



Annex: lab's sensors

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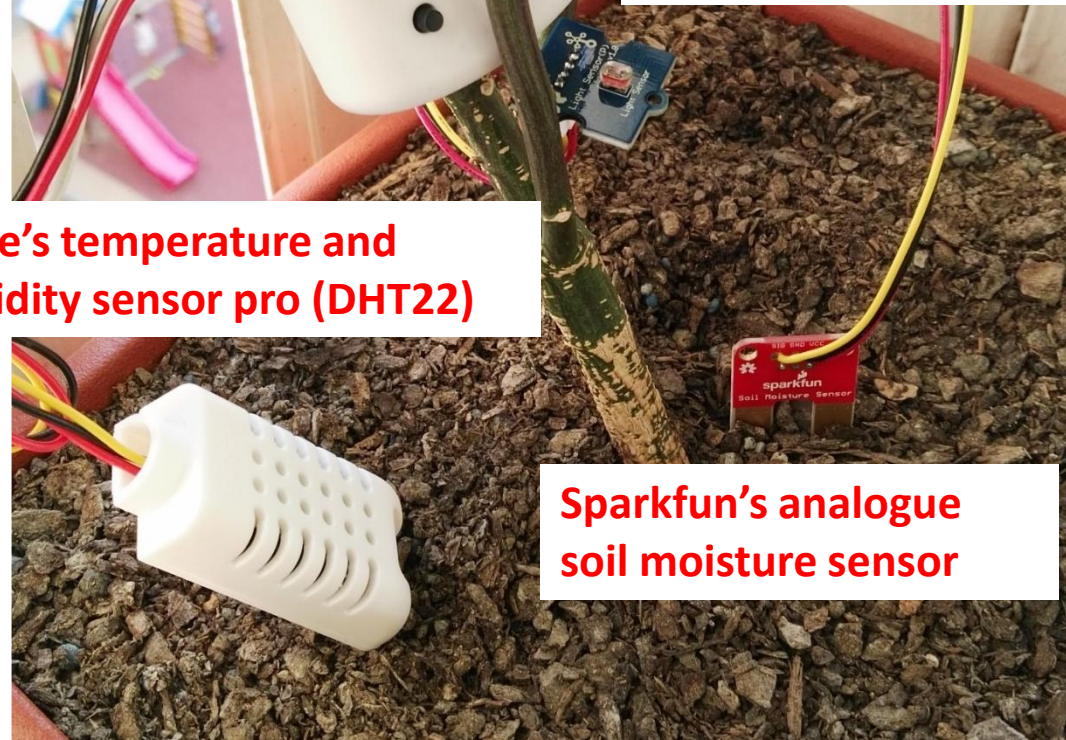






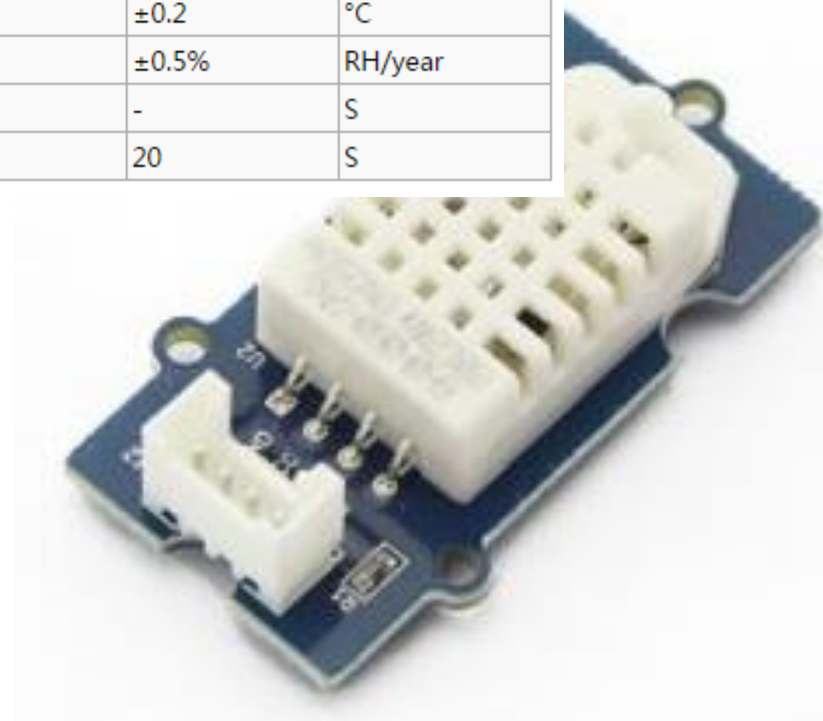
Grove's analogue light sensor (P)

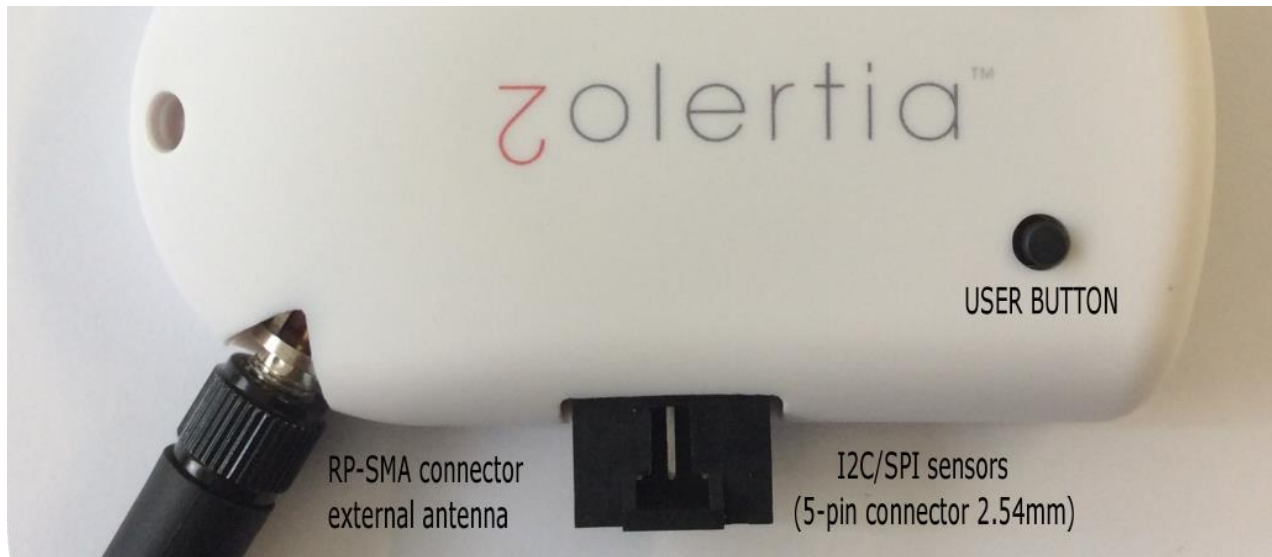
Grove's temperature and humidity sensor pro (DHT22)



Sparkfun's analogue soil moisture sensor

Item	Parameter	Min	Norm	Max	Unit
VCC	-	3.3	-	6	V
Measuring Current Supply	-	1	-	1.5	mA
Standby Current Supply	-	40	-	50	uA
Measuring range	Humidity	5%	-	99%	RH
	Temperature	-40	-	80	°C
Accuracy	Humidity	-	-	±2%	RH
	Temperature	-	-	±0.5	°C
Resolution	Humidity	-	-	0.1%	RH
	Temperature	-	-	0.1	°C
Repeatability	Humidity	-	-	±0.3%	RH
	Temperature	-	-	±0.2	°C
Long-term Stability	-	-	-	±0.5%	RH/year
Signal Collecting Period	-	-	2	-	S
Respond Time	1/e(63%)	6	-	20	S






```

/*-----*/
#include <stdio.h>
#include "contiki.h"
#include "dev/dht22.h"
/*-----*/
PROCESS(remote_dht22_process, "DHT22 test");
AUTOSTART_PROCESSES(&remote_dht22_process);
/*-----*/
static struct etimer et;
/*-----*/
PROCESS_THREAD(remote_dht22_process, ev, data)
{
    int16_t temperature, humidity;

    PROCESS_BEGIN();
    SENSORS_ACTIVATE(dht22);

    /* Let it spin and read sensor data */

    while(1) {
        etimer_set(&et, CLOCK_SECOND);
        PROCESS_WAIT_EVENT_UNTIL(etimer_expired(&et));

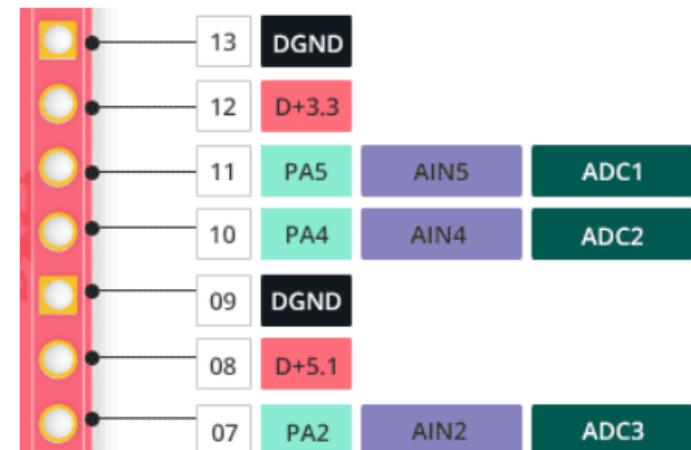
        /* The standard sensor API may be used to read sensors individually, using
        * the `dht22.value(DHT22_READ_TEMP)` and `dht22.value(DHT22_READ_HUM)`,
        * however a single read operation (5ms) returns both values, so by using
        * the function below we save one extra operation
        */
        if(dht22_read_all(&temperature, &humidity) != DHT22_ERROR) {
            printf("Temperature %02d.%02d °C, ", temperature / 10, temperature % 10);
            printf("Humidity %02d.%02d RH\n", humidity / 10, humidity % 10);
        } else {
            printf("Failed to read the sensor\n");
        }
    }
    PROCESS_END();
}

```



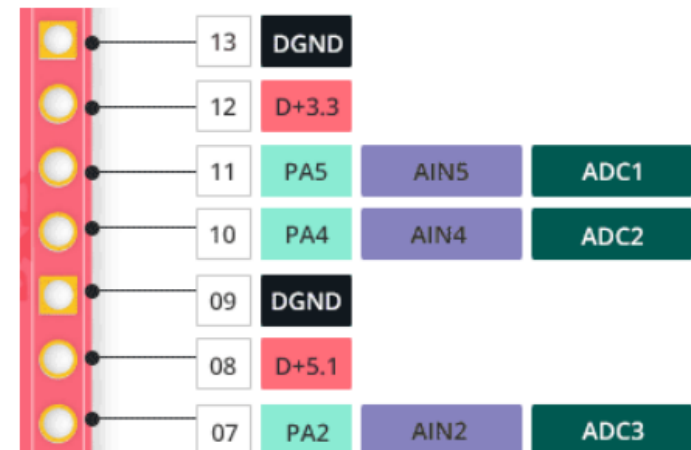
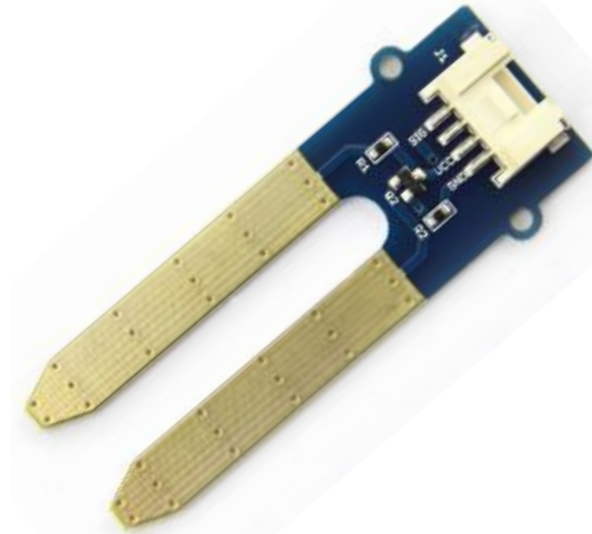
TECHNICAL SPECIFICATIONS

- Operating Voltage: 3-5V
- Supply Current: 0.5-3mA
- Photoresistor: GL5528
- Light resistance: 20K Ω
- Dark resistance: 1M Ω
- Response time: 20-30 secs
- Peak Wavelength: 540 nm



TECHNICAL SPECIFICATION

- Operating voltage: 3.3~5V
- Operating current: 35mA
- Sensor Output Value in dry soil: 0~ 300
- Sensor Output Value in humid soil: 300~700
- Sensor Output Value in water: 700 ~ 950
- PCB size: 2.0cm X 6.0cm





Test the sensors using the suggested test applications, read the values read by the ADC and try to figure out proper variables respect to what you observe (dry soil, dark room, etc).

Remember if you are connecting a sensor to the ADC3 port, it uses 5V to power the sensor, thus you may need to adjust the formulas to use 5V instead of 3V, and also would need to take into consideration the voltage divider, as explained in previous lessons

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