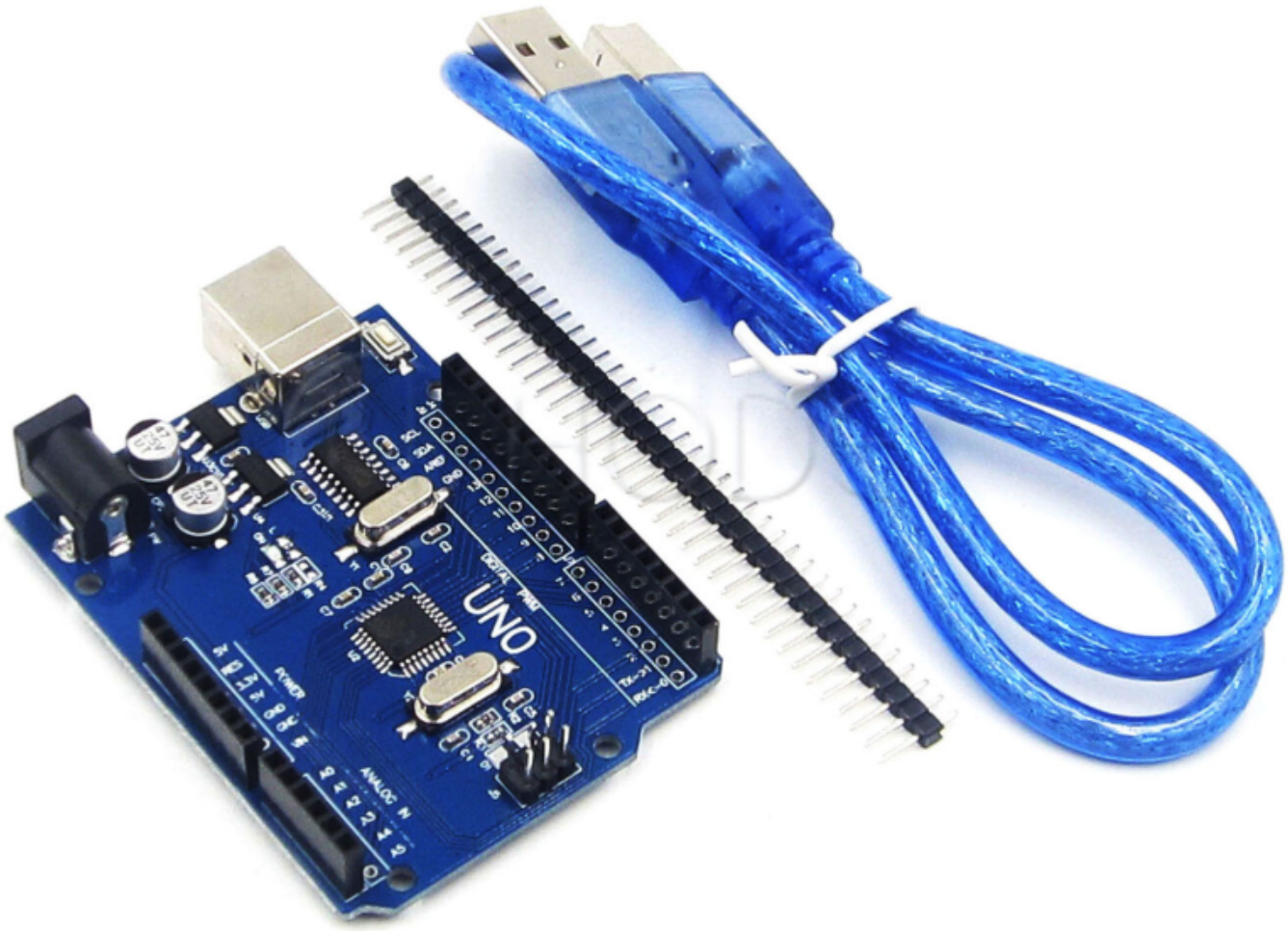
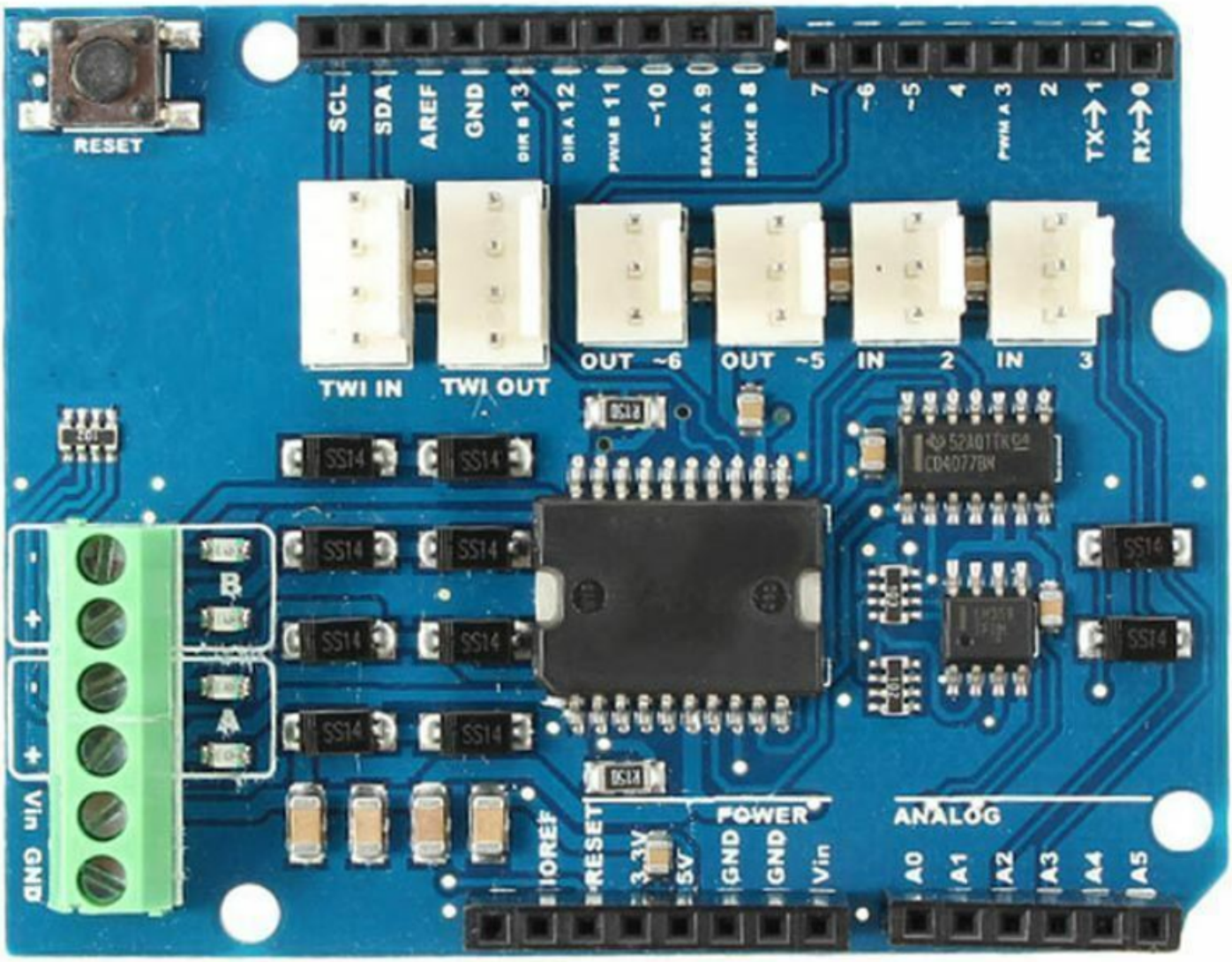
Instructables

Step # 1:Buy the parts

- Arduino Uno £3.00, buy here (a genuine Uno board was used in the prototype)

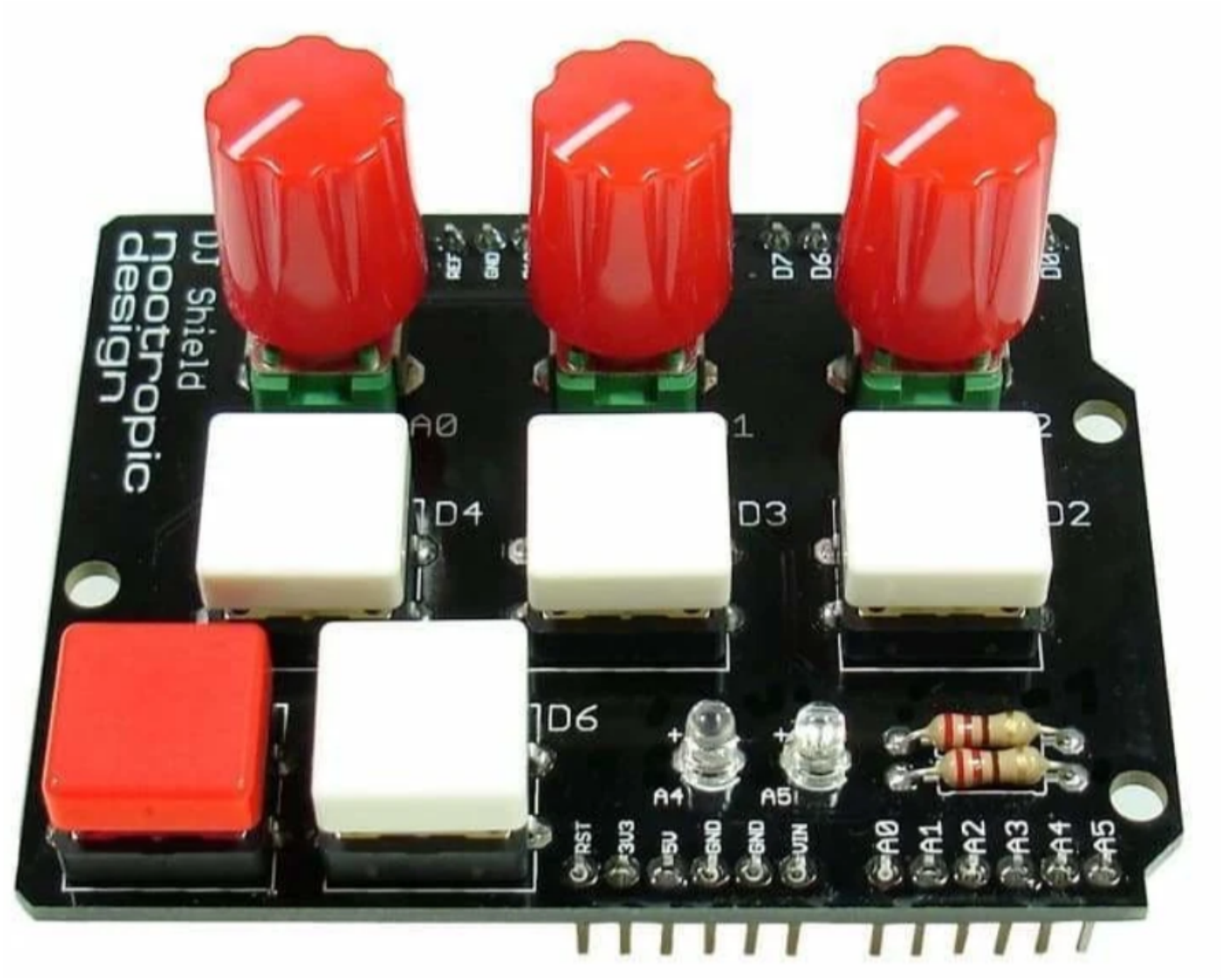


- Arduino motor driver shield rev 3 £10,buy here



- Geared DC motor 20-40rpm £24.00,buy here

- Arduino Dj shield £16.00 Buy Here



- Mains to 12 V DC ‘wall wart’ min 3A £5 Buy Here

- On/off switch £1.00 any switch will do, I used a push button latching 16mm panel mount switch, the one in the link is another example

- 4x cable ties/zip ties (beefier the better)
- 2x jubilee clips 25-40mm
- 9x M6x25mm bolts
- 4x M6x15mm bolts
- 13x M6 nuts
- 1x niloc M6 nut
- 1x M8 x 40mm bolt
- 1x M8 nut
- Laser cut 8mm acrylic parts for chassis £10-£30 (depending on how friendly your local laser cutting place is)
- Laser cut 3mm aluminium motor arm £5-20£ (depending on how friendly your local laser cutting place is)Totaling around £80 (excluding the medical parts; BVM etc.)
- DXFs for laser cutting are stored on GrabCAD in this link: https://grabcad.com/library/covid-19-rapid-manufacture-ventilator-bvm-ambubag-openvent-bristol-2
- Other things not listed here that you will need for treating COVID-19 are a PEEP valve with valve ring adapter, a mask extension tube and a soft Velcro mask strap.

- A list of improvements for the next version is kept in the GitHub readme, some of those things are below:

- A 12V battery backup with at least 20 min run time
- A battery management circuit to automatically switch over to the battery in a power cut

- A pressure sensor alarm for sensing failure and a buzzer & LED to create an alert
- An LCD screen to show pressure and other values and settings