Introduction
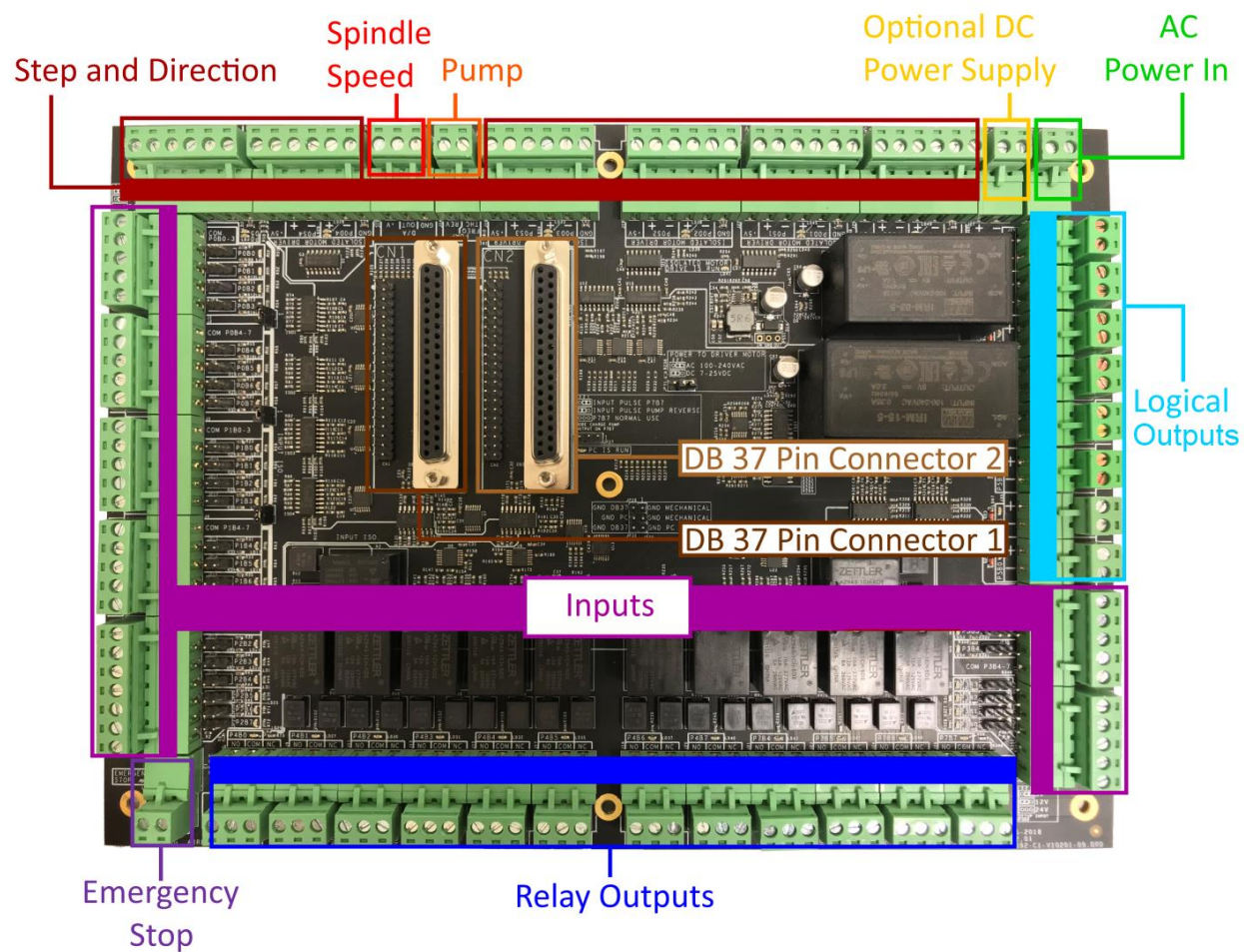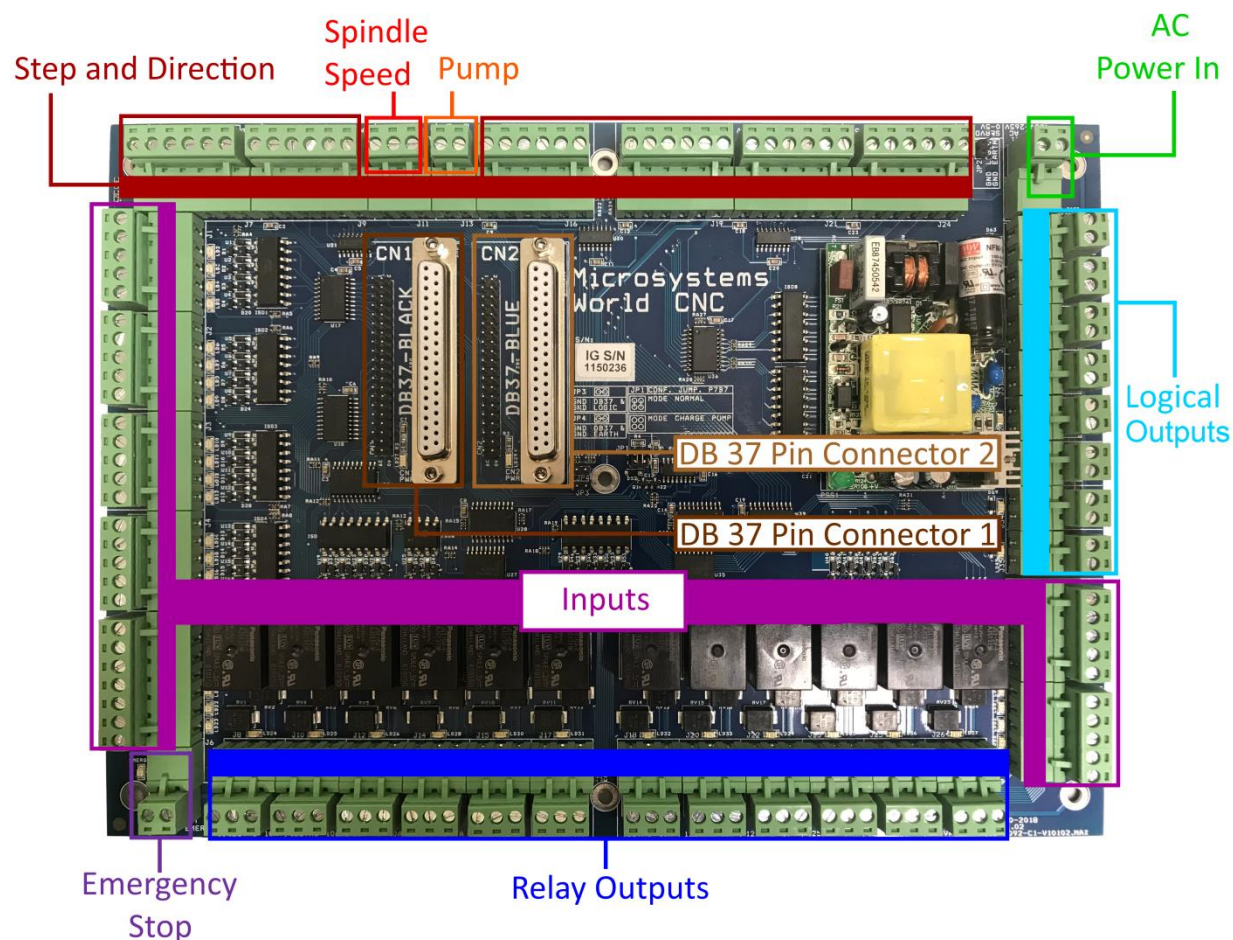
This document will outline installing a CN1/2 Interface board on your CNC machine controlled by WinCNC.

Fully Isolated CN1/2

Labels on the board image: Step and Direction, Spindle Speed, Pump, Optional DC Power Supply, AC Power In, Logical Outputs, DB 37 Pin Connector 2, DB 37 Pin Connector 1, Inputs, Emergency Stop, Relay Outputs

CN1/2

Pictured above is a CN1/2 Interface Boards. The first step in connecting the board should be configuring the jumpers to accept the input voltage you are using. By default you will receive your board with all jumpers removed and enclosed in a separate bag. Jumper positions 1+2 should be used for 12v DC, positions 2+3 should be used for 5v DC, and no jumpers should be used for 24v DC. If using 5v DC for your inputs the 5v output on the board can be used a power supply. Any other voltage will require an external power supply not supplied.

Emergency Stop Function

A circuit must be completed between the two E-Stop terminals on each board for them to function. This can be accomplished with a switch or by simply shorting the terminals if you wish to bypass the E-Stop. Also located on **only** the CN1+2 boards are two jumpers in the middle of the board controlling the Emergency Stop function. These jumpers must be present for the board to function.

On the CN1+2 board when the emergency stop circuit is open, the outputs will go into the open state and the inputs will go low, but the step and direction will still output signal to your drives. Your machine will still move while the E-Stop button is pressed if using the CN1+2 board.
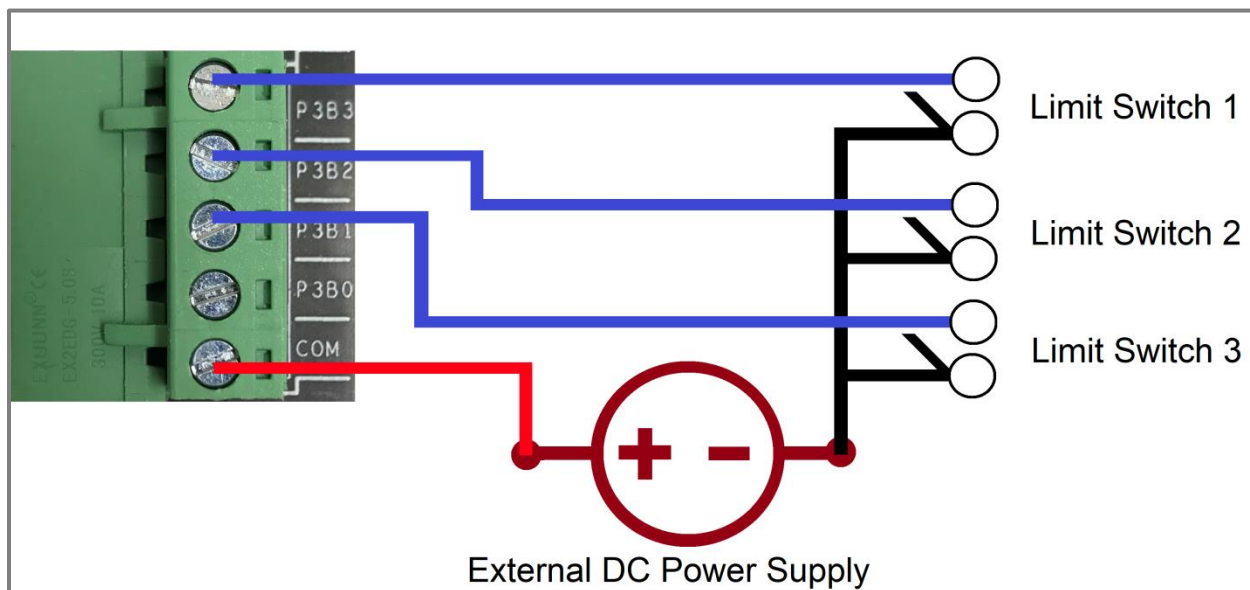
Power and PC Connection

The board can be powered using 90~240V AC. The CN1+2 board connects to the PC using two 40 pin ribbon cables. It is important to note that when using ribbon cables with the CN1+2 board the red wire on the cable (Pin 1) must go to pin 1 on the interface board. When looking at the board, pin 1 of the 40 pin header will be on the left side of the connector if you are looking at the board so that the letters "CN1" and "CN2" are legible.
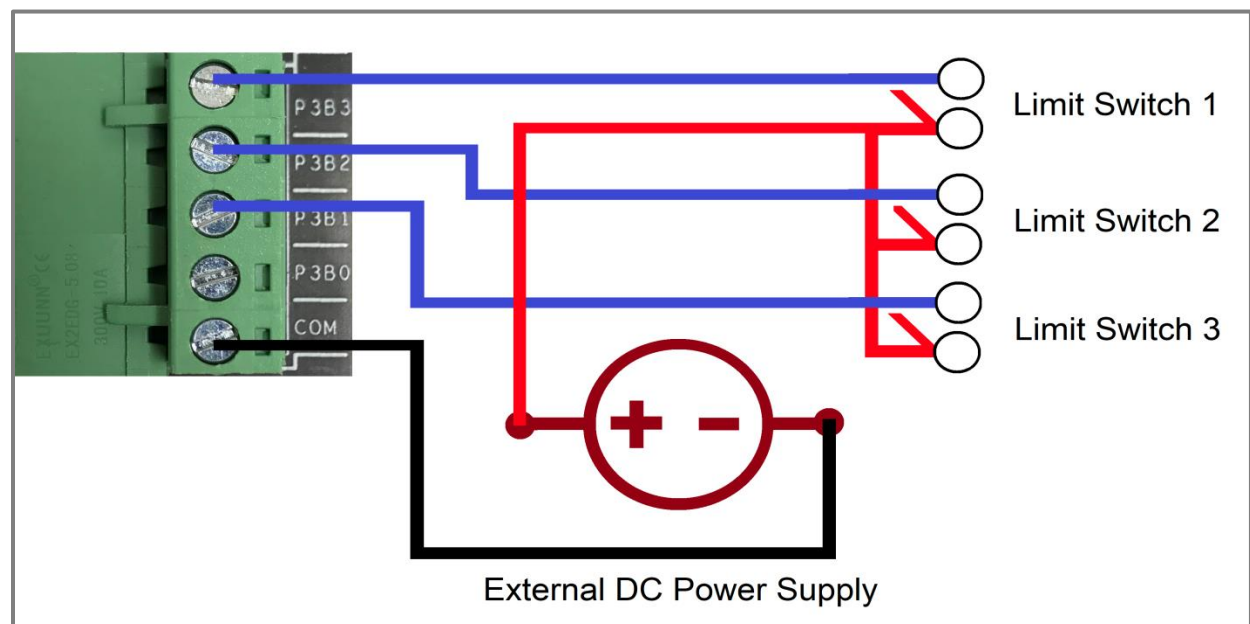
Input Wiring

Below is an example of wiring for multiple limit switches. There are two different ways to connect inputs to the board and if you are using transistor style switches you will need to use the correct method for NPN or PNP depending on your switch type. If using normal contact switches either method can be used.

NPN

P3B3
P3B2
P3B1
P3B0
COM

Limit Switch 1
Limit Switch 2
Limit Switch 3

External DC Power Supply

PNP

P3B3
P3B2
P3B1
P3B0
COM

Limit Switch 1
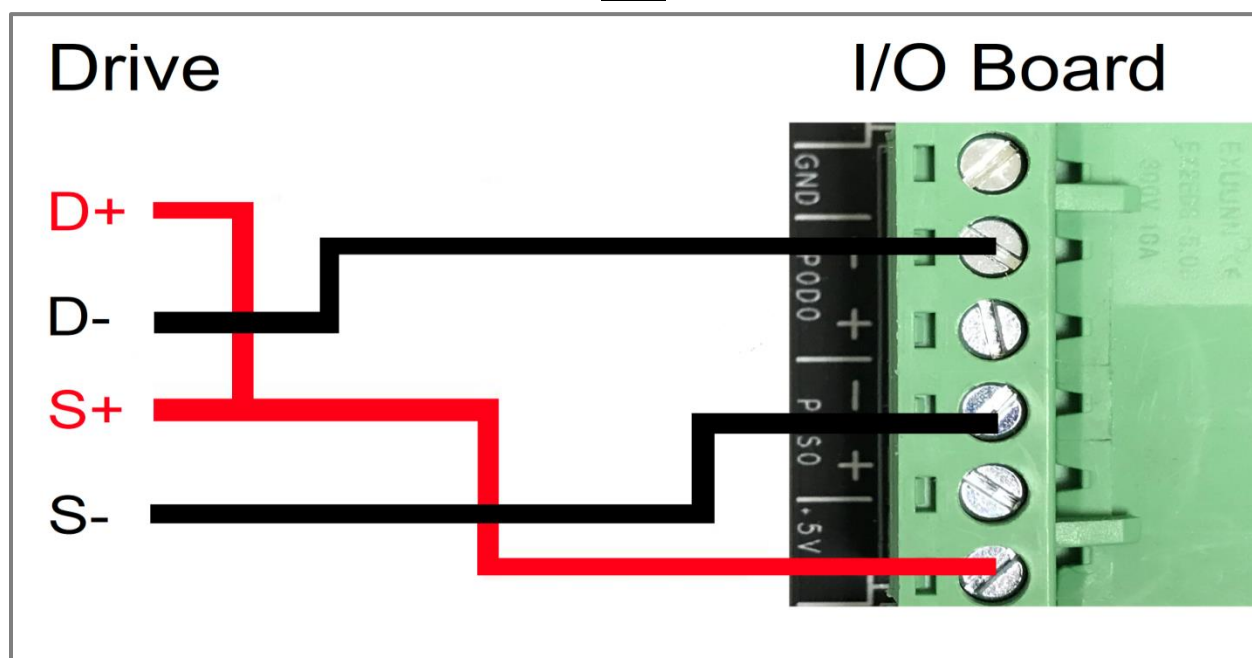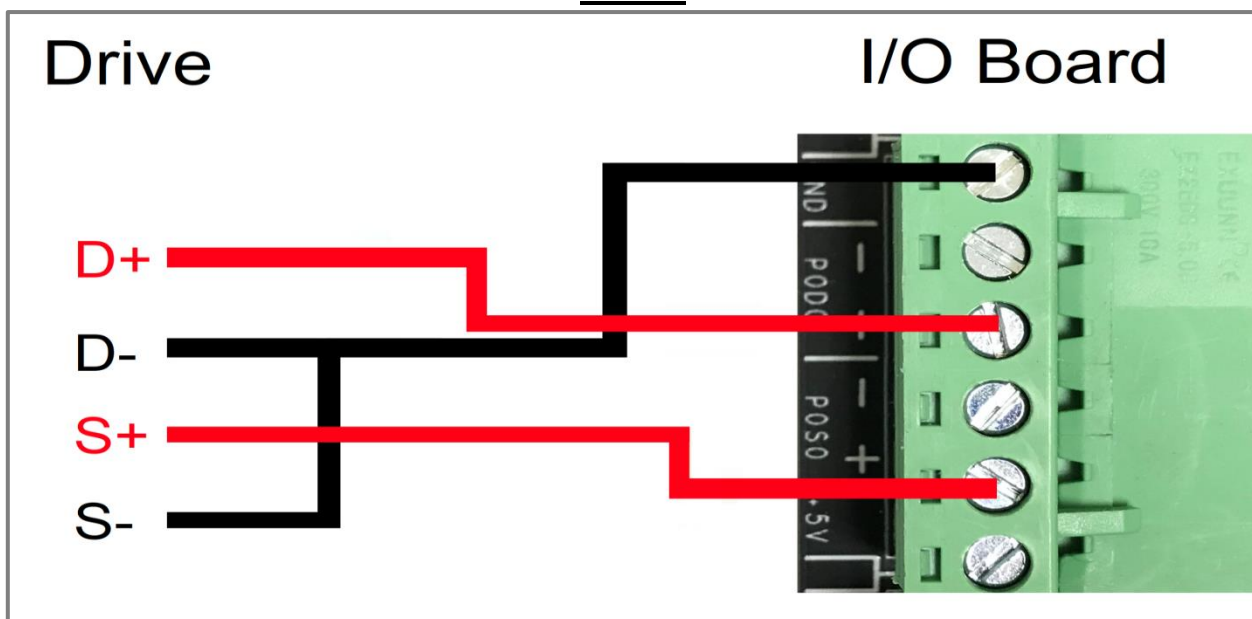Limit Switch 2
Limit Switch 3

External DC Power Supply

Step and Direction Wiring

Wiring examples for the step and direction portion of the board can be found here. As with the inputs there are two different methods of connecting a servo or stepper drive to the board.

Sink

Source

Logical Outputs

The eight logical outputs on the right side of the CN1/2 board each have a positive and negative terminal. A voltage input on the positive terminal will be output on the negative terminal when the corresponding output in WinCNC is turned on. Maximum rating for the circuit is 24VDC and 50mA.

Relay Outputs

The outputs on each board can be wired to turn on your spindle, dust collector, or any piece of equipment you would like to be able to control through the software. Your input power up to 240v AC goes into the COM terminal and depending on whether you want the equipment to be on while the control board is powered off (NC) or off while the control board is off (NO) you place another wire going from the corresponding terminal to the voltage input on your equipment.
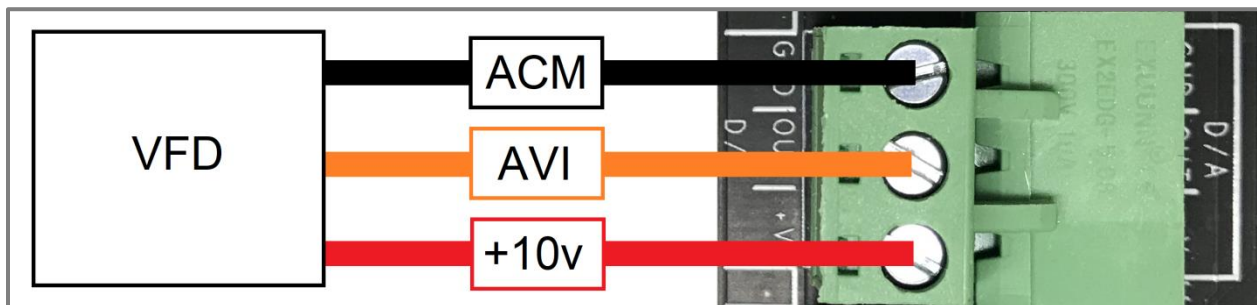
NO
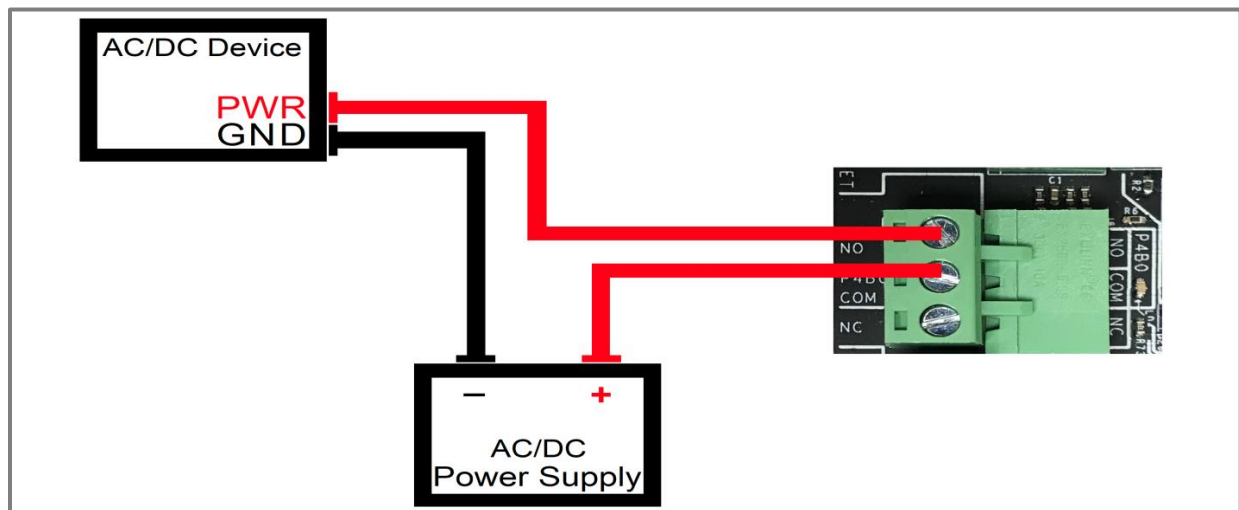
NC
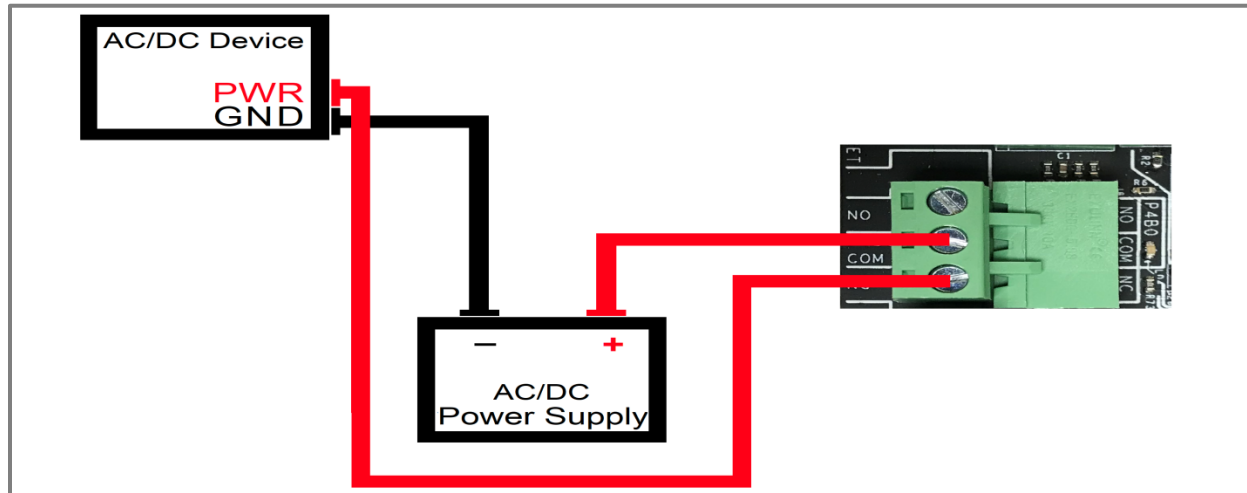
Spindle Speed

In conjunction with a VFD (Variable Frequency Drive), the CN2 board is capable of Spindle Speed Control, formerly known as Digital to Analog Speed Control. +10v, ACM (Analog Common/Ground), and AVI (Analog Voltage Input) is wired into the board from the VFD as shown below. Terminology can vary between VFDs, however what is specified in this wiring example is common.

CN1/2 Size Specifications