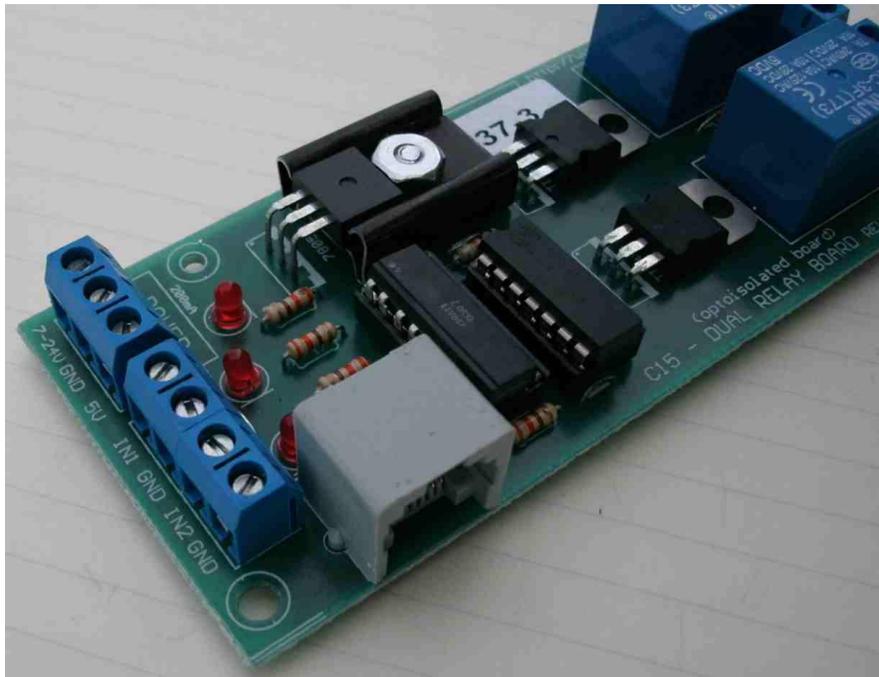


C15 - DUAL RELAY BOARD Rev. 2.1

User manual Rev.1



1. Overview.

This board serves as a basic dual relay board with 2 electromechanical relays.

2. Features

Opto-Isolated Input.

Isolates input connections to protect your computer from shorts circuits.

All TTL +5VDC Signals.

Interface directly with parallel port interface products and other cnc4pc.com cards. 5VDC (TTL)

signals are very common among automation devices..

Works directly with popular CNC hardware and software.

Such as GeckoDrive, DeskCNC or Rutex, and parallel port control software, such as mach2, Linux EMC, TurboCNC, CNCPlayer, CNCZeus and others. (Not all tested)

Screw-On connections for all terminals.

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

Works as a set of switches for powering your hardware.

This board can be used for turning on or off spindles, enabling contactors for large spindles, coolant pumps, electro valves, etc.

Controls 2 independent AC or DC devices.

The relays can take loads of up to 10 amps 28vdc or 125VAC and 6 amps at 220VAC.

Keep in mind that motors can draw up to 3 times the rated current on start up.

3. Specifications

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

4. Functional Block Diagrams

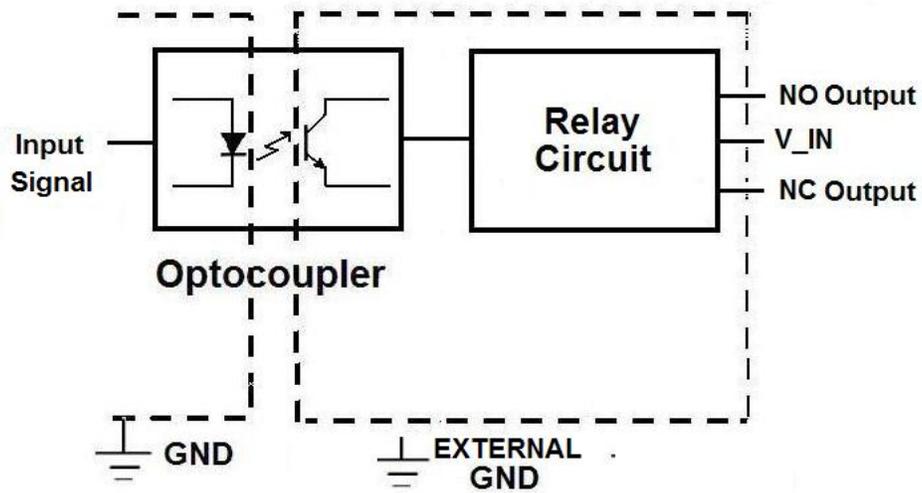
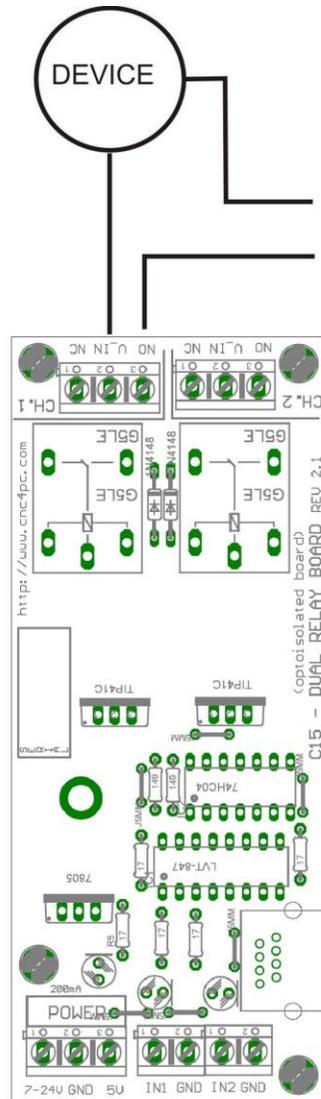


Fig. 2. Relays Outputs Block Diagram.

5. Wiring Diagrams



110/220 AC or a DC voltage



WARNING:

Electrical motors or other electrical devices with abrupt startups can create arcs in the relay contacts. These arcs can limit the life of the relay and the motor. For these devices it is recommended that you use a solid state relay.



WARNING:

To keep the input signals optoisolated, these must not have common ground with the external power supply used to power the board

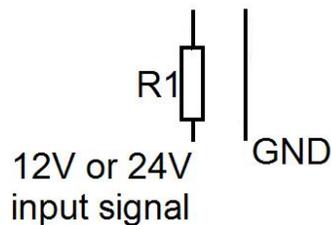
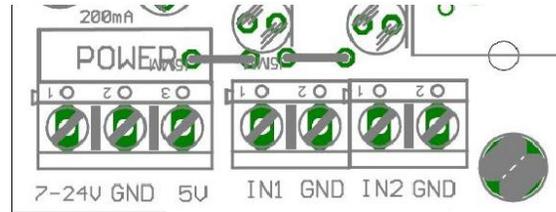
POWER CONNECTIONS:
A +12 vdc 5VDC or 7-24VDC external power source must be used to power the board.

||
**INPUT SIGNAL FROM
PARALLEL PORT OR
BREAKOUT BOARD**

Requirements:

It requires a +5VDC@200mA or +7-24V@200mA power supply to operate.

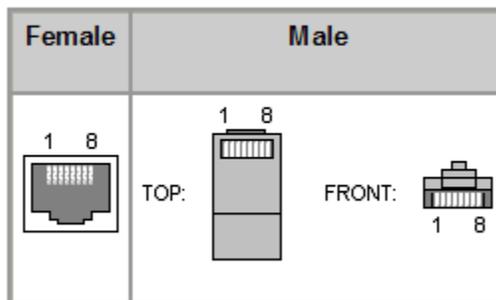
Note: This board supports signal +3.3V and +5V inputs signal. Connecting 12V or 24V signals is possible with the use of an external resistor. See the image and table bellow



Connecting 12V or 24V inputs signals	
R1 Value (12V)	R1 Value (24V)
Aprox. 470Ω	Aprox. 1KΩ

Note: 10mA signals are required, so the use a buffered breakout board is required.

RJ45 Connector



Pin	Description
1	NC
2	+5vdc
3	NC
4	INPUT SIGNAL 1
5	INPUT SIGNAL 2
6	NC
7	NC
8	GND

Note: If using this connector optoisolation in the grounds will be lost.

6. Troubleshooting.

SYMPTOM: THE BOARD DOES NOT REACT TO THE SIGNAL.

POSSIBLE CAUSE	POSSIBLE SOLUTIONS
<ul style="list-style-type: none"> - Pin conflict or mach3 configuration. It is possible that the port address used for the pin is not right, or that there is a pin conflict with the. That is that you are using that same pin twice. (it could be assigned to a different function). 	<ul style="list-style-type: none"> - Go to the device manager in windows, and check the memory address used for the parallel port you are using. Usually it will be 378 for LPT1. Check also that the port does not have a conflict. Then in mach3, go to Ports & Pins / Port Setup and Axis Selection. Check the memory address is correct. - Check that the pin you are using is not been used anywhere else in your setup. Got to motor output and output signals, and check all the entries.
<ul style="list-style-type: none"> - The signal or frequencies are not getting to the board. It could be the cable or that you are passing the signal through the same breakout board that you are enabling/disabling, so the outputs could be disabled, so they will not get to the breakout board. 	<ul style="list-style-type: none"> - Try a different cable. - Test the pins in the cable (before they reach the breakout board) with a multimeter.
<ul style="list-style-type: none"> - The inputs signal does not have enough strength. Modern PCs come with parallel ports that have very low amperage signals. 	<ul style="list-style-type: none"> - Use a breakout board to buffer and boost the signals.
	-

7. Dimensions

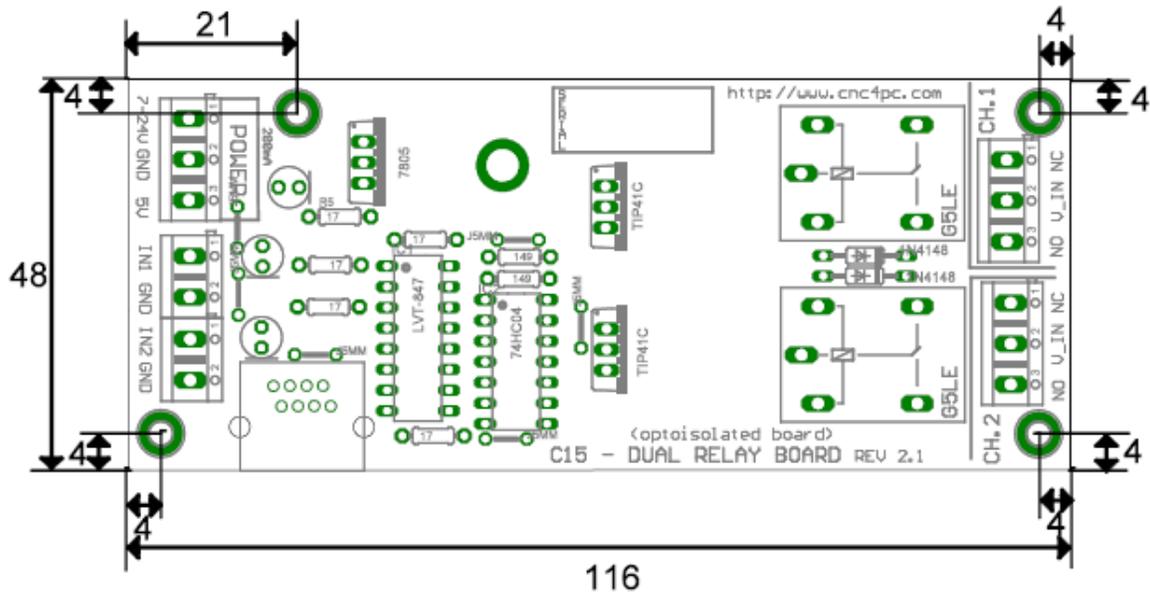


Fig. 3. C15 dimensions

All dimensions are in Millimeters.

Disclaimer:

Use caution. CNC machines could be dangerous machines. DUNCAN USA, LLC or Arturo Duncan are not liable for any accidents resulting from the improper use of these devices. The C15 is not fail-safe device, and it should not be used in life support systems or in other devices where its failure or possible erratic operation could cause property damage, bodily injury or loss of life.