Read Me 26ʰ October 2024

Latest version of the firmware is V3.04.1

V2.x of the firmware and associated files are listed below the version 3 files in downloads.
If you're thinking of updating then please read the following carefully before updating to see if you require any of the new features, for the majority of people V3 offers nothing extra over V2.
Please also read the V3 manual.

V3 requires a different chip (PIC18F4620) due to memory requirements.
This is a plug in replacement for the existing 4520 (or even the original 452) so all existing controllers can be updated to use it.
A modified PCB is now supplied which uses larger connectors and has reverse polarity protection.

Files:
- HardwareManual.pdf Hardware manual for fully built controller.
- Manual V3.04.pdf Operating manual for V3.04.x
- GettingStartedV3.pdf What to do with the module sat in front of you.
- FrontPanel.pdf Using the front panel overlay (including some info on making your own and cutting templates).
- FrontPanel.dxf DXF file for cutting the front panel to suit the overlay.

For completeness:
- Rotary18F4620 V3.04.1.hex Latest firmware (requires 4620)
- Circuit Diagram V3.0.jpg V3 circuit diagram.
- PCB Layout V3.png PCB component layout.
- PartsList.pdf List of parts.

Firmware change-list:

V3.04.1 additions.
Speed shows as decimal value 1.0 to 9.9
As per 3.04 pressing speed followed by a numeric value inputs an integer value (i.e. 1.0, 2.0 etc).
However whilst speed is flashing the [<] and [>] can increment or decrement the speed in 0.1 steps.
This is generally useful for cutting whilst rotating offering finer control over speed changes.

Programming mode now has shortcuts based on numeric keys for faster input. See manual for details.

V3.04.0 additions.
Simplified max/min speed settings in setup.

Profiles can now be named to make it easier to differentiate instead of "P:1" etc.

Number of profiles increased to 6.

Profiles can be enabled/disabled in setup and only the enabled ones are shown on boot.
(Last used profile in list has suffix '*'.)

How a profile is selected (press it's number) no longer requires 'G' afterwards.

If only one enabled profile then device no longer queries for a profile on boot.

"Default Profile" option removed since this is covered above.
How speeds are changed has been changed from simply cycling to pressing speed (value flashes) followed by a numeric key.

Number of speeds has been increased to 9 (1...9) giving finer control over speed.

Fixed a debounce issue with the keypad that can result in multiple keys being issued.

V3.03.4 additions.
Linear ratio can now be 6 digits (previous limit was 65535).

V3.03.3 additions.
Allow 360 deg rotation in degree mode (previously wouldn't move since it was already at the destination).

Changes to how debounce is handled on the keypad.

Linear no longer strobes the acknowledge line.

V3.03.2 firmware additions:
Added 'Beep' command in program mode.

Added 'Sense Lo' and 'Sense Hi' to program mode flow control.

Fix for jog bug (if "Steps per 360" is less than 18,000 then a 0.01 jog could rotate 360 degrees)

Fixed bug in limit switches that prevents continuation when limits hit.

V3.03.1 additions.
Added two extra commands to program mode to allow sense line to continue if high/low.

Changed code around limit switches to allow them to be used to limit travel when gear cutting.

Fixed a minor bug that can prevent the table indexing if it hits a limit switch.

V3.03.0 firmware additions:
Both stepper ports are now active and can be swapped over in the machine profile (the ready built unit uses this to select either the internal stepper driver or an external one).

A simple gear cutting mode has been added using the second stepper port to drive the cutter, this replaces the use of two controllers.

A new motion engine which offers linear acceleration and higher top speeds.

The 16 bit limit for "Steps per 360" has been removed so values larger than 65535 can be entered (allows microstepping and slow feedrates for cutting with small cutters whilst rotating and the use of microstepping only drivers, i.e. some Geckos).

Updated programming mode to support the linear functionality added by gear mode.

The enable line has a pre-settable delay allowing it to be used to drive an electro-mechanical brake.

Various changes to setup reflecting the above.

'Goto Angle' allows 360 degrees to be entered (for machining a full circle)

Some changes to nomenclature both on screen and in the manual to differentiate between the two ports.

Degree and Jog modes now work with "ideal position" rather than actual position which prevents accumulated errors (and shows desired position rather than actual on display).

Degree and Division modes now can recover from 'Cancel' and 'Stop' commands (subsequently pressing one of the index button moves to the correct position for that index).

Removed ability to jog in Degree and Division modes (it was messy and caused other issues – plus nobody seems to use it).
(And probably some other bits and pieces I've forgotten about...)