Fitting an Endurance 3.5w laser module to a Wanhao Duplicator i3


Some weeks ago, I discovered that the nozzle fan on my Wanhao Duplicator i3 was powered by a 12v Pulse Width Modulation supply that could be used as a way to both power and control the intensity of a laser module.   Further research showed that there were a range of laser module suppliers so, after my initial "cheap" 3.5w module from a well known Chinese supplier arrived "dead on arrival", I contacted George at Endurance Lasers and, having received some very clear and helpful advice, ordered a much better quality replacement 3.5w laser module (that came with a lifetime warranty).

In the short time I had to wait for international delivery, I researched which software I should use.   I settled on a trial copy of Lightburn and discovered that it did not work with the hacked version of Repetier firmware that the Wanhao i3 uses.   It did, however, work with Marlin, so a quick visit to the Github website provided me with an appropriate base firmware to upload to the printer.   This was done using the Arduino IDE, burning a boot loader and the new Marlin firmware onto the Melzi board in the printer, using the Arduino IDE.   This firmware change was only necessary as I wanted to use the Lightburn software and, should you

be content to use the free software available on the internet to manage your laser, this would not be necessary.

Also during this period I made a bracket to fit the Endurance Laser module to the existing screw holes where the nozzle fan is fitted on the Duplicator.   This was simply a length of aluminium right angle bracket drilled at appropriate spacing to fit both the laser module and the fan mounting.   Some additional M3 nuts and bolts were the only materials needed.
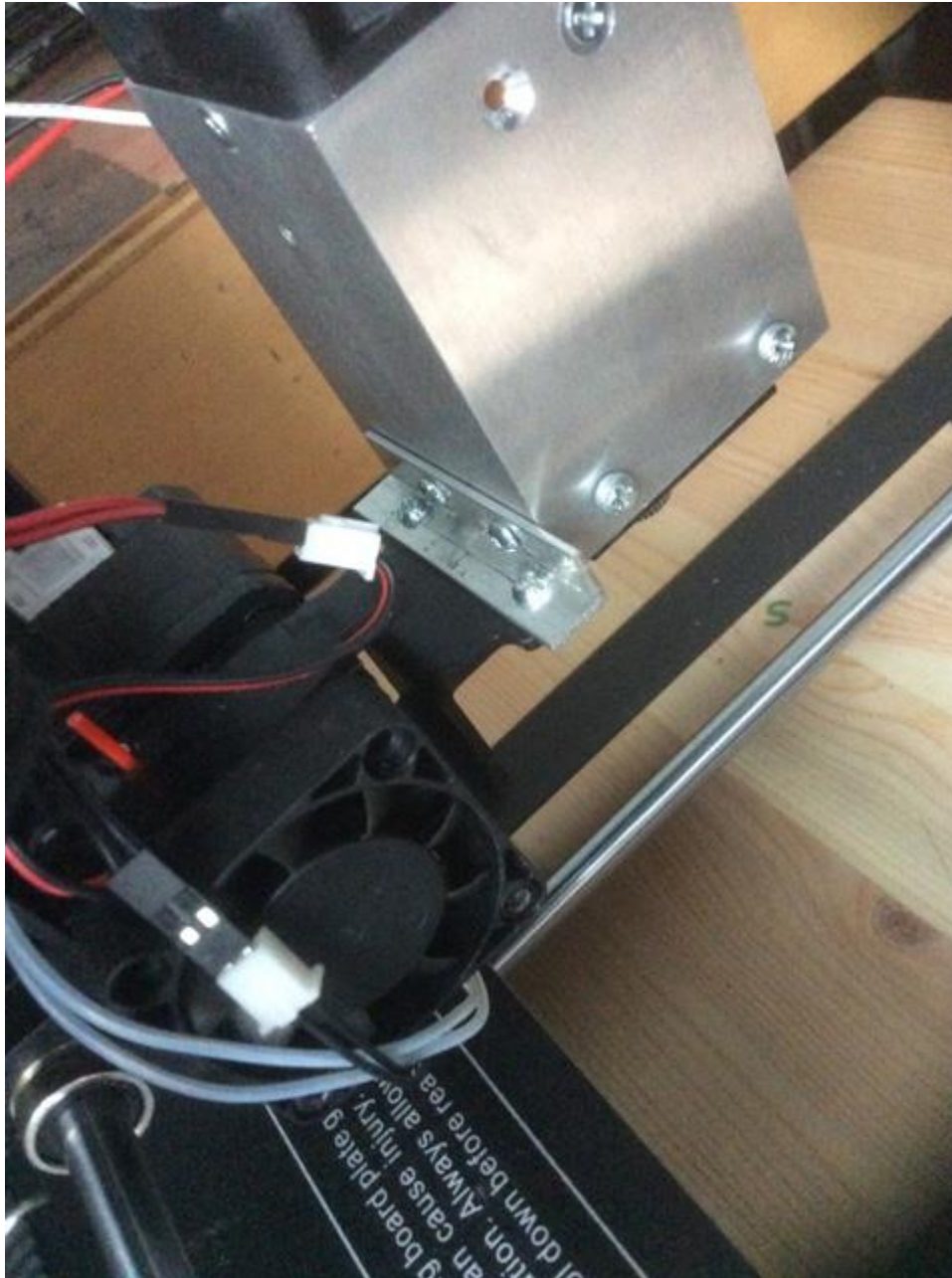
On arrival, the Endurance Laser module was quickly mounted on the angle bracket and the PWM power supply from the fan was connected to the power input.   After putting on the free safety glasses included by George, the laser was powered up and focused.   The intensity of the laser is controlled by the g-code settings for the fan, so there is a range of 256 settings available - enough to engrave fairly complex pictures.   On full power, the laser is capable of cutting 3mm birch plywood in 5 or 6 passes.   The combination of the Lightburn software and Marlin firmware fully automates this for the user.
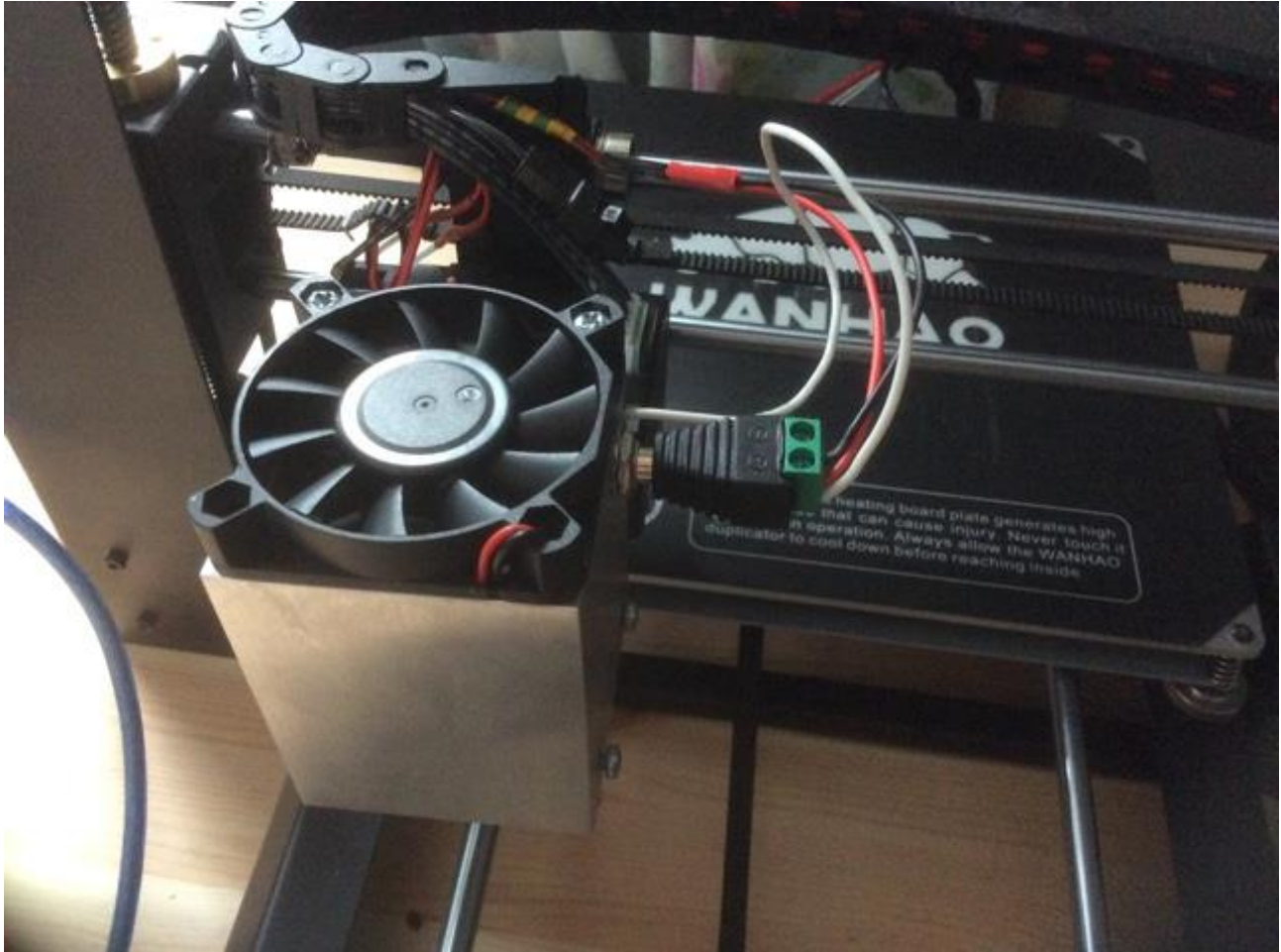
After a few hours learning the software and the capabilities of the laser module itself, I was delighted to be able to produce this.

The 3d printer is still fully functional too.

In conclusion, this was a fairly simple conversion to do, the advice received from George and the quality of the product being excellent.   I would highly recommend Endurance Lasers.