	CNC4PC	Manual

C1-PARALLEL PORT INTERFACE CARD
Rev5

Overview

This card has been designed to provide a flexible interface for CNC projects using parallel port control software. Proven implementation of buffering and optoisolation circuits provides for a quick and reliable solution

Features

- ***All pins can be used in a concurrent manner.***

You can use all the input or output pins in a concurrent manner. For example, if you are using output pin #1 to control an output device, you can also access that signal from the output pin on the board or from the DB25 connector for output. Each connection will not affect the other current from the other connection.

- ***Fully optoisolated***

The card isolates connections to protect your computer from short-circuit. An opto-isolator is an integrated circuit that transmits the signal through an encapsulated LED and phototransistor. When the signal is hi, the LED lights up, the phototransistor captures it and relays the signal. That way, your computer's electronics are completely isolated from your circuitry. The signals are transmitted through light and not through physical connections. This way, a power surge cannot reach the computer. That is the reason why this card has two power connections. One power connection powers the computer side of the circuit and the other powers the circuit that interacts with your cnc system. Extra precautions have been taken when designing this circuit, by taking into consideration the extremely high voltages that stepper drivers can achieve and lack of experience that some users could have in wiring circuits of this kind.

- ***Buffered Outputs.***

All inputs and outputs are buffered through the use of high speed and high power buffers. Each pins deliver 24 milliamps.

- ***Output pins 1,2,3,4,5,6,7,8,9,14,16,17.***

- ***Input pins 10,11,12,13,15.***

- ***Status LEDs on all inputs and output connections.***

No more guessing. You can SEE all your signals. Save valuable time and brainpower for cncing.

- ***Has an extra DB25 female connection for output.***

This card can be used to optoisolate any existing setup just by connecting this card between the computer and current control box. That way, you can also see and access all the signals. This makes the board ideal for use with the xylotex, hobbycnc or other non-optoisolated boards. You only have to add this board to a DB25 male connection to a male cable.

- ***Input and output pins with close by ground or +5vdc connections.***

Input and output pins have close by ground or +5vdc terminals to make your wiring easy.

- ***External Enable Pin (EN).***

The board has a pin that allows you enable/disable all the outputs at once. The board requires +5vdc in the EN pin. If it is not present, it will send all the outputs to ground immediately. This terminal can be used to enable and disable the system manually, or an external Safety Charge Pump or other external device can also be used.

- ***All TTL +5VDC or +3.3VDC Signals.***

Works with newer computers and laptops that have low voltage parallel ports.

- ***All inputs are outputs are tied to pull-down resistors.***

Pins are never in the air open to noise. If you leave a pin in the air you will get a LOW or 0. If you input a ground you will get a LOW and a +3.3 or+ 5 vdc signal will deliver a HI.

- ***Works directly with popular CNC hardware and software.***

That goes for Geckdrive, DeskCNC or Rutex and parallel port control software such as mach2, Linux EMC, TurboCNC, CNCPlayer, CNCZeus and other/ (Not all have been tested).

- ***Screw-On connections for all terminals.***

You only have to screw-on the wires to make all your connections.

Installation

Requirements:

A 5VDC@1 amp power supply is required for operation. It also requires a connection to the PC power supply. A 6' USB cable is provided, for drawing the current directly from your PC. You can also wire it directly to your PC power supply.

Wiring:

Follow these steps:

1. Connect the provided USB Power Cable to the board on the PC side of the circuit.
2. Connect to power the other side of the board.
3. Provide +5 to enable pin next to the power connection. This +5vdc must come from the current used to power the cnc circuit.
4. Connect the parallel port cable and run the control software. You should be able to see the status of each pin in the control software and the LEDs.

Please note that output pins 2, 4, 6, 8, and input pins 13 and 15 are provided with high speed optoisolators. Use these pins for step or frequency signals.

USB Cable
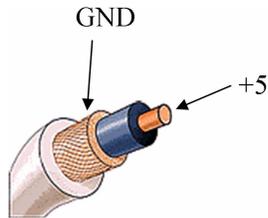
FAQ

1. **Can I use the signals from the DB25 for output and the signals on the output and input pins at the same time?** Yes, but keep in mind that you have a total 24 mA per output pin, if you are using it twice and you are sharing the same current. If you have a cable connected in the DB25, but you are not using that pin, no current is drawn.

2. **Can I power both sides with the same current source (power supply)?** Yes, but you will lose optoisolation in the grounds. Keep in mind that this board uses up 70 mA on the PC side and 950 mA on the output side. You can draw a maximum of 600 mA from a USB port.

3. **Will this card protect my computer from a short or power surge in my drivers or wiring?** Yes, this is the best protection you can get. Your PC signals are optically isolated from your cnc system. In case of a meltdown, the card would take the damage. The most probable thing is that it could be easily repaired by replacing a couple of inexpensive ICs.

Performance:

OUTPUT:

Output Speed Pins 2-9	200Khz.
Pins 1,10-14,16 and 17	10Khz
Voltage	5 VDC
Max Current	24 mA

INPUT:

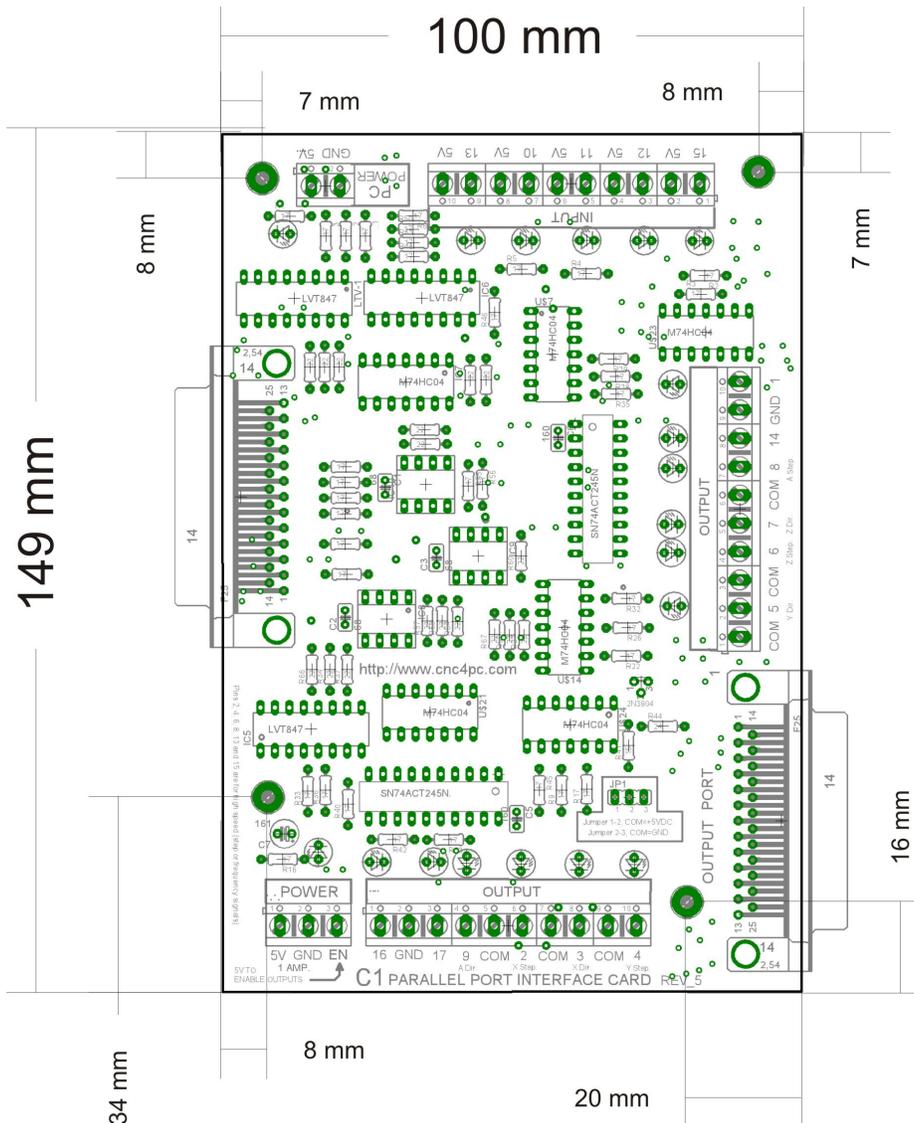| Max Speed	10Khz.
Voltage	0 - 5 VDC

It can work with parallel ports with voltages from 3.3 and 5 volts.

Power consumption 70 mA on the PC side of the circuit, and 950 mA on the output side of the circuit. Keep in mind you can draw a maximum of 600mA from a USB port, so do not attempt to connect this connection to a USB port.

Dimensions:

Disclaimer:

Use caution. CNC machines are dangerous machines. DUNCAN USA, LLC or Arturo Duncan are not liable for any accidents resulting from the improper use of these devices.