

# Arduino and Odysseus

In this article, we will use Odysseus to process measurements from two light dependent resistors (LDR). To do so, we use the Arduino open-source electronics prototyping platform.

## Requirements

- RS232 wrapper bundle
- [Arduino IDE](#) or [dfu-programmer](#)
- [Arduino Board](#)
- 2x Light dependent resistor
- 2x Resistor (10k)
- Soldering iron and solder
- Wires
- USB Cable to connect the Arduino to your computer

## The Hardware

For this example we will use an Arduino Mega 2560. To measure the voltage at the LDR we simple build a voltage divider as shown the following image.

? Unknown Attachment

? Unknown Attachment

Next, we solder all the parts together. We use three pins to connect the wires later. However, you can also just solder the wires on the parts.

? Unknown Attachment

After that, the three wires of both LDRs are connected to the Arduino (red: 5V, black: GND, and green on A0). In the image we used the ScrewShield to connect the wires.

? Unknown Attachment

When all wires are connected you can plugin the USB-cable and start writing the software for the Arduino.

## The Software

To measure the voltage at the LDR we simple use the *analogRead* method with the pin id as parameter. The output is done by the *Serial.println* method that puts the readings on the serial connection as a CSV string.

### Arduino

```
#include <stdio.h>

const int analogInPin1 = A0;
const int analogInPin2 = A1;
int sensorValue1 = 0;
int sensorValue2 = 0;

void setup() {
  Serial.begin(9600);
}

void loop() {
  sensorValue1 = analogRead(analogInPin1);
  Serial.print(sensorValue1);
  Serial.print(",");
  Serial.println(sensorValue2);
  delay(500);
}
```

## The Query

The query reads the sensor measurements from the serial connection on device `ttyACM0`. To do so, the Access operator uses the [RS232 Transport Handler](#) and the [CSV Protocol Handler](#). Further, we set our stream schema to *light1* as Double and *light2* respectively.

### Odysseus Query

```
arduino= ACCESS({source='arduino',
wrapper='GenericPush',
transport='RS232',
protocol='CSV',
dataHandler='Tuple',
options=[['port', '/dev/ttyACM0'],['delimiter', ',']],
schema=[['light1', 'Double'],['light2', 'Double']]
})
```

After writing down the query you can start it and open the operator graph to see the measurements in the List View.