



MULTIFUNCTION CNC BOARD

Overview

This card has been designed to provide a flexible interface and functions to your computer projects, by using the parallel port control software. This board comes as a response to many customers that have been asking for a faster way to connect devices and reduce the possibility of wiring errors.

Features

- ***Built-in Safety Charge Pump.***

It has a built-in safety charge pump that can be enabled or disabled. It also comes with an external enabling if you would also need an additional safety control device.

- ***Built-in Variable Speed Control..***

It has an analog 0-10VDC output that will convert a step signal into an analog signal that can be used to command a commercial VFD.

- ***Built-in 10 amp AC Solid State Relay.***

It is very useful to use a solid state relay instead of a mechanical relay for starting motors or other devices that might produce arcs at contact. This will increase the life of the motors and relay. This relay is also optoisolated from the rest of the board and has a replaceable fuse.

- ***Built-in 8 amp Solid State Relay with NO and NC positions.***

Mechanical relays are very flexible because they can be used for AC or DC and come with NO and NC (Normally Open and Normally Closed) positions.

- ***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 the Built-in Solid State Relay Board, 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 on, the LED lights up, the phototransistor captures it and relays the signal. In that way, your computer's electronics are completely isolated from your circuitry. The signals are transmitted through light and not through physical connections. In this way, a power surge has no way to reach your computer. That is the reason this card has power connections. One power line powers the circuit on the computer side and the other power connection is for powering the side of 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, with the result that your devices receive all the power they need.

- ***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.***

You can use this card to optoisolate any existing setup just by connecting this card between your computer and your current setup. That way, you can also see and access all your signals. This makes this card 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 connections.***

Forget about grounding problems. Easily connect your pin by using your close by ground connection. No need to be an electronics expert to ground all your stuff.

- ***Easy installation of an On/Off switch. You can control the card externally.***

An On/Off or a Safety Charge Pump can easily be installed to enable or disable the card. CNC could be dangerous machines and, remember, safety comes first. Having the power supplied externally gives you the ability to turn your system on or off. This card is provided with an extra pin (EN) that allows you to control the card externally by enabling or disabling outputs externally. The card must have +5vdc supplied in the EN pin to enable outputs.

- ***All TTL 5VDC signals.***

Interface directly with parallel port interface products and other CNC4PC cards. 5VDC (TTL) cards are very common among automation devices.

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

That goes for GeckoDrive, DeskCNC or Rutex and parallel port control software such as mach2, Linux EMC, TurboCNC, CNCPlayer, 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:

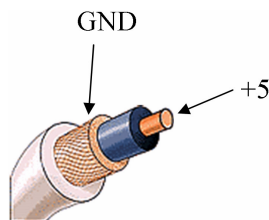
A power supply with 5vdc@ 2 amps and 12vdc@ 0.3 amps for operation. It also requires a connection to your PC power supply. A 6' USB cable is provided, so as to enable you to draw current directly from your PC. You can also wire it directly to your PC power supply. Cnc4pc provides an electronic switching power supply that is ideal for this board. Other commercial laptop type power supplies can also be used.

Wiring:

Check the sample installation below (Coming soon).

1. Connect the USB cable provided to the board on the PC side of the power input side.
2. Connect to power the other side of the board.
3. Provide +5 to enable pin next to the power connection. If you want to install an external switch or safety charge pump connect the output to this pin. If you enable the on-board safety charge pump, you can leave this pin unconnected.
4. You can connect the parallel port cable and run your control software. You should be able to see the status of each pin.

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 your board. Keep in mind that this board uses up 70 mA

on the PC side and 1800 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	34 mA

INPUT:

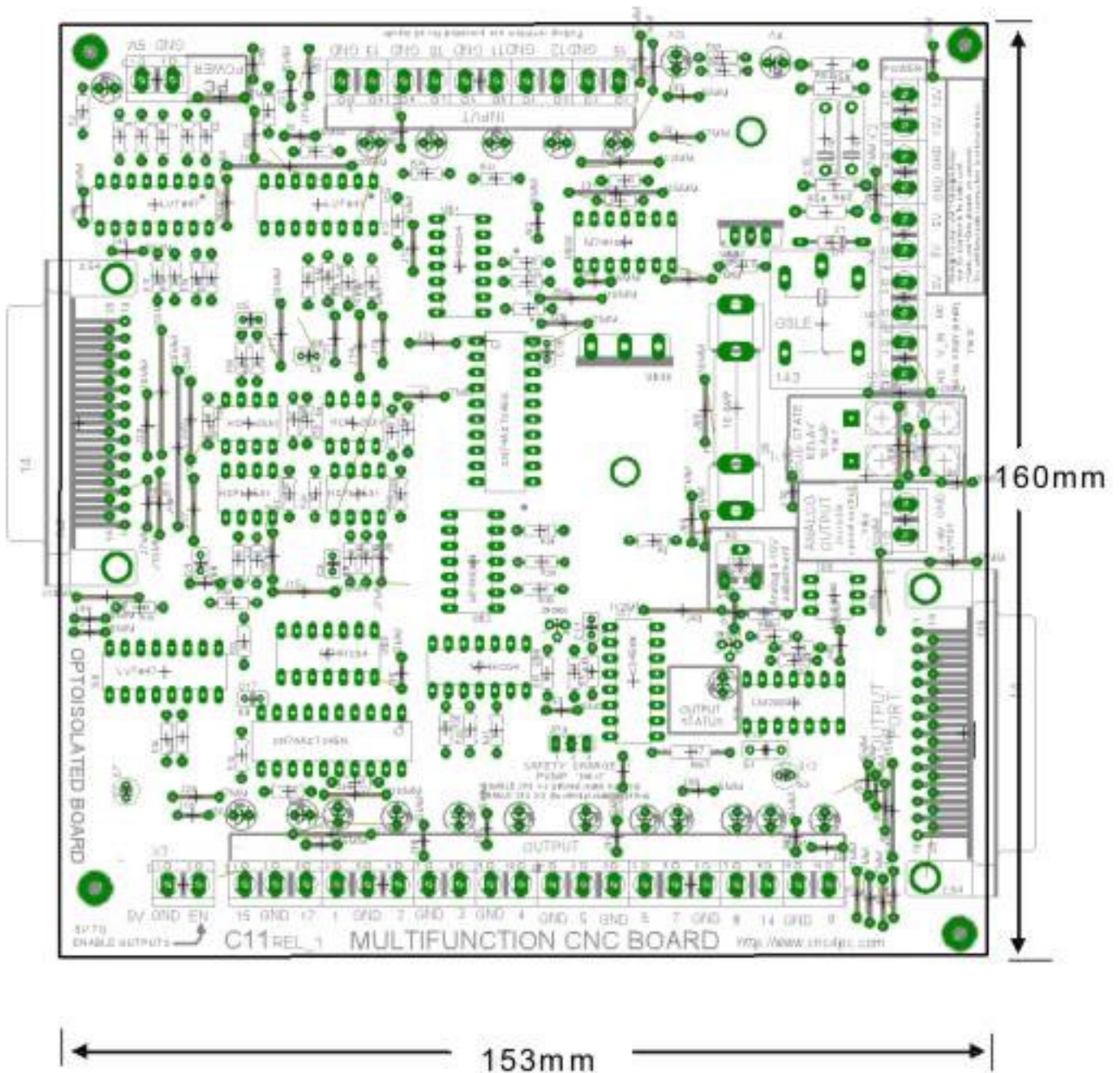
Max Speed	10Khz.
Voltage	0 - 5 VDC

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 attemp to connect this connection to a USB port.

Dimensions:

This is the actual size of the card



Disclaimer:

Use caution. CNC machines are dangerous machines. Neither DUNCAN USA, LLC nor Arturo Duncan is liable for any accidents resulting from the improper use of these devices.