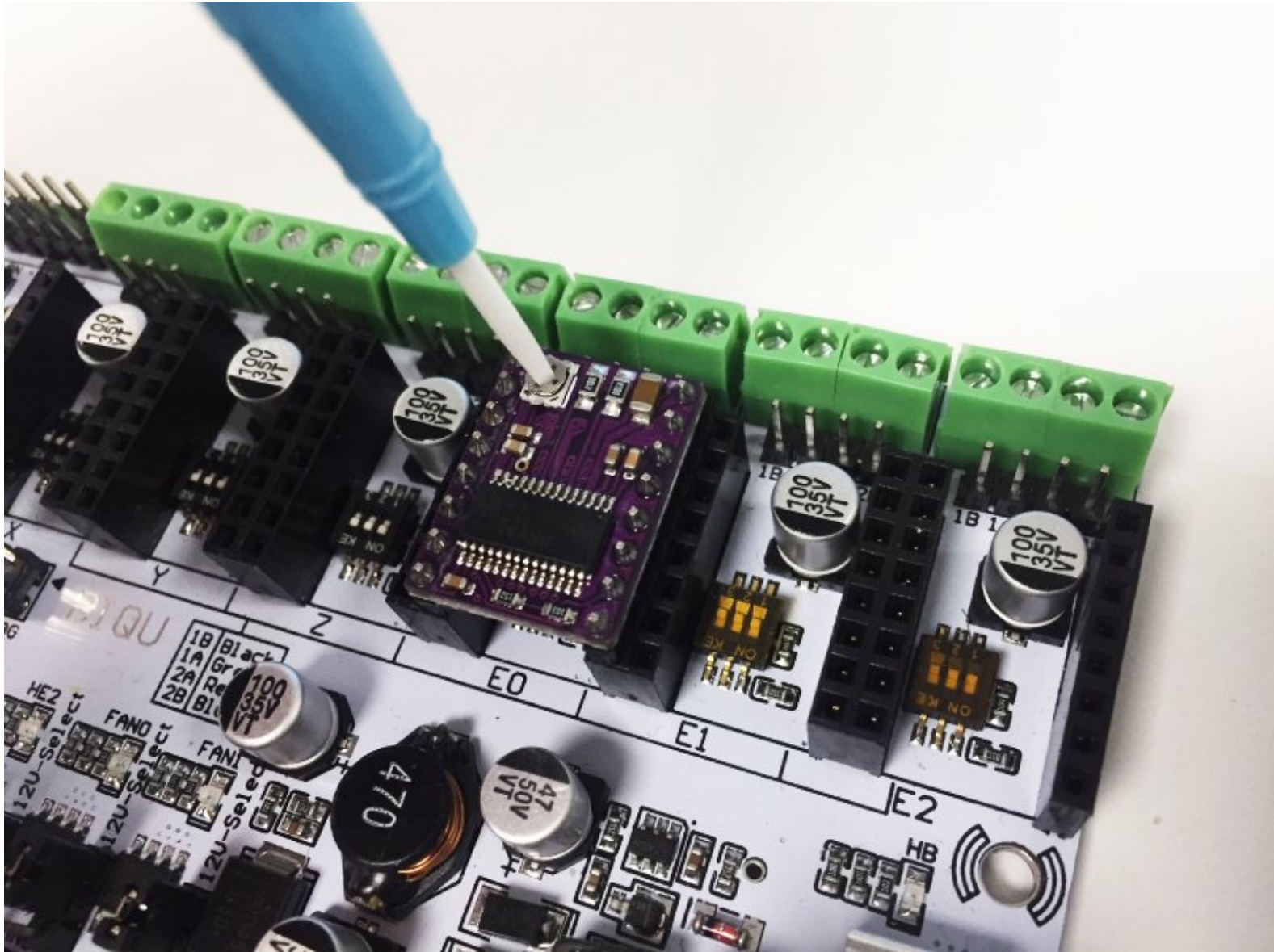




# VREF Calibration guide DRV 8825

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## INTRODUCTION

When changing the extruder motor to a compact but powerful motor (recommended for the Titan and Titan Aero) or Slimline motor (still useable but may require slower printing speeds) you will most likely require a slight adjustment to the stepper driver to ensure that you are not over or under powering the motor. Not over or underpowering is important in order to provide the ideal amount of torque for the extruder to run without skipping steps or overheating and damaging the motor.

For the Compact but powerful motor, the Maximum rated current that you should set the stepper driver to output is 1.68A.

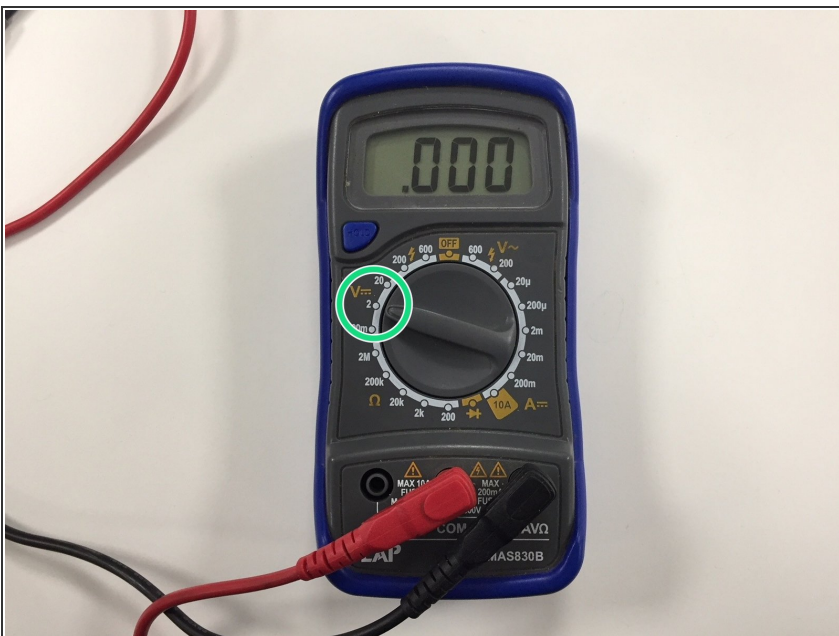
For the Slimline motor, the maximum rated current that you should set the stepper driver to output is 1.4A.

## Step 1 — The Formula



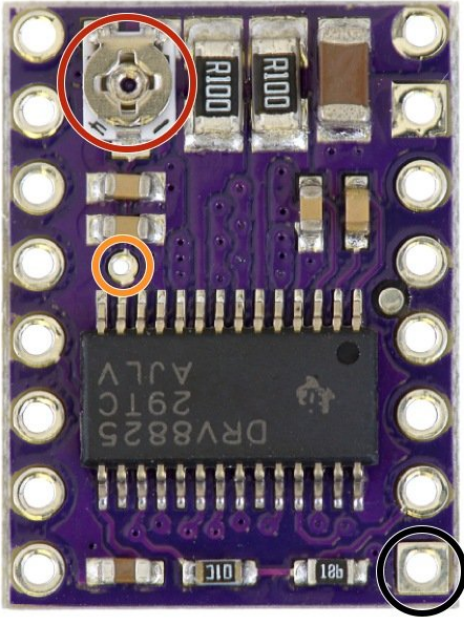
- $V_{REF} = \text{Rated motor current} / 2$
- $V_{REF} = 1.68 / 2$
- $V_{REF} = 0.84$
- ⓘ It is always a good idea to add a 10% safety margin so that you are not running the stepper motor at the maximum rated current.
- $V_{REF} \text{ with a 10\% safety margin} = 0.756\text{v}$

## Step 2 — Measuring the current VREF



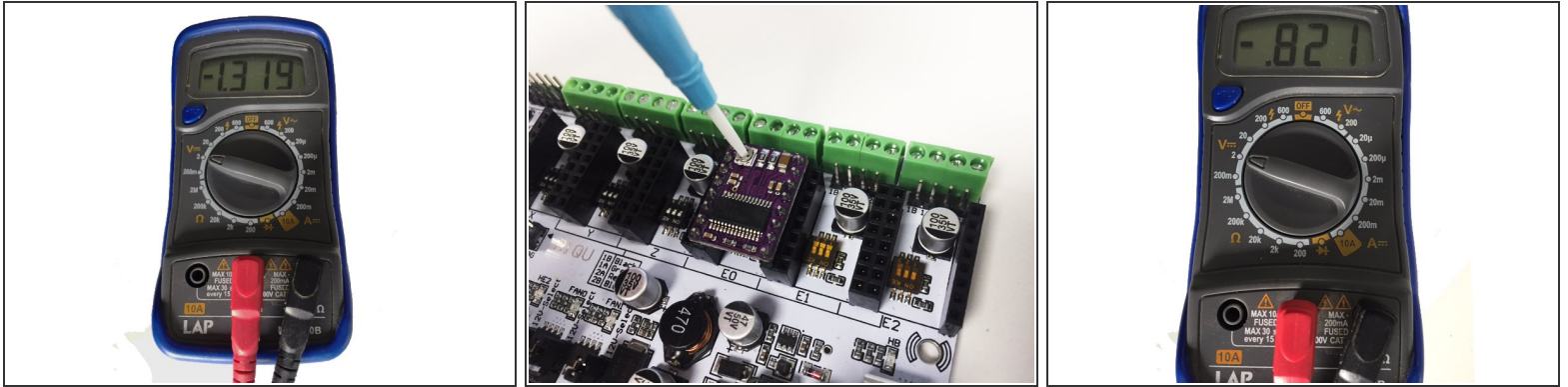
- To work out what your current VREF is you need to use a multi-meter
- We are dealing with DC voltage so select the 2V DC option.
- Make sure the printer board is fully powered, ie it must be powered by the power supply not just over USB to get a correct reading.

### Step 3 — Measuring points.



- Use the Red probe on the Potentiometer.
- Use the Black probe on the Ground Pin.
- There is also a specific probing hole, however this can sometimes be blocked by the heatsink.

## Step 4



- The stepper driver was initially set to 1.319, this is too high and will over heat the stepper motor leadign to loss of toruq and a decreased lifespan.
- By rotating the potentiometer, in this case clockwise from the potion I was in you can decrease the VREF.
- ⓘ Please note the direction of turn to decrease may be different depending on the manufacturer of the stepper driver so always double check by rotating a small amount initially.
- It can be difficult to get the value spot on, It's better to set the VREF slightly lower than it is to set it slightly higher.