CNC4PC
Integration Solutions for CNC Projects

VARIABLE SPEED CONTROL

Variable Speed Control allows controlling the spindle with PWM and direction signals, as if it was an axis motor. It converts the PWM signal into an analog (0-10VDC) signal.

A Variable Frequency Drive or Inverter works by modifying the frequency for AC motors. You can control most of these devices with an external analog signal (0-10VDC). That is, if there is 5VDC control signal, the motor will run at 50% of full speed, if there is 10VDC, the motor will run at 100% of full speed. If there is no voltage, then the motor will stop.

This function can also be used on many DC motor controllers by replacing the potentiometer that controls the speed.

WARNING: You will require a voltmeter to fine tune your system.
Before connecting anything, please be sure to read your VFD's manual and make sure you understand all the safety issues.

- Operation Mode Selection Jumper

This jumper allows selecting the way how the relays are activated when a PWM signal and REV signal are present in the pins 1_14 and 1_16.

In US mode one relay is used to start on CW and the other one to start on CCW. In international mode one relay is used for on/off, and the other one to indicate the CW or CCW rotation of the spindle motor. This board uses the step and direction setting for the spindle motor under motor output in Mach3 to generate the required action on the relays. For both cases the presence of PWM will indicate spindle start.

See the tables below.

US MODE (INT)				
PIN		**RELAYS**		
1_14	***1_16***	***REL 1***	***REL 2***	***OPERATION***
PWM	1	OFF	ON	Spindle ON CCW
PWM	0	ON	OFF	Spindle ON CW
0	1	OFF	OFF	Spindle Off
0	0	OFF	OFF	Spindle Off

INTERNATIONAL MODE (INT)				
INPUTS		**RELAYS**		
1_14	***1_16***	***REL 1***	***REL 2***	***OPERATION***
PWM	1	ON	ON	Spindle ON CCW
PWM	0	ON	OFF	Spindle ON CW
0	1	OFF	OFF	Spindle Off
0	0	OFF	OFF	Spindle Off

Relay 1 and 2 (Pins 16 “Port 1”)
They can be used to control the VFD. The relay specifications are shown in the table below.

ELECTROMECHANICAL RELAYS SPECIFICATIONS	
Maximum Current (AC)	7A@240VAC; 10A@125VAC
Maximum Current (DC)	15A@24VDC; 10A@28VDC