

## Convert your mill to CNC

Written by RICHARD FELTHAM

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The idea of CNC has been around from the 1950s, but it required the advent of serious computing power to make it accessible to sheddies. In essence, each of the three axes lead screws is turned independently by its own independent, dedicated motor, synchronised by the software to obtain the desired movement of the cutter in three dimensions. A fourth rotary axis is also provided.

I used the same type of 4.2 amp bipolar series, a linked stepper motor and driver module for all axes. The mechanical toothed-belt drive has a 5.7:1 reduction for the sideways X and Y axes, in order to obtain both increased precision and better torque for the horizontal slides. The vertical Z axis is 1:1, as is the rotary axis A.

The driver is a commercial micro-stepping unit (Oregon Micro Systems MD10) that is capable of further dividing the 200 native motor steps by a factor of 10, allowing up to 2000 steps per 360°.