

Sensoren en interfacing

Weerstation

Inhoudsopgave

Project

Sensoren

Actuatoren

Visualiseren

Totaalpakket

Het project

Compact weerstation

Minstens 7
functionaliteiten:

- Temperatuur
- Luchtvochtigheid
- Water
- Licht
- Rotatieknop
- LED
- Buzzer



Sensoren

Water sensor module

LDR

MQ-2

DHT11

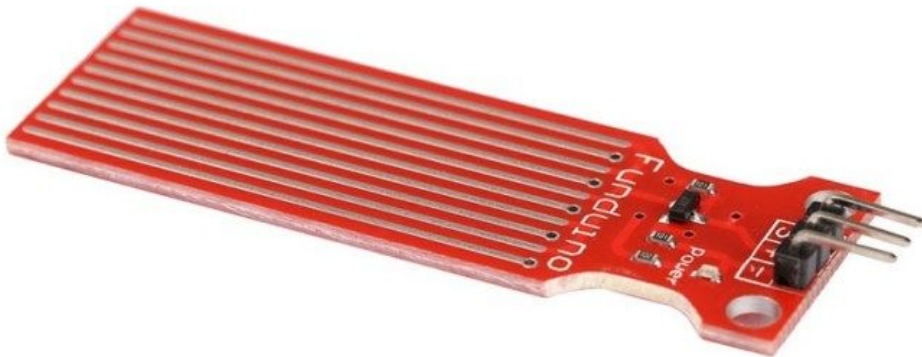
BMP085

Rotary encoder

Water sensor

Geleidbaarheid van water

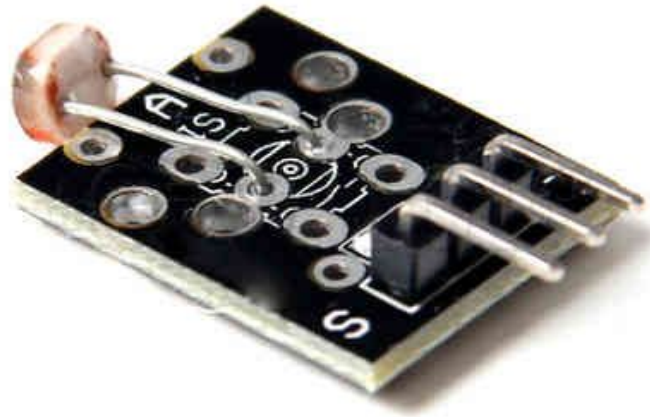
Bodemvochtigheid sensor



LDR

Light-dependent resistor

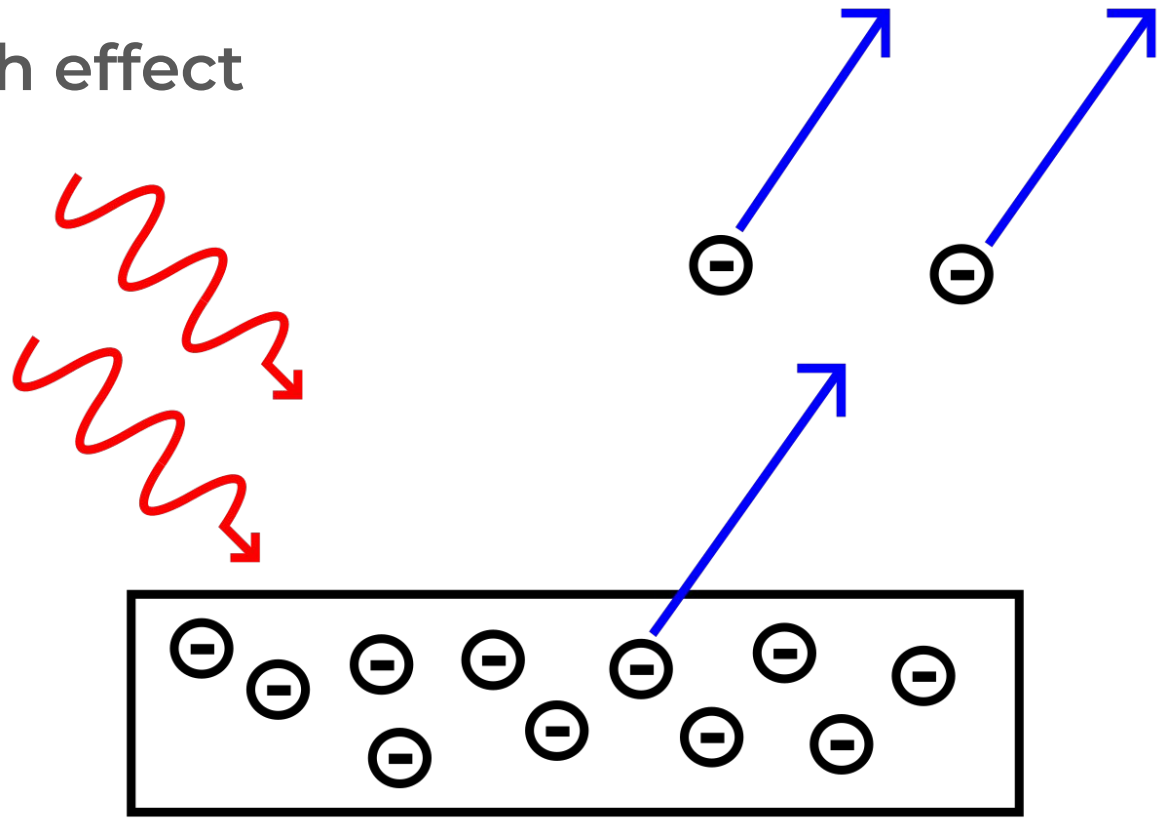
Licht sensor



LDR

Photoresistor

Foto-elektrisch effect



MQ-2

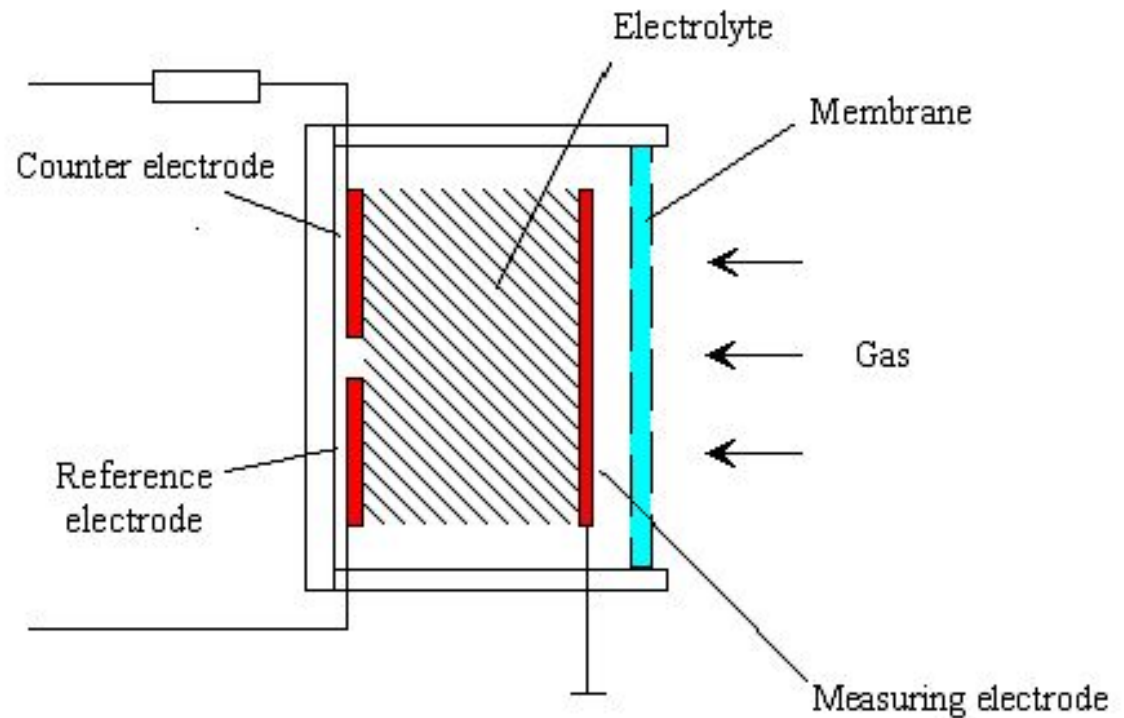
Gas/rook sensor



MQ-2

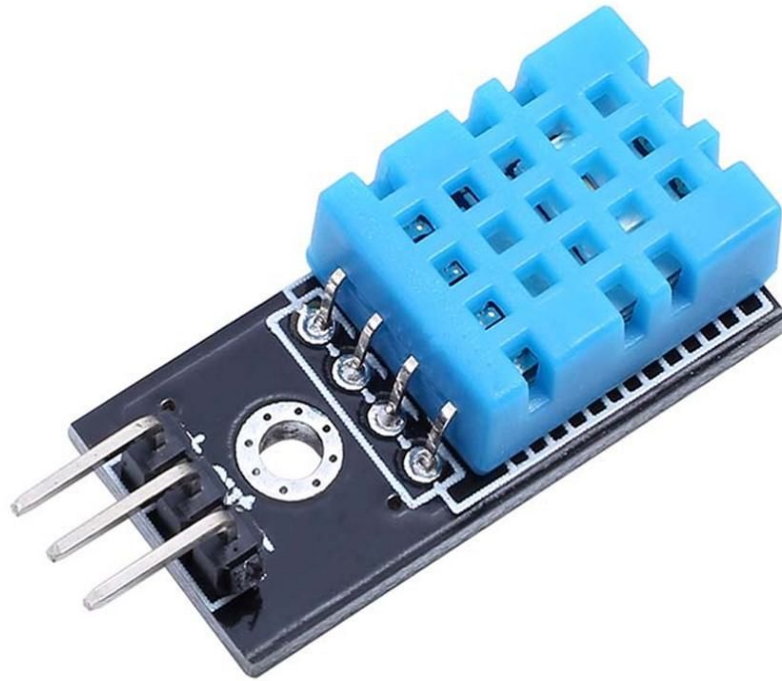
Elektrochemische sensor

Redoxreacties



DHT11

Digital Humidity & Temperature sensor



DHT11

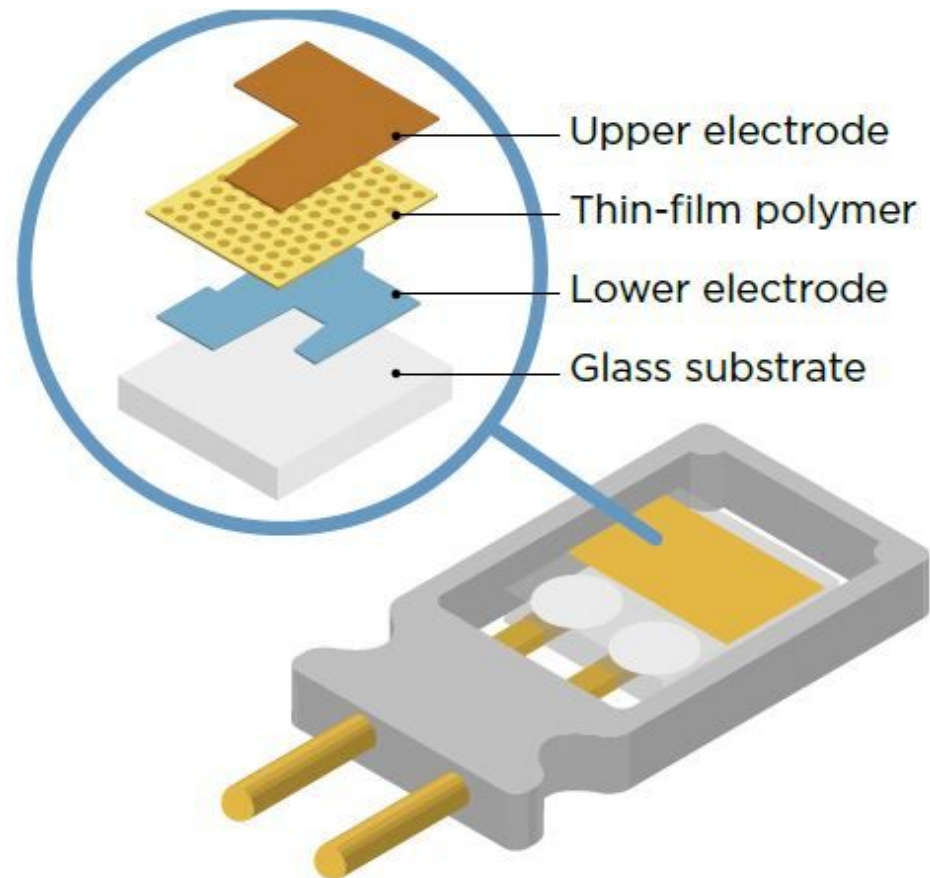
Temperature sensing component

Thermistor



DHT11

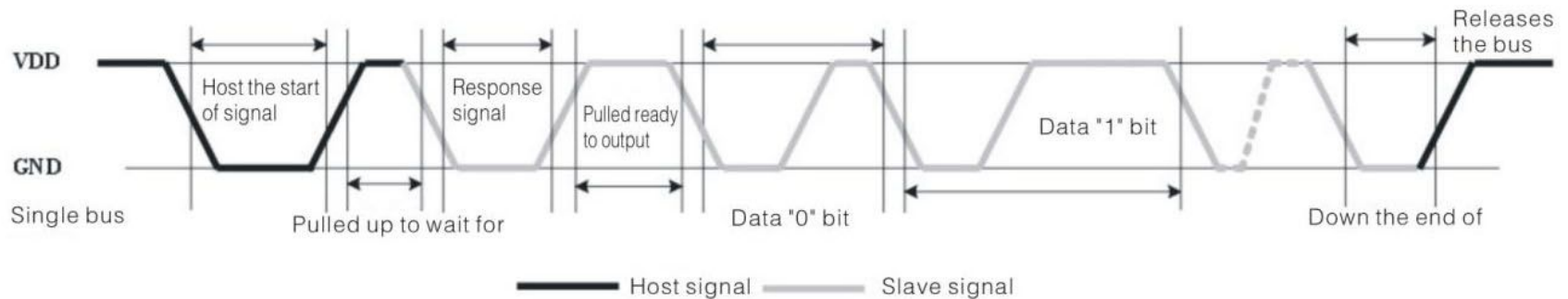
Humidity sensing component



DHT11

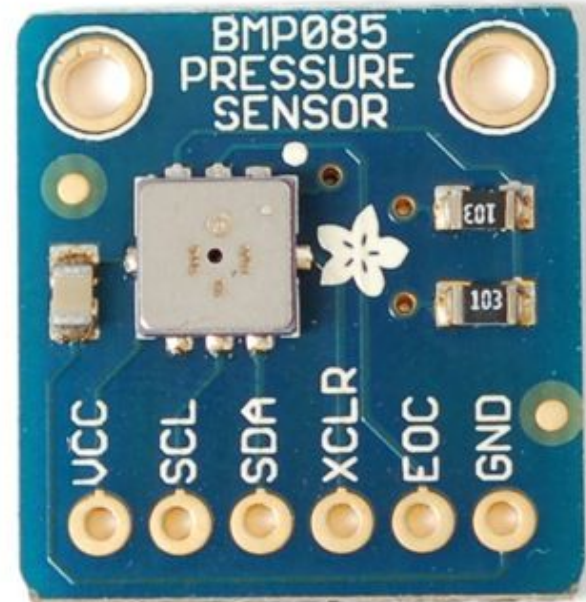
Seriële verbinding

Timing adhv arduino library



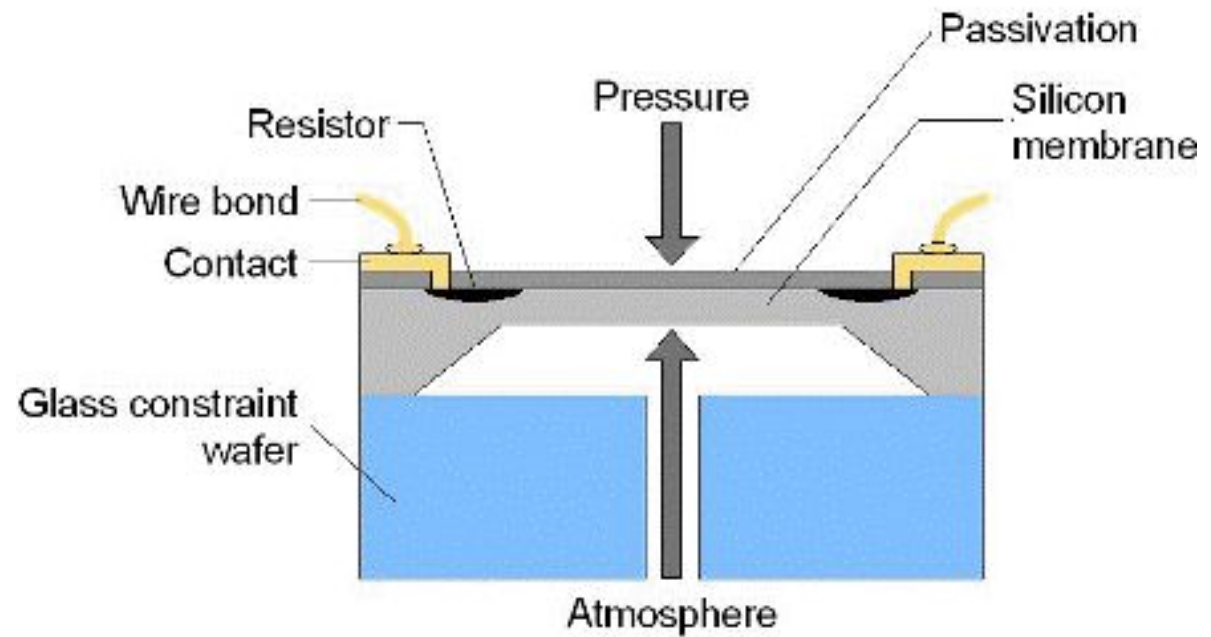
BMP085

BaroMetric Pressure Sensor



BMP085

Piezoresistive sensor



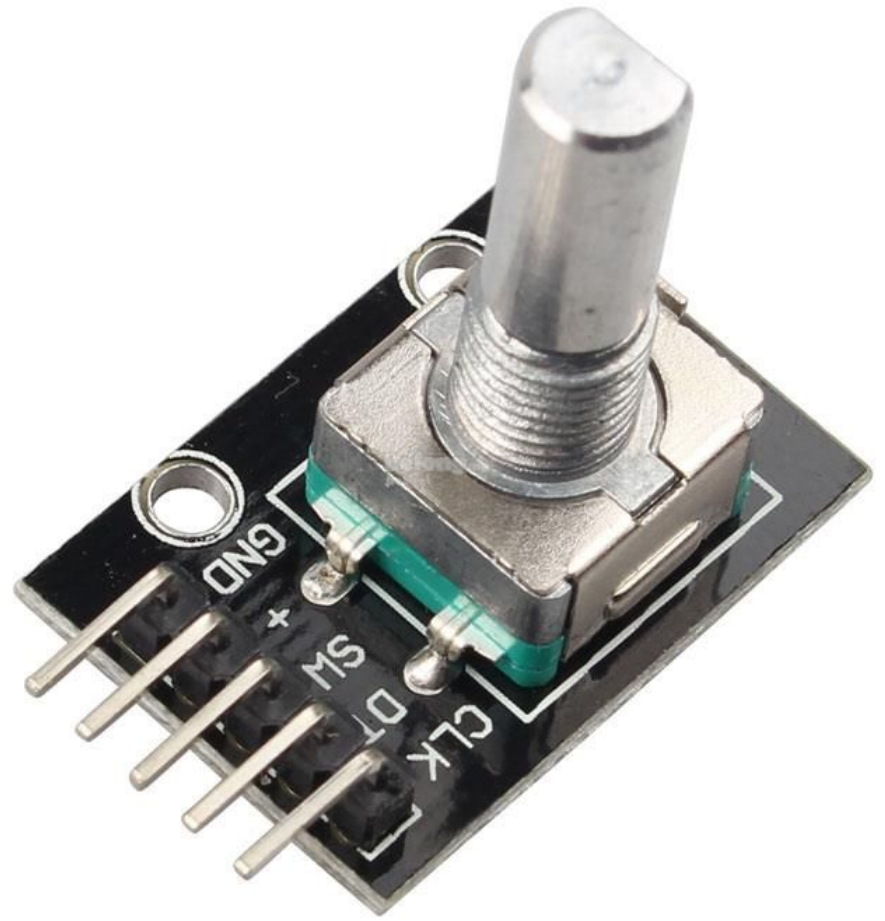
BMP085

Ingebouwde EPROM met kalibratie

I2C voor datacommunicatie

Rotary encoder

Draaiing en hoek

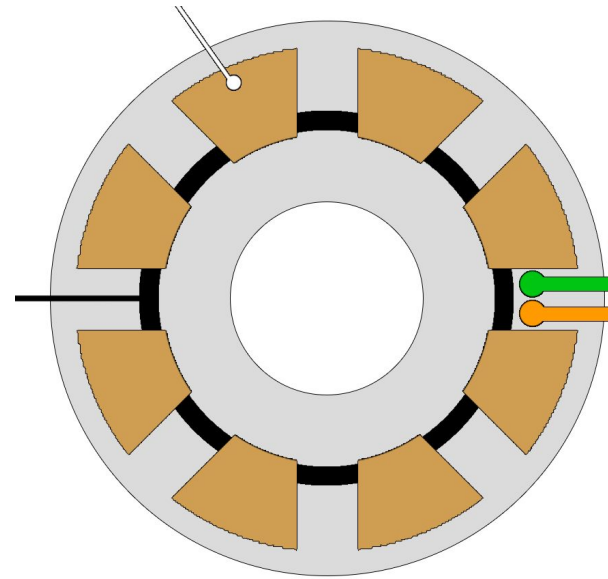


Rotary encoder

Contact zones

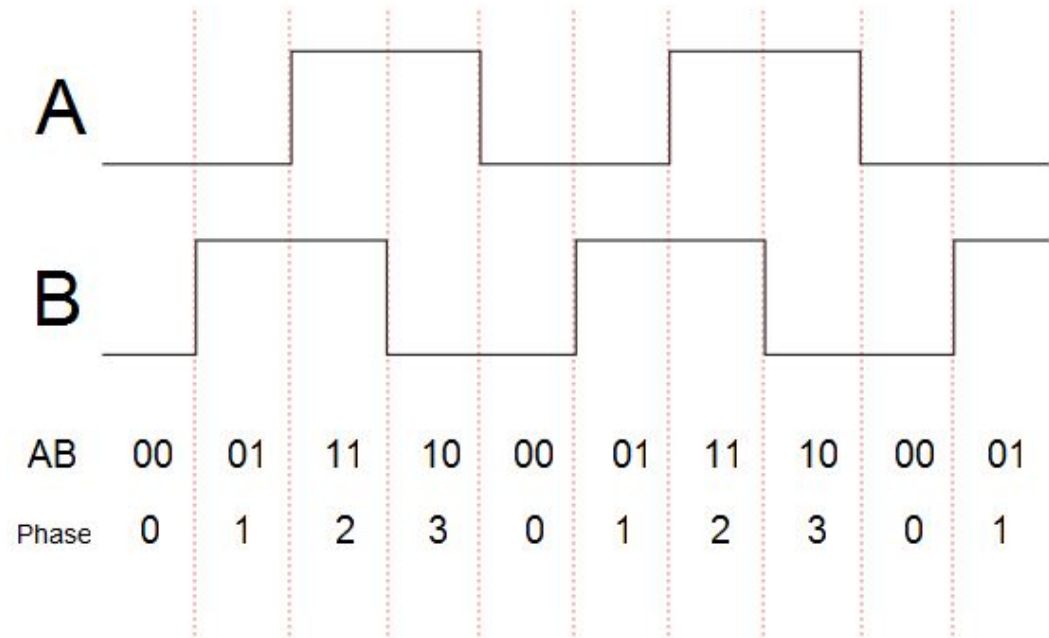
Verbonden met aarding
of spanning

Signaal afhankelijk van
contact



Rotary encoder

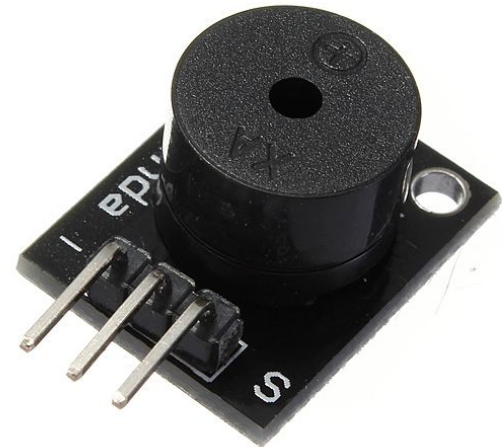
Door rotatie ontstaan
blokgolven



Actuatoren

RGB LED

(active) Buzzer



Visualisatie

Thingspeak (MathWorks)

Gratis account

GET requests

Channel Settings

Percentage complete 70%

Channel ID 591215

Name Wheather Station

Description Project 1 Sensors & Interfacing

Field 1

Lux



Field 2

Temperature



Field 3

Air Pressure



Field 4

Altitude



Field 5

Smoke



Field 6

Water Sensor



Field 7

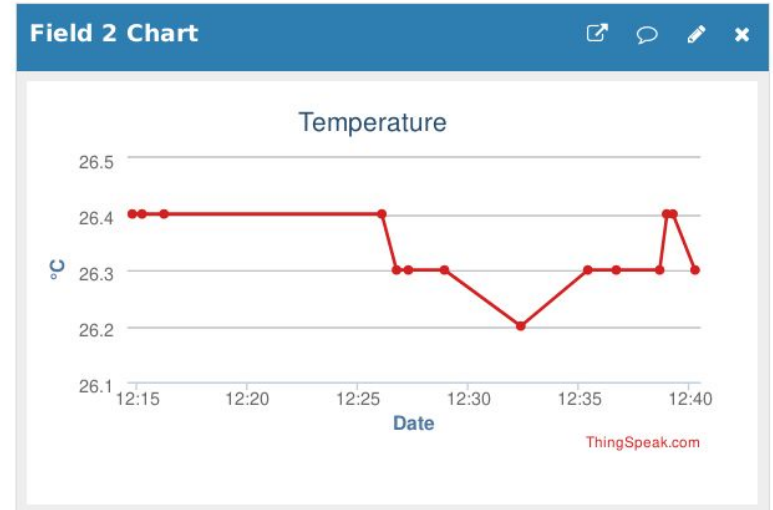
Humidity



Field 8



Thingspeak



ESP8266

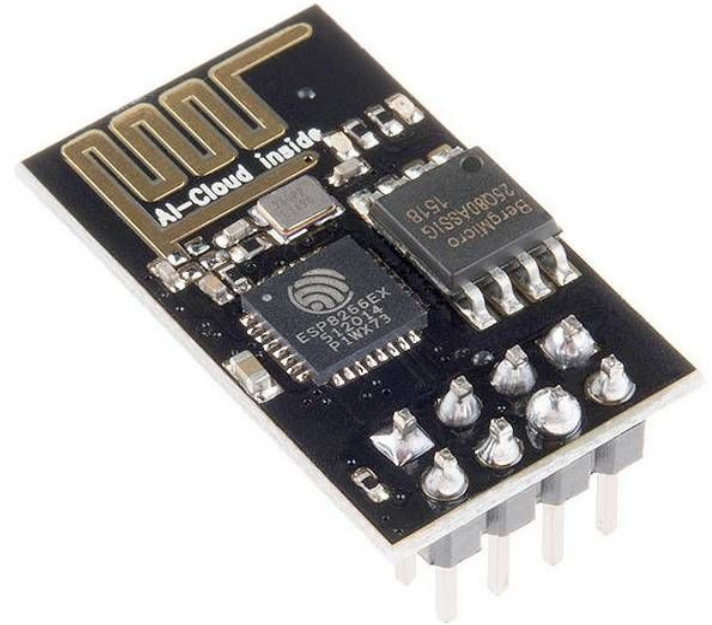
ESPRESSIF Systems

Wi-Fi module

Microcontroller

Interfacing met Arduino via
AT commando's

3.3 Volt -> Spanningsdeler



AT - Test AT startup

Variant	Command	Response	Function
Execute	AT	OK	Test if AT system works correctly

ESP8266 - Demo



Ontwikkeling

CLion (C++)

PlatformIO(.ini)

Bibliotheken

```
jonas ~
> platformio lib search dhtlib
Found 1 libraries:

DHTlib
=====
#ID: 1336
Optimized Library for DHT Temperature & Humidity Sensor on
AVR only.

Keywords: dht11, dht22, dht33, dht44, am2301, am2302, am23
03, am2320, am2322
Compatible frameworks: Arduino
Compatible platforms: Atmel AVR, Atmel SAM, Espressif 32,
Espressif 8266, Intel ARC32, Microchip PIC32, Nordic nRF51
, Nordic nRF52, ST STM32, Teensy, TI MSP430
Authors: Rob Tillaart
```

```
jonas ~
> platformio lib -g install DHTlib
Library Storage: /home/jonas/.platformio/lib
LibraryManager: Installing id=1336
DHTlib @ 0.1.29 is already installed

jonas ~
>
```

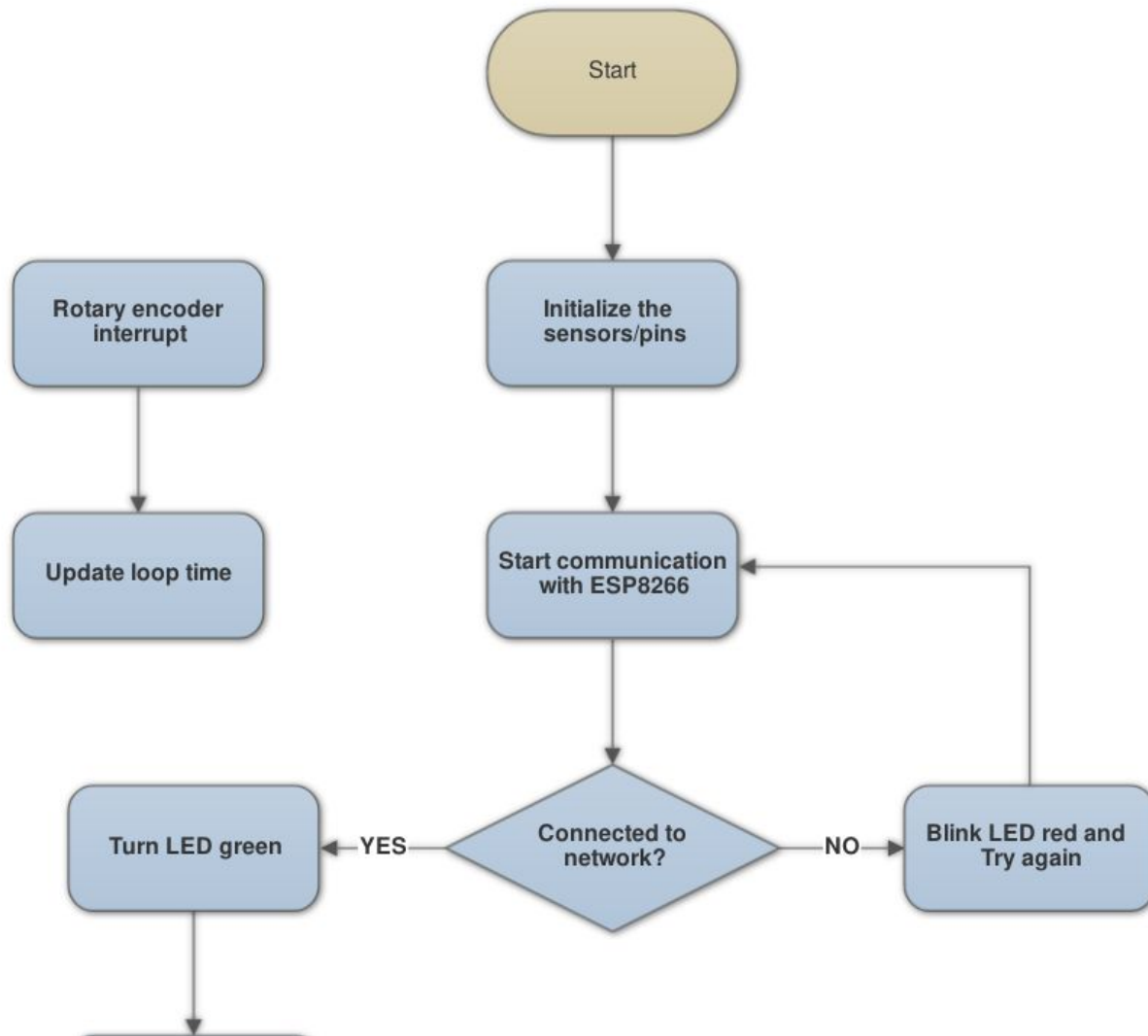
[env:uno]

platform = atmelavr

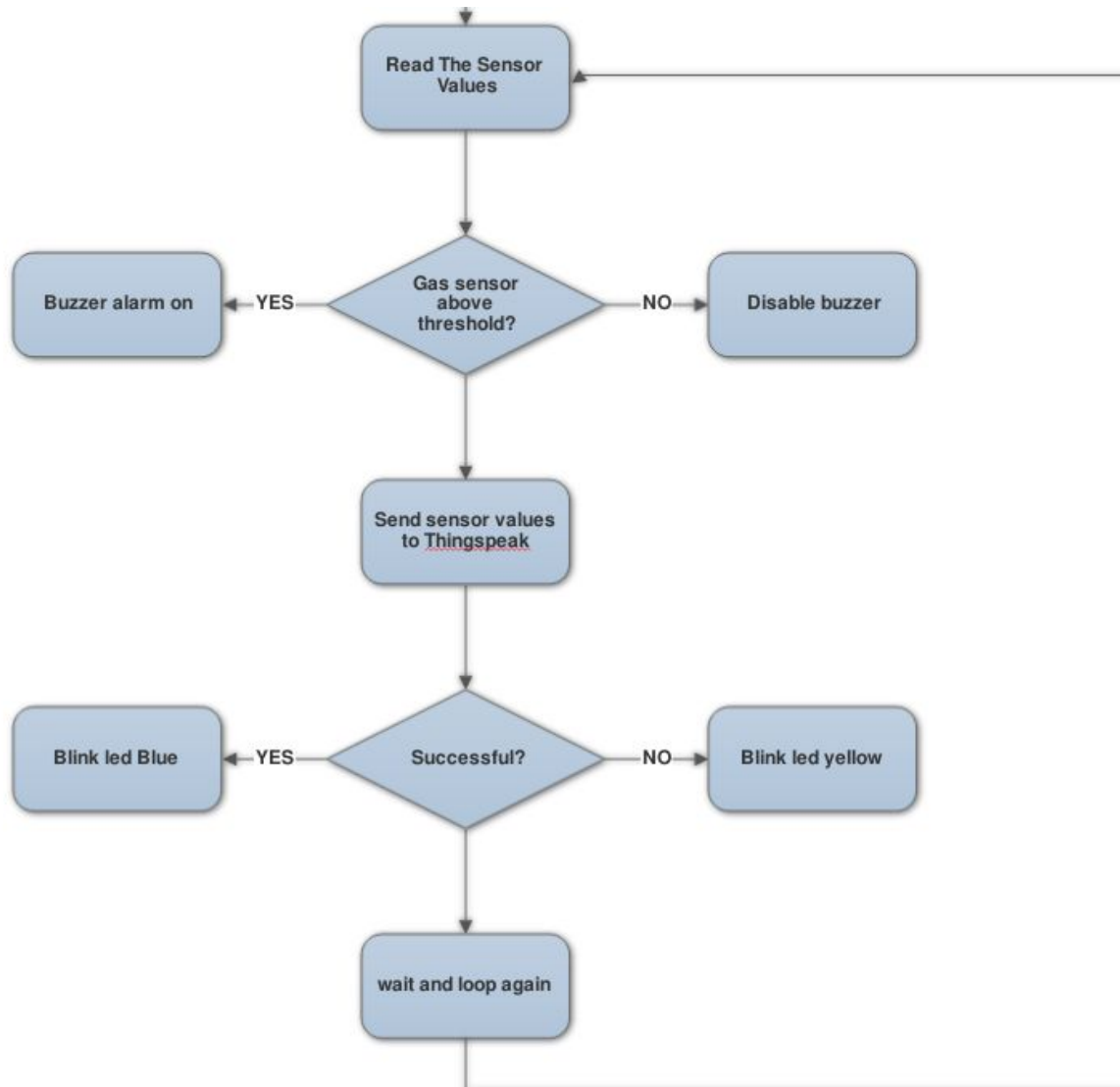
board = uno

framework = arduino

Flowchart (1)



Flowchart (2)



Demo

Questions?

