# 6.0 Electronics

## 6.1 Version control

Version 1.0 - 2 February 2021 - first version
Version 1.1 - 9 February 2021 - typos fixed

## 6.2 Introduction

This part of the documentation describes the electronics. That is the same for inner and outer planets. The basis consist of five parts: RPI, driver, stepper motor, power supply, reed switch

## 6.3 RPI

Not much to say here: you need a Raspberry Pi Zero W (or any other Pi with Wifi).

## 6.4 Driver

You need the Adafruit DC & Stepper Motor HAT for Raspberry Pi - Mini Kit. It comes along with a nice software library on which the DMO software is based.

## 6.5 Stepper motor

The NEMA17 is chosen for its availability, robustness and torque.

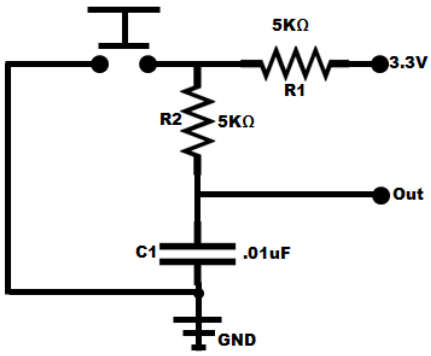
## 6.6 Power supply

The driver runs on 12V but the RPI on 5v, so the voltage must be decreased.

## 6.7 Reed switch

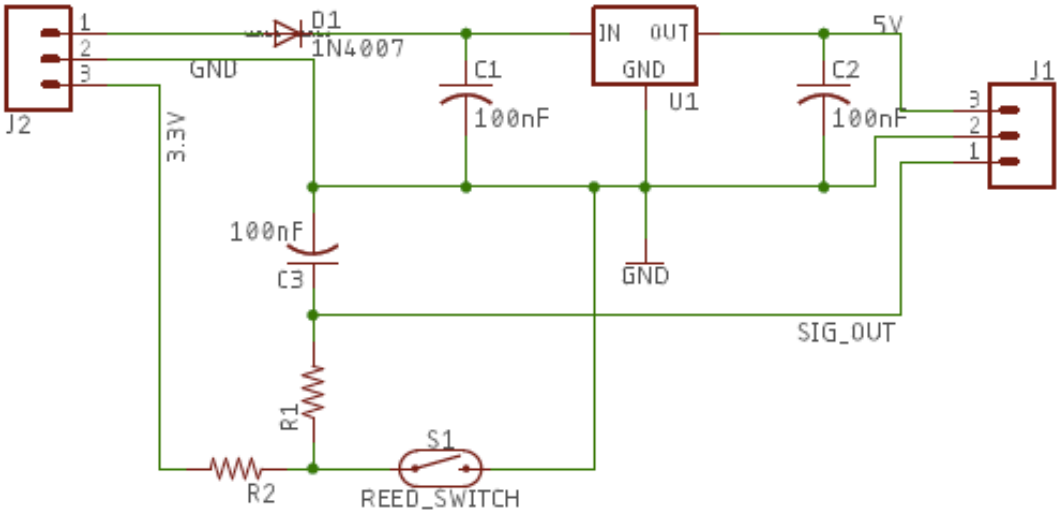
The RPI must now where it is. In order to do so there is one magnet sticked on every track. The RPI detects when the magnet is passed, sets its counter to zero and because he “knows” how many steps one round is he can determine how many steps the stepper should run to go to the right position.

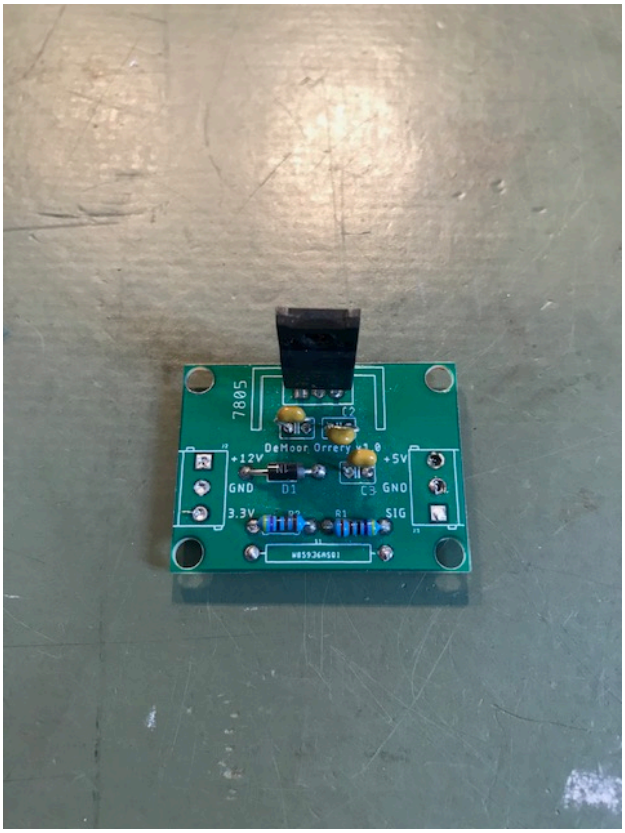
There is a problem with bouncing GPIO ports on an RPI. In order to prevent this you need the following solution:

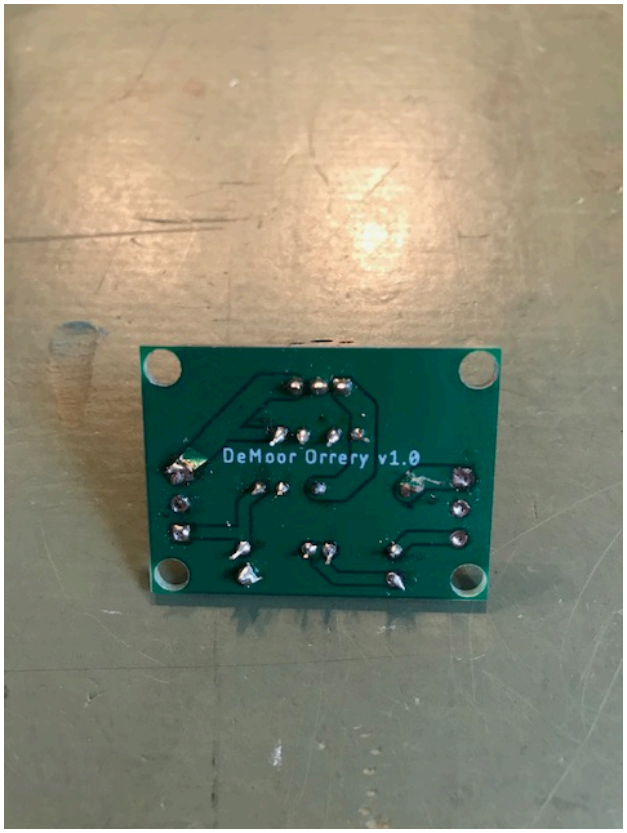



## 6.8 Scheme and pcb

To integrate the solution for 6.6 and 6.7 a pcb board has been designed with this circuit.






The accompanying gerber files are stored in our GIT account.