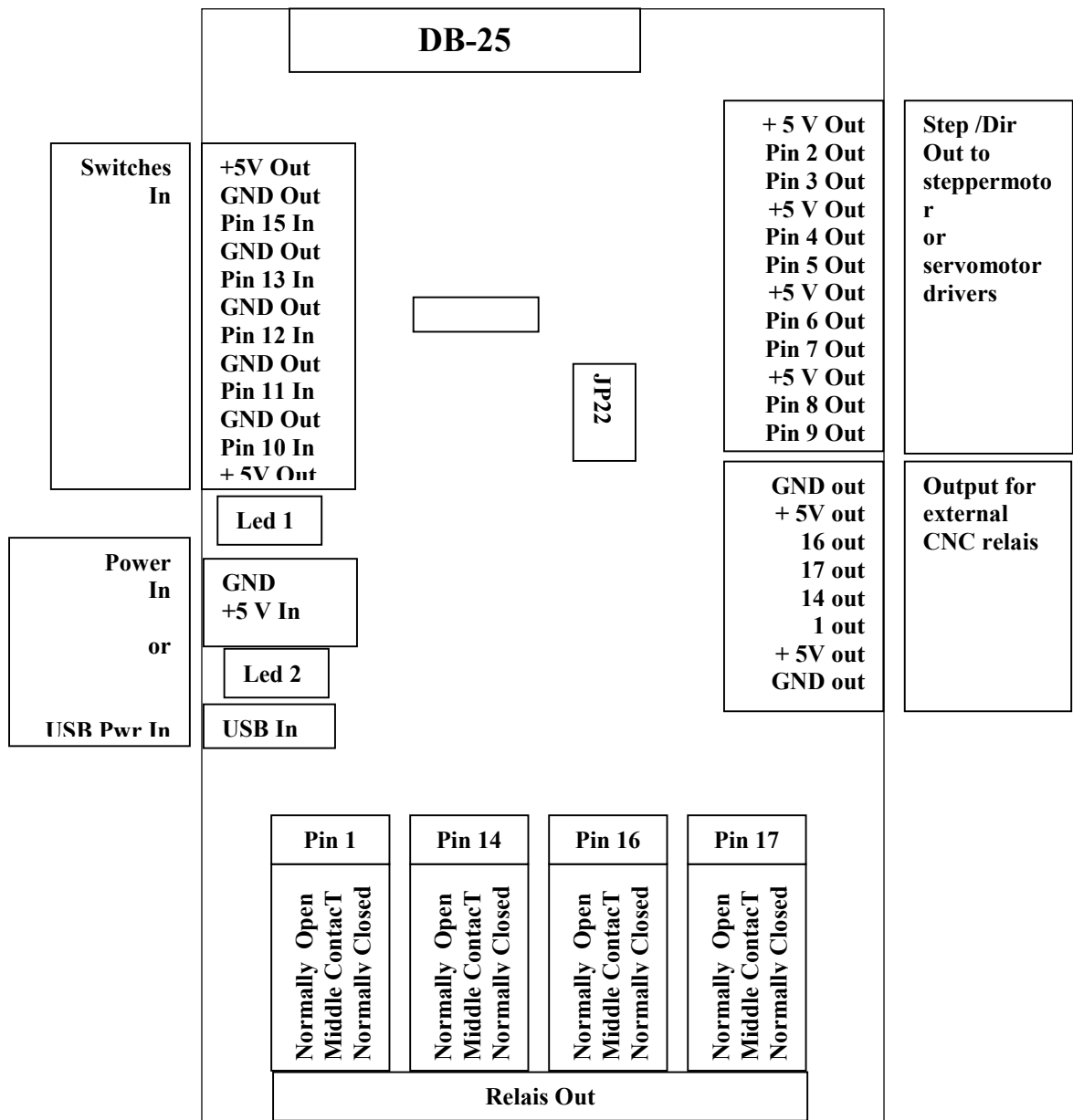


CNC Breakout board with step and direction input

These CNC breakoutboards are used to connect an LPT port to one (ore more) CNC steppermotor (s) or CNC servomotor in an easy way. This board can (by means of a jumper) be made to just wait some time for the computer and programm to start up, or to switch on during the time on pin 1 fast pulses are recieved. A program like Mach3 can be made to sends those pulses to a pin to signal the breakout board everything is ok. This way the cnc machine just start to work if the program sends correct information to the cnc-machine.



JP22 : Short (closed) means the board waits until a charge pump signal on pin 1
: Open means the board waits a few seconds before becoming active. Relais on pin 1 enabled.

Power input

Power can be supplied by either a separate 5V powersupply, or by means of a USB cable. This cable can be connected to either a separate powersupply or by the computer through the USB port. Depending on the state of the JP22 jumper, the board will wait some time to give the computer some time to start up before the board gets active, or wait until a steady pulses comes from the cnc programm that runs on the computer.

Leds

Led 1 will turn on wenn there is power to the board.

Led 2 will turn on wenn the board is active, and turn off wenn the board is not active. It does NOT turn on at the moment wenn just the power is supplied. There is either a timedelay (JP22 closed) or there needs to be a chargepump signal from the CNC programma (like mach3 can give if properly configured).

Jumper J22

Jumper J22 tells the board what to do after the power supply is turned on. If the Jumper is installed (pins are shorted by the jumper) the boards turn immediately active if a steady puls signal is recived on pin 1. Wenn this signal disappears (usually when the cnc programm stops running) the board turns inactive again. The relais that normally reacts on pin1 is turned off if this jumper is placed. If this jumper is not installed (pins not connected), the board just waits until some time elapses, giving the cnc system time to get the state of the pins that leads to the breakout board in the right position. As there is no need for a chargepump signal the relais that reacts on the signal on pin 1 is active.

DB-25 connector

The DB-25 connector is usually connected to the LPT port of the cnc system. The signals to the step and direction input of the CNC stepper motor or CNC servomotor drivers are buffered, so there is no problem with signal levels not being right. There are no optocouplers on the board, as those are normally on the drivers.

Switches input connector

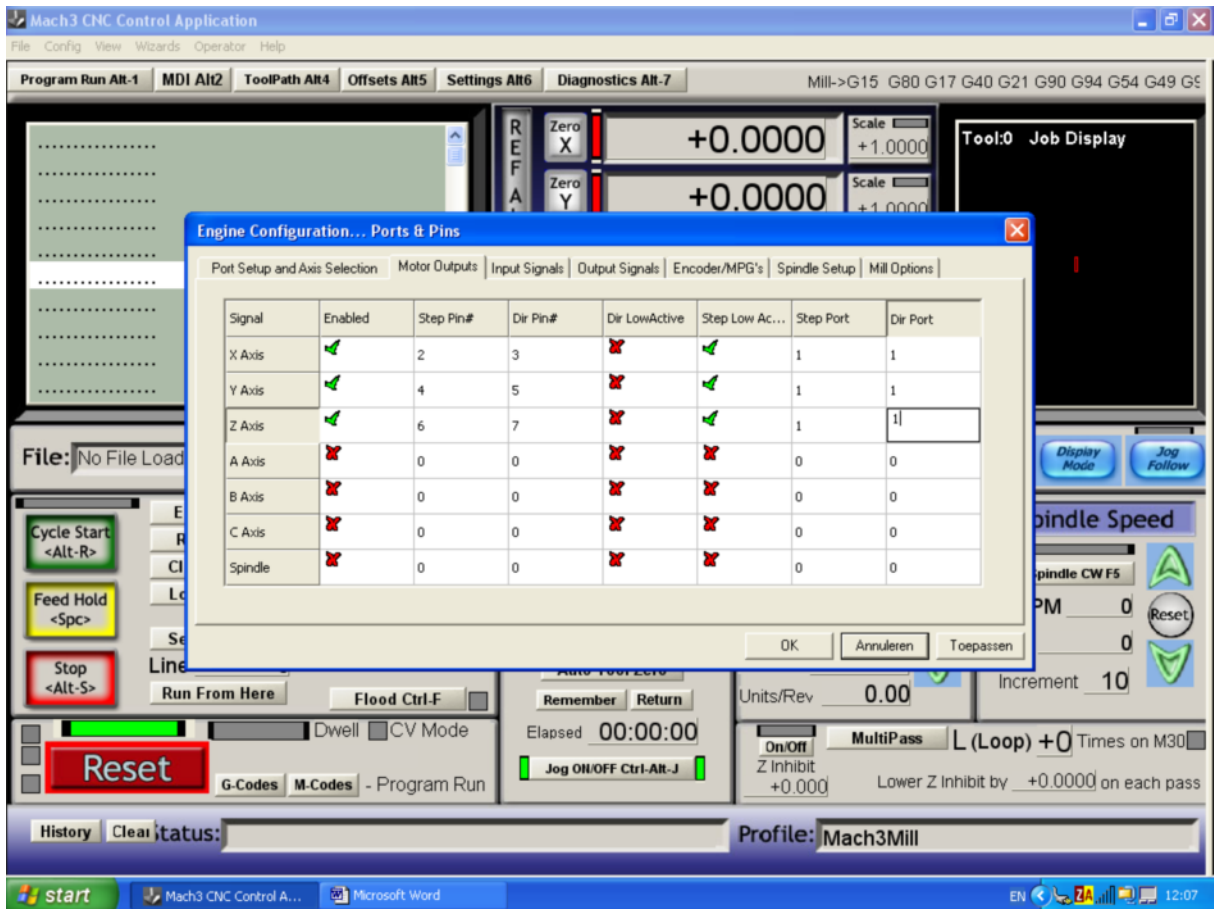
The switches (for example home switches) can be connected on this connector. The signals are internally either pulled up to +5 V or pulled down to GND by means of a resistor pack on the board. This network can be made to connect the signals to GND or to +5 V. Most CNC systems use a inductive switch to home the CNC system (axes at a know zero position). For those inductive CNC switches there is both a GND and a +5V output.

Step/dir output connector

The drivers of the cnc system are connected to this connector. Those signals are buffered and amplified , but there are no optocouplers on the board. The reason for this is that on almost all drivers optocouplers are present. Two optocouplers in a row (one on the board, and one on the drivers) doesn't give more protection, just slows the signals down somewhat.

Relais output

There are 4 relays that can be used for switching a spindle, pump, etc. One of those relays is tied to the signal that can be used for the charge pump signal, as is used in Mach cnc software. This makes this signal useless for controlling this relays, so it is turned off in case the board is configured to use this charge pump signal.



Standard Connections (Example with MSD-50-5.6 driver)

X-axes

PUL+ : + 5 Vout
PUL- : Pin 2 out
DIR+ : + 5 Vout
DIR- : Pin 3 out
ENA : NC

Y-axes

PUL+ : + 5 Vout
PUL- : Pin 4 out
DIR+ : + 5 Vout
DIR- : Pin 5 out
ENA : NC

Z-axes

PUL+ : + 5 Vout
PUL- : Pin 6 out
DIR+ : + 5 Vout
DIR- : Pin 7 out
ENA : NC

MSD-32-2.5 driver

Standard Connections (Example with MSD-32-2.5 driver)

X-axes

OPTO : + 5 Vout
PUL : Pin 2 out
DIR : Pin 3 out
ENA : NC

Y-axes

OPTO : + 5 Vout
PUL : Pin 4 out
DIR : Pin 5 out
ENA : NC

Z-axes

OPTO : + 5 Vout
PUL : Pin 6 out
DIR : Pin 7 out
ENA : NC

JP22 open for NO chargepump.