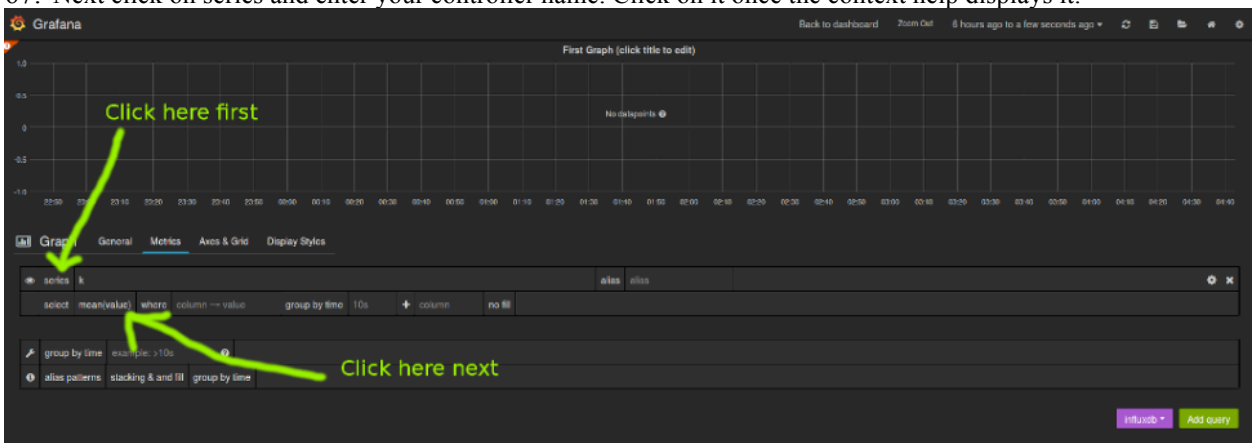
Displaying the Data

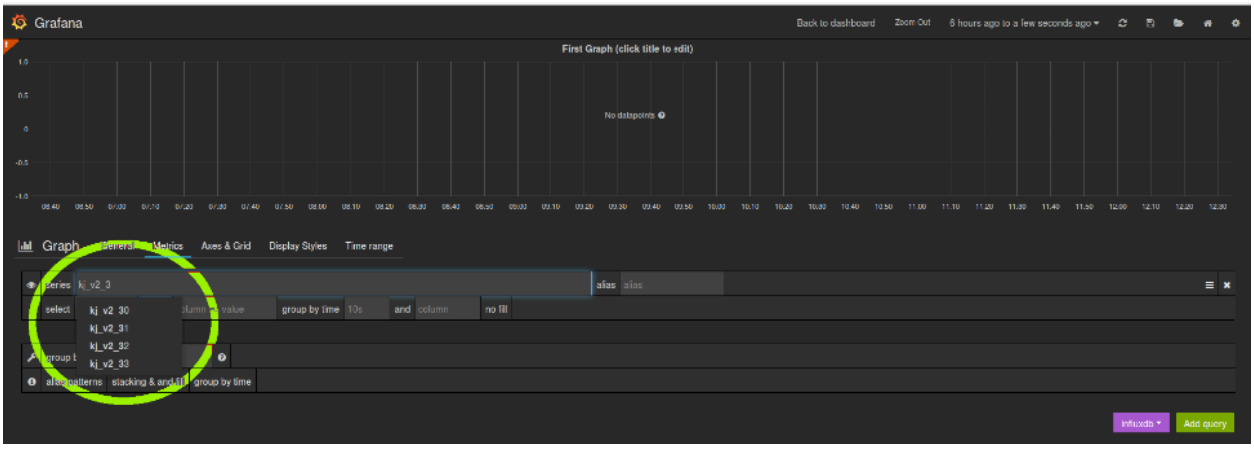
65. In a new tab enter http://api.kijanigrows.com:8080/grafana



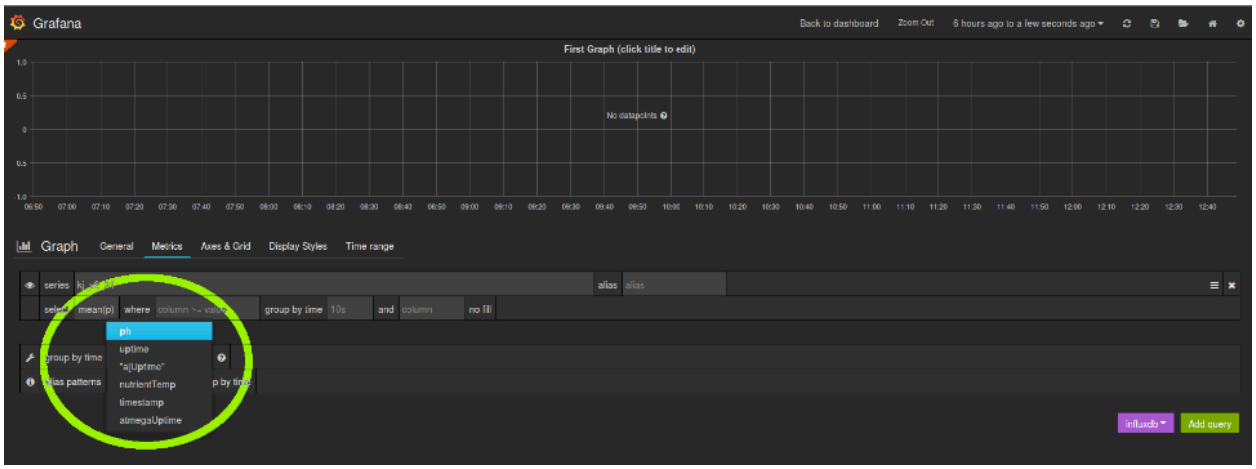
66. Click the title 'First Graph' then click on edit as shown below

67. Next click on series and enter your controller name. Click on it once the context help displays it.

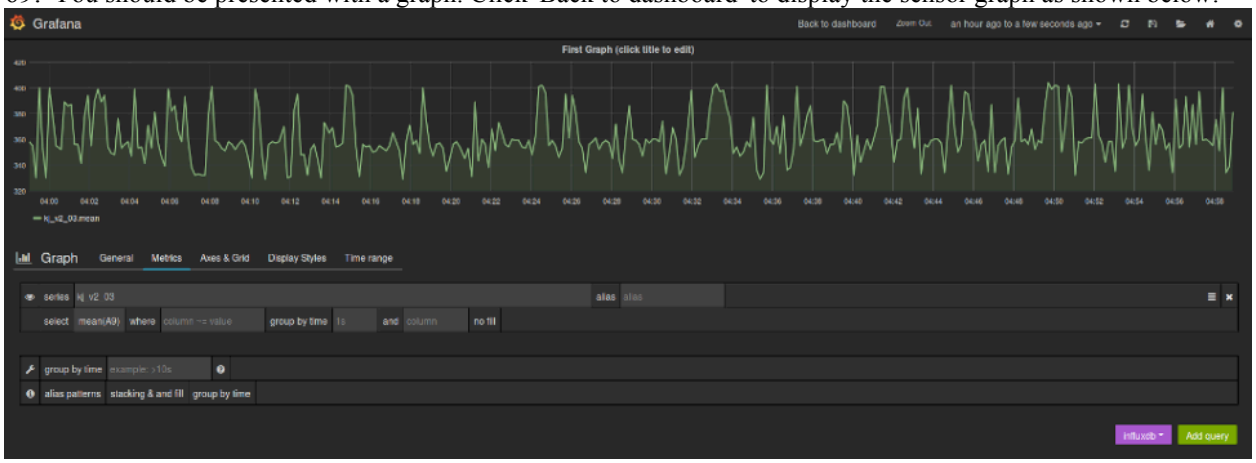




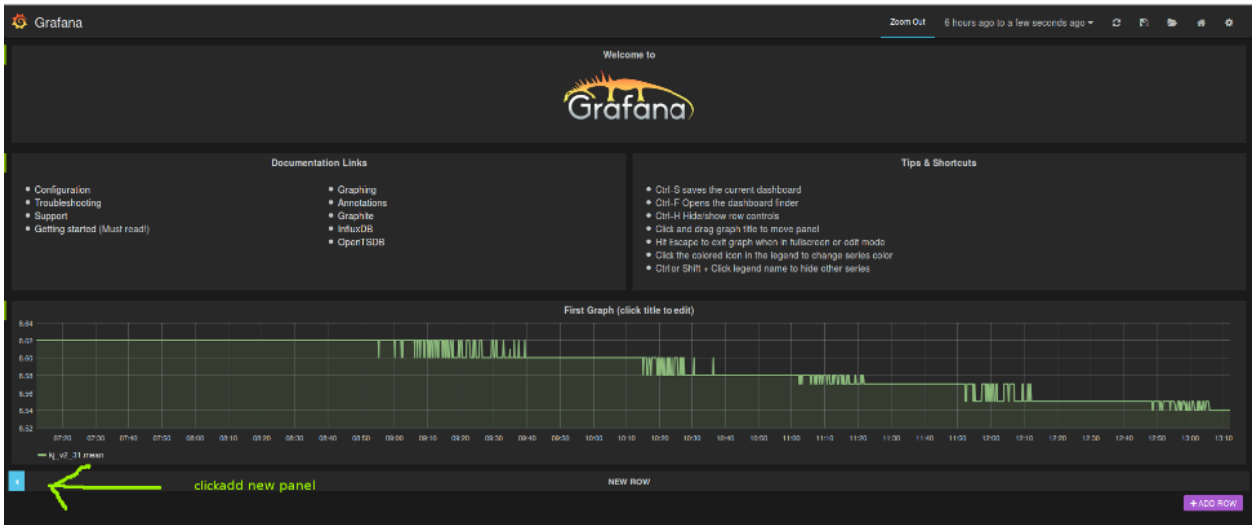
68. Next click on 'value' and type your sensor pin name 'eg A4' and select it from the dropdown list as shown below. For temperature sensor use (nutrientTemp)



69. You should be presented with a graph. Click 'Back to dashboard' to display the sensor graph as shown below:



70. Next add the rest of the sensors to the graph as shown below




Grafana
Zoom Out
a day ago to a few seconds ago
atlas-scientific pH
kj_v2_31 mean
temperature
kj_v2_31 mean
+ ADD ROW