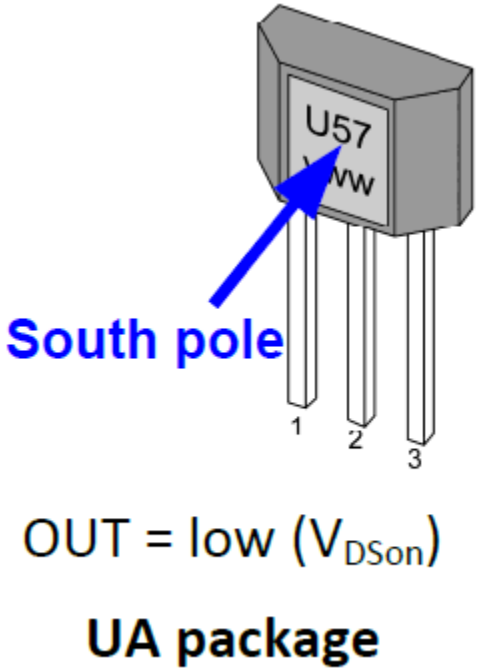
Instructions for the In Car Telemetry Module

Installation

- Hall effect sensor must be within ¼” of the magnets on the wheel for the measurement to be accurate. All magnets must be the same pole (i.e., N or S) facing outward.
    - If the sensor picks nothing up flip the sensor around, it is pole sensitive.
- The MAF sensor’s hot wire and temp sensor must be within the air flow path.
-



Editing code Parameters

Required Software

- Arduino IDE loaded with the following libraries. (download from the integrated library manager by pressing ctrl + shift + I)
    - Adafruit GFX
    - Adafruit ILI9341
    - Adafruit Image Reader
    - SD
    - SdFat – Adafruit Fork
    - From the ESP32 Library
        - Open preferences by pressing ctrl + ,
        - Under “Additional board manger URLs, add this line (without quotes)
            - “https://raw.githubusercontent.com/espressif/arduino-esp32/gh-pages/package_esp32_index.json”
        - Open Board manager in the board’s menu under Tools in the top bar
        - Search “ESP32”
        - Install that library
        - Restart the Arduino IDE

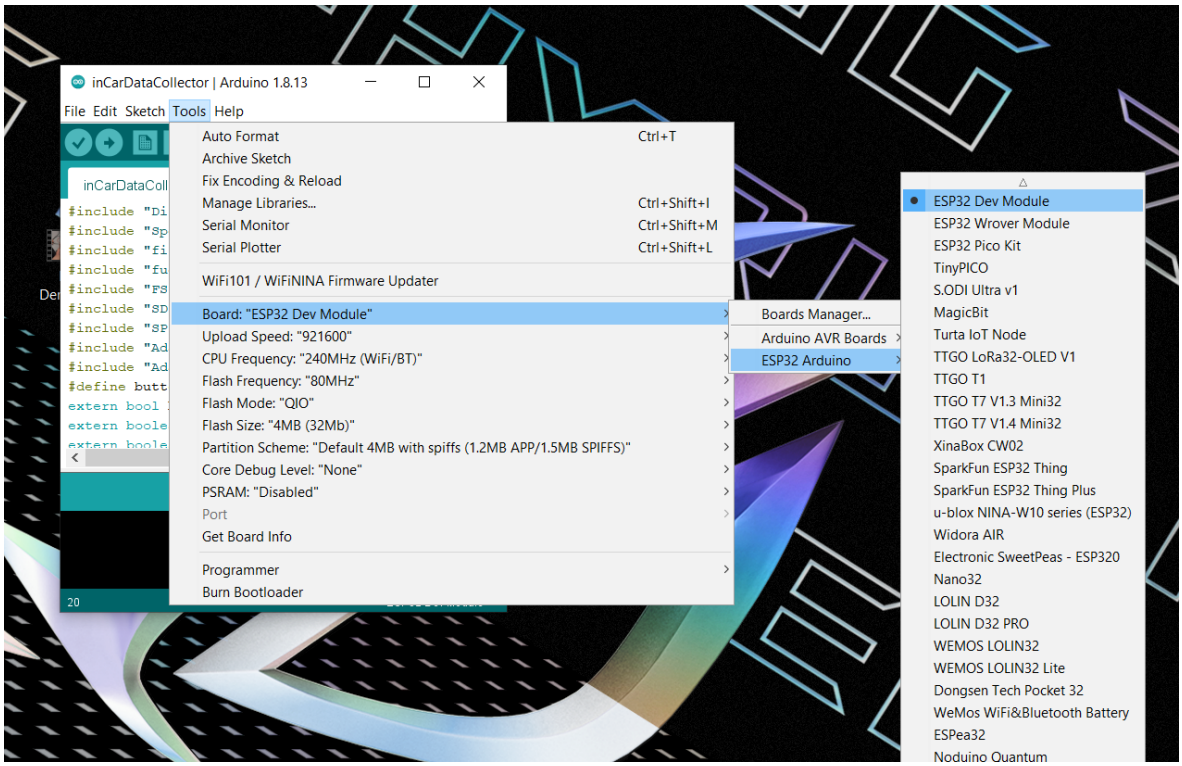
Required Hardware

- Micro USB cable
- Available USB 2 port on a windows computer

Instructions

- Set the board to “ESP32 Dev Module” as shown on the next page.

Instructions for the In Car Telemetry Module



- Plug in the ESP32 to the computer
- Set the COM port under port in the tools menu. Typically, only 1 will appear and that will be the correct one.

Changing values

- Clone this repository https://github.com/frog7227/inCarDataCollector into a folder of your choice.
    - You can download then unzip it directly from git into a folder or perform a git clone in that folder.
    - Then open the “inCarDataCollector.ino” file
        - This will open all of the others as well in the Arduino IDE

Editable Values

Value	Location	Default	Note
stochiometricRatio	fuelReading.h	18.75	It is always :1, this is the fuel air ratio
crossSectionAreaIntake	fuelReading.ino	1.005	In cm^2
distancePerPulse	Speed.ino	1	In meters

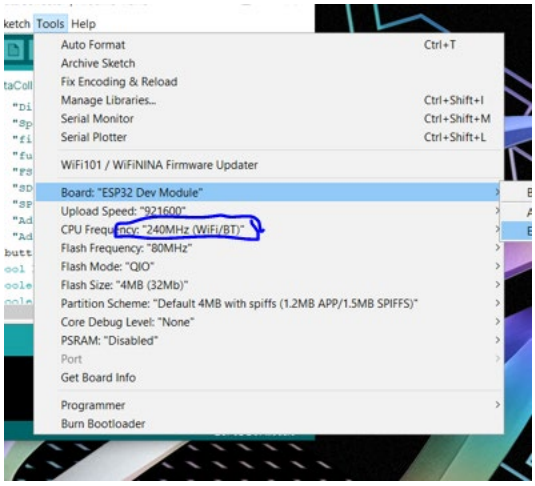
Additional Notes:

To find the distance per pulse, simply find the circumference of the OUTSIDE of the wheel, including the tire, and then divide it by the number of magnets on the wheel.

Instructions for the In Car Telemetry Module

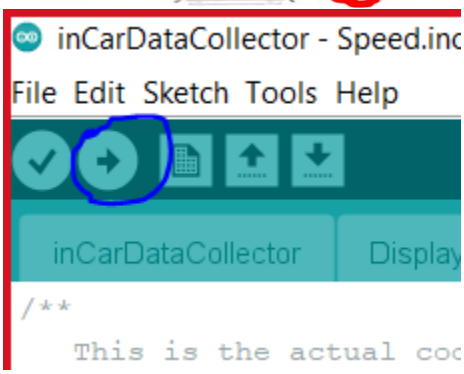
Uploading new changes to the board

- Set CPU frequency to 80MHz.



- Hold the BOOT button on the ESP Board, and click the upload button in Arduino.

-



- It will build for a minute or so and then upload. Once it says upload finished you're good to go!