Summary Description: Testing a Portable UV Index Meter

Tags: electronics; software; Arduino nano; GUVA-S12SD UV sensor

Why I did this: I bought the cheap GUVA-S12SD UV sensor because I figured it could be a useful sensor for a myriad of solar projects (weather station; garden solar quality measurement; solar panel monitors; UV research projects) so I wanted to test out its measuring qualities with a simple portable meter.

(summary pic of system)

Design Walkthrough:

Parts: Arduino microcontroller (nano); GUVA-S12SD UV sensor; OLED display; 9V battery

I followed the directions of the Abid Hossain’s UV index meter tutorial to setup some basic Arduino code for produce UV range values (0-10 UV index). By combining all the parts I was able to produce the portable testable product.

(pics of system)

Lessons Learned and Future Changes:

It works, enough said. It works well and was easy to set up. I appreciate how the sensor and code was set up without the need of a sensor specific library and only required a few lines of math code (to convert the analog signal to a UV index value).

Compares with photoresistor? This UV sensor works similarly to a photoresistor where it produces an analog value corresponding to intensity, but they are different technologies; this sensor captures the ‘240-370nm range of light which covers UVB and most of UVA spectrum’; the photoresistor typically works within the visible light wavelength range (peaking near 540nm). I wonder how they would fare side by side in supplementing a solar system with useful data or control?

References:

GUVA-S12SD UV sensor purchase website: <https://thepihut.com/products/adafruit-analog-uv-light-sensor-breakout-guva-s12sd>

Abid Hossain’s UV index meter tutorial: https://www.hackster.io/abid\_hossain/arduino-uv-index-meter-f03b4e

0.91in OLED display tutorial: <https://www.aranacorp.com/en/using-a-0-91in-oled-display-with-arduino/>

GM55 photoresistor data sheet: <https://www.sparkinter.com/pdf/120300-0056590.pdf>