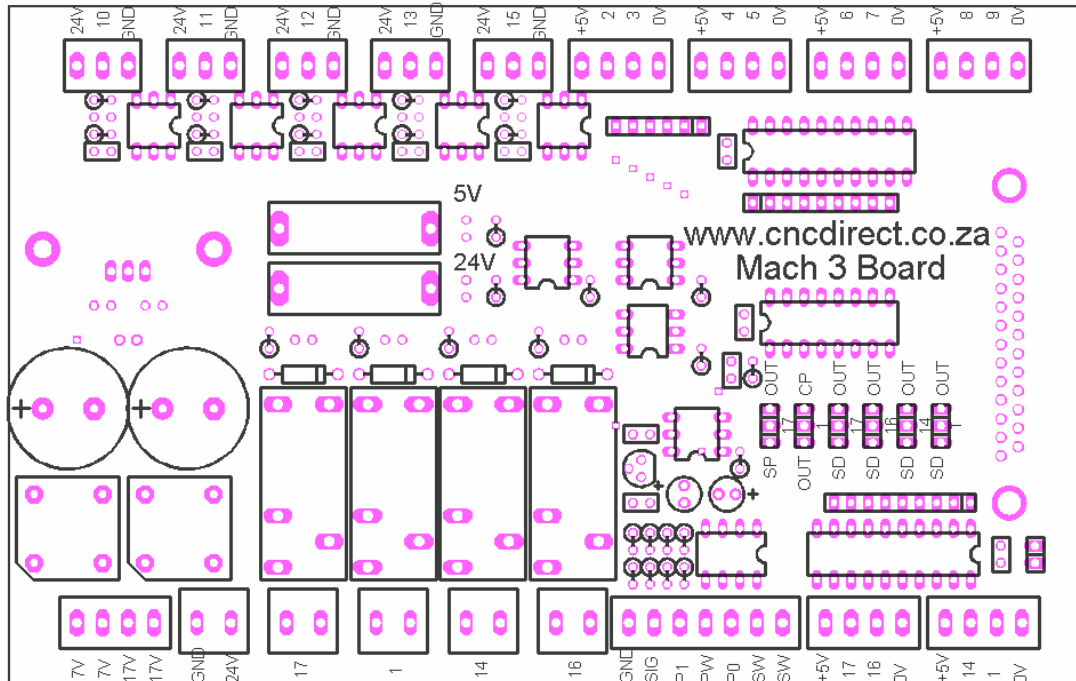# Mach 3 Break Out Board

Thankyou for purchasing our Mach 3 Breakout board. Please read the following installation guide carefully.

Note that with Mach all inputs and outputs are referred to by the corresponding pin number on the printer port, this board follows this convention. The printer port allows for a total of 5 inputs and 12 outputs, the outputs generally divided into 8 pins for Step and Direction port and a further 4 pins for general purpose outputs.

Starting at the top left according to the picture above, the first 5 terminals are the general purpose inputs, to connect a plain contact requires a connection between the 24V pin and the center pin marked according to the port pin number. If you wish to use a proximity type sensor, use a PNP type for 3 wires and connect the 24V, signal and the GND, if using a 2 wire type connect between 24V and the input pin.

The next four terminals are the Step and Direction port. Note that the 5V and GND is available to you according to the method that your drive is connected. Geckodrive 201's and 202's require that their common is connected to the +5V pin, the G210's and G212's require a connection to the 0V for the common.

Moving to the bottom right, we find the 5th and 6th axis step and direction ports which are available at the expense of the general purpose outputs. Above these are 6 rows of jumpers, the first 4 (closest the D connector) determine if the outputs will be used for the Step and Direction or general purpose outputs. In between each row is printed the corresponding pin number. If the jumpers are all set to SD then you will have no general purpose outputs. It is common practice to have 5 Step and Direction ports and to leave the remaining two pins for general purpose outputs.

The remaining two rows of jumpers are for the Charge Pump and the analogue SPindle output. Firstly, the charge pump safety device is a just a timer that times out more than 1000 times per second, if Mach fails to reset this timer quicker than that it will switch the corresponding output off. This is important when the computer crashes or during booting up as these pins toggle between high and low and an accident is likely. Wire all important functions in series with the Charge Pump relay (Pin 1). Note that with the Charge Pump enable, pin 1 is no longer available as a general purpose output.

The analogue SPindle output will give you a 0-10V signal suitable for connection to a variable speed drive. The GND must be connected and SIG is the 0-10V signal. P0, PW, and P1 are the 'low' end, wiper and 'high' end of an external override potentiometer. Use a 10K linear potentiometer. The SW and SW are for an external switch, this will disable the circuit when open.

Just below the 25pin D connector is another jumper, this jumper allows you to connect the PC ground which comes through the screen on the cable to the internal ground of the board. There has been much discussion if these grounds are to be connected, personally I leave it open as it just creates an earth loop which might cause interference.

The relays are available for general purpose outputs, although they are rated for 12A please do not use more than 2A as the tracks on the PCB will fail. If you wish to switch larger loads, please use a slave relay, contactor or solid state relay.

There is an extra terminal which offers the 24V available on the board and the remaining terminals are the 17V and 7V inputs. The internal 5V and 24V are fused with 1A fuses each, if a fuse were to blow, please find the fault before replacing it.

We hope you have success with this product, should you have any further queries please do not hesitate to contact us.

Belli Button