Geiger counter

In this tutorial you will learn how to assemble a nuclear radiation detector
You can purchase the Geiger Counter Kit here
https://www.banggood.com/Assembled-DIY-Geiger-Counter-Kit-Module-Miller-Tube-GM-Tube-Nuclear-Radiation-Detector-p-1136883.html?rmmds=search&cur_warehouse=CN

Difficulté	Durée	Catégories	Coût
Difficile	**1 heure(s)**	**Électronique**	**30 EUR (€)**

Sommaire

Introduction

A Geiger counter is an instrument used for detecting and measuring ionizing radiation. Also known as a Geiger–Mueller counter (or Geiger–Müller counter), it is widely used in applications such as radiation dosimetry, radiological protection, experimental physics, and the nuclear industry.
Geiger counters are used to detect radioactive emissions, most commonly beta particles and gamma rays. The counter consists of a tube fillec with an inert gas that becomes conductive of electricity when it is impacted by a high-energy particle.

Matériaux

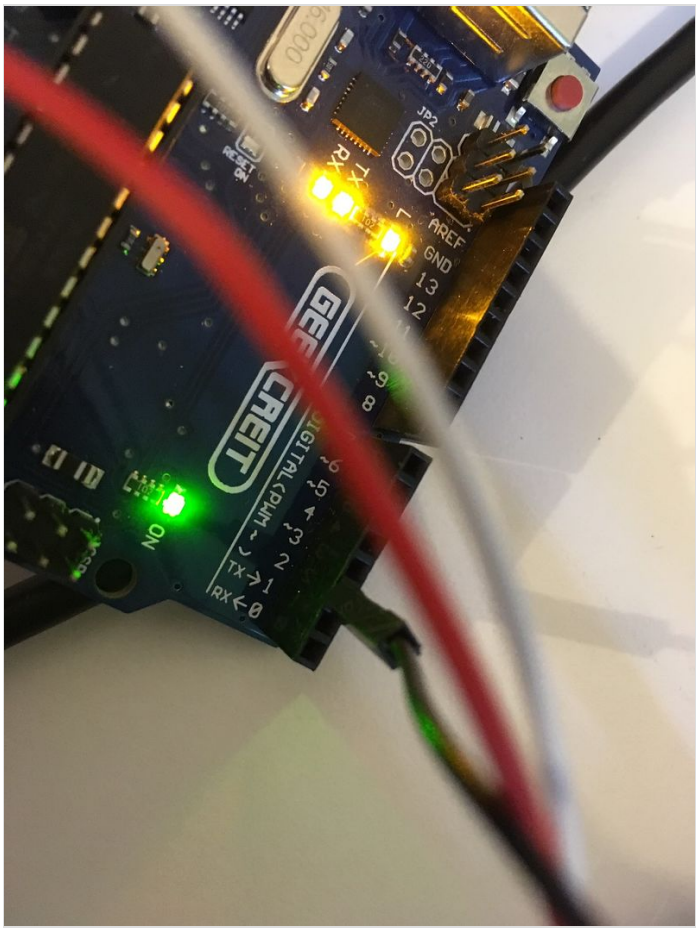
Outils

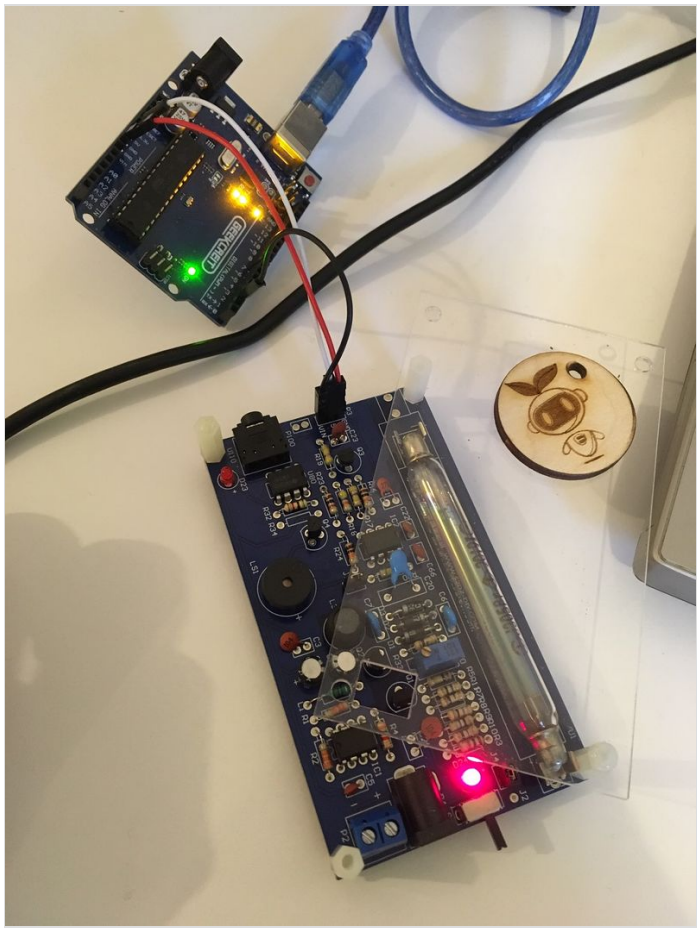
Étape 1 - Soldering the geiger counter

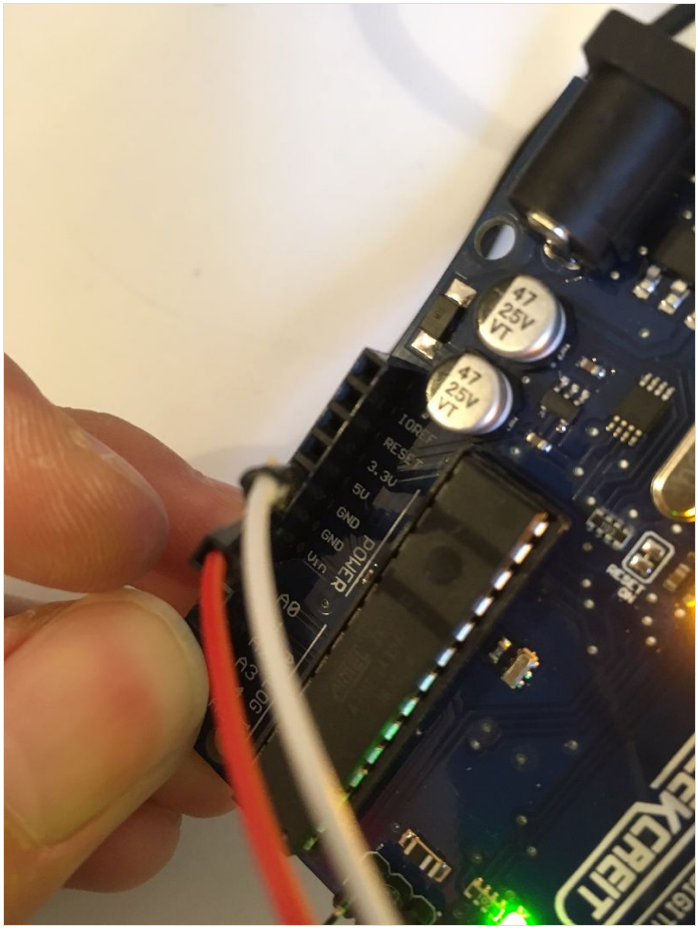
This is a timelapse of the assembly process of the geiger counter

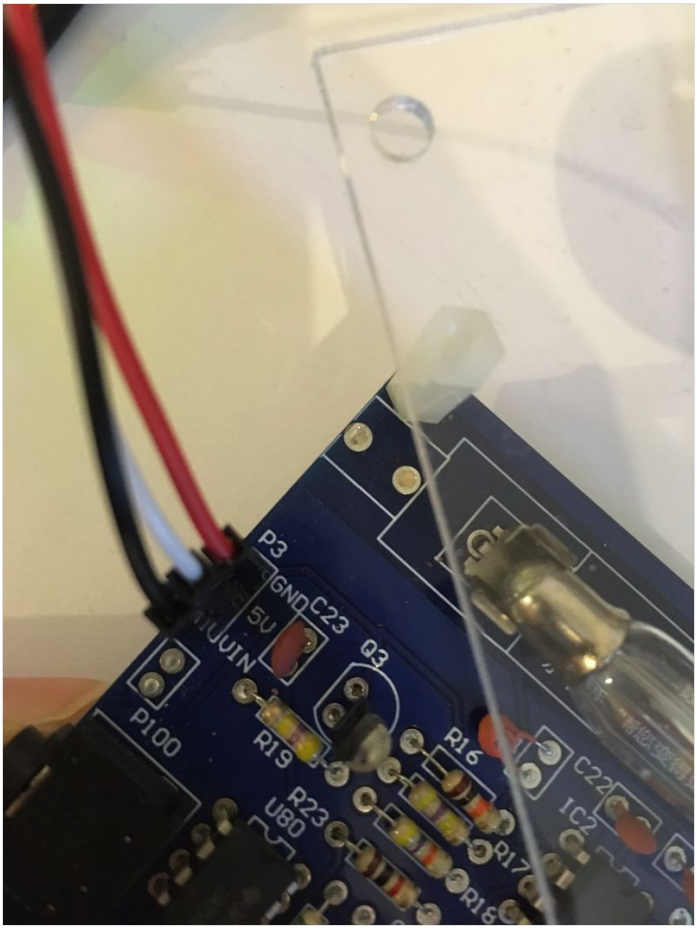
Étape 2 - Using the geiger counter with an arduino

Connect the P3 Pin GND, 5V, VIN to arduino GND, 5V, Digital 2 respectively.
Then in the arduino software open the file: spi_rad_logger.ino which you could find here
https://drive.google.com/open?id=1BBhsOjpKFHZ5vheR6OtunmrIlw6JLzbc
Be sure to change the Serial.print(cpm) command to Serial.println(cpm) in the void loop(){} for better readability.
Download the program and open the serial port window by clicking on the scope on the upper right corner.
Then we'll get the radiation value displayed in CPM, counter per minutes which could be converted to uSv/h with the index 151(151CPM=1uSv/h for M4011 GM Tube).


AREF
GND
13
12
DIGITAL(PWM~)
TX→1
RX←0








```
void loop(){                                    //main cycle
  unsigned long currentMillis = millis();
  if(currentMillis - previousMillis > LOG_PERIOD){
    previousMillis = currentMillis;
    cpm = counts * multiplier;

    Serial.println(cpm);
    counts = 0;
  }
```

Notes et références

Description:
Name:Radiation Detector system
Geiger tube parameters:
Technical parameters diameter:Φ10±0.5mm
Total length: 90±2mm
Starting voltage: < 350V
Recommended operating voltage: 380V
Minimum plateau length: 80V
Maximum plateau slope: 10%/80V
Extreme operating voltage: 550V
The maximum count rate: 25 times / min
Life: > 1 x 10^9 pulse
Medium temperature: -40 ~ 55 ℃
Size:108x63x20mm
Infos:
https://www.banggood.com/Assembled-DIY-Geiger-Counter-Kit-Module-Miller-Tube-GM-Tube-Nuclear-Radiation-Detector-p-1136883.html?rmmds=search&cur_warehouse=CN
https://drive.google.com/folderview?id=0B9itH-BnWE5sY2JGRkM4MWhSYkE&usp=sharing
https://drive.google.com/drive/folders/0B9itH-BnWE5sY2JGRkM4MWhSYkE
Features:
1) 5V power supply, or 1.5V 3x battery; 1.2V 4x battery, current: 30mA - 12mA
2) for the detection of 20mR/h ~ 120mR/h of gamma rays and 100 ~ 1800 off
variables / points / cm 2 of the soft beta ray.
3) sound and light alarm
4) interrupt the output interface, through this interface can be connected to the
microcontroller and then displayed on the LCD.
5) Ardunio compatible
6) supports most of the Geiger tube: M4011, STS-5, SBM20, J305, etc. (the
330~600V operating voltage of the Geiger tube can be supported).
7) support the computer (PC) data acquisition, Matlab analysis and processing
Detection of nuclear radiation work (copy the following link to the browser to watch):
Http://v.youku.com/v_show/id_XNzI3MTU2NzQ0.html
Customers using our Geiger counter to record the video:
Http://v.youku.com/v_show/id_XOTE4ODIyNTIw.html
Compatible with Arduino:
(recommended UNO R3 Arduino, or any other arbitrary with 5V and external interrupt INT)
Internet can be downloaded: SPI example for Radiation Logger Arduino
Logger Radiation can be used as the host computer software to build radiation monitoring station.
Package included:
1 x Assembled Radiation Detector system
1 x GM Tube
1 x Power supply cable
1 x Battery Holder (without batteries)
3 x Jumper Wires
4 x Nuts
1 x Acrylic cover