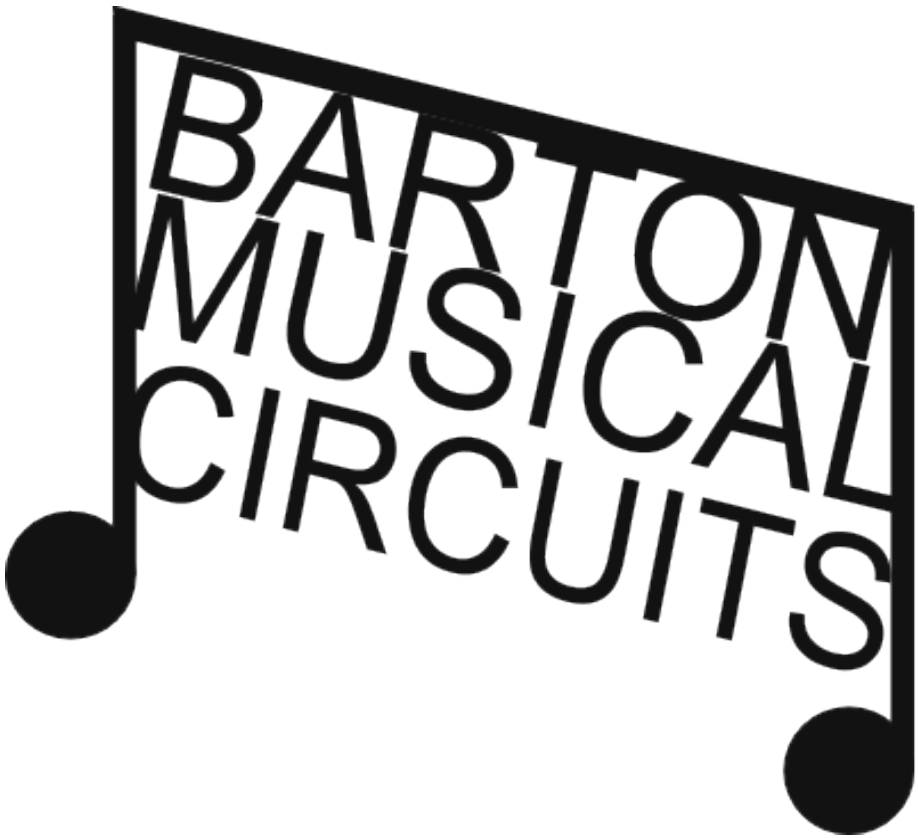
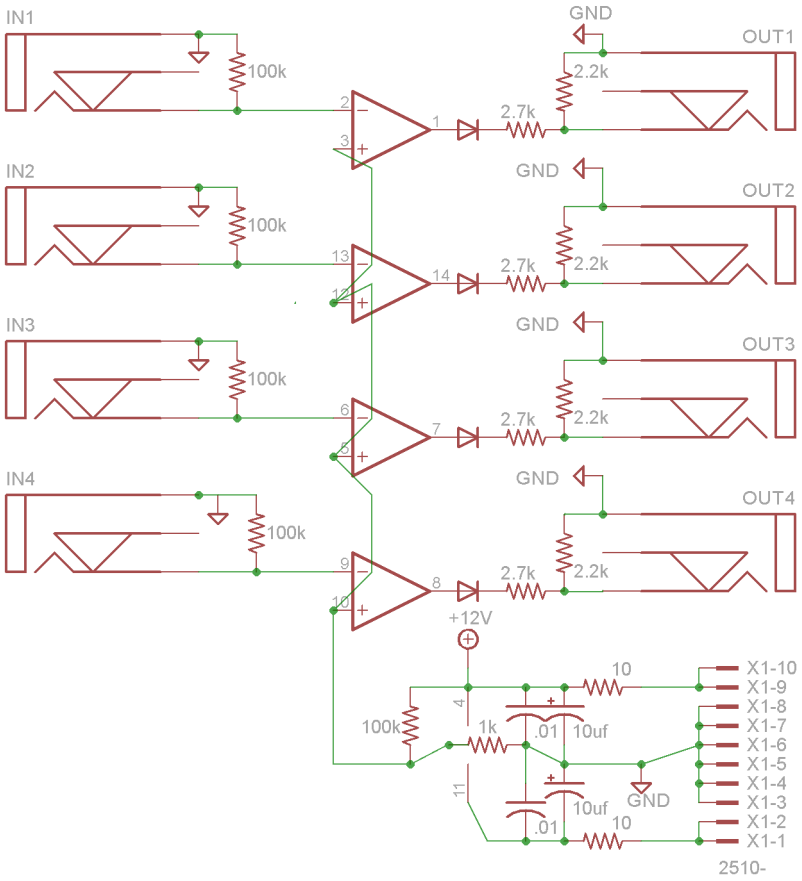


BMC 081. 4HP Gate Inverter
Build Documentation.

I. Using The Module.

This module has four channels of gate inversion. When the voltage on an input is below 0.012V the output will be at +5V and when it is above that threshold the output will be at 0V.



II. Schematic.

Above is the schematic for this module. Each channel's input jack connects to a 100K resistor to ground to keep the input at 0V when no input voltage is present and then connects to the inverting input of an op-amp. The op-amps are wired as inverting comparators with their thresholds set by the 100K/1K resistor pair at the bottom of the schematic which sets the threshold at 0.12V.

The output of each op-amp connects to a diode to only allow positive voltage to flow and then a 2.7K/2.2K resistor pair that attenuate the +12V output of the op-amp down to +5V. The signal then flows into the tip of the output jack.

At the bottom of the schematic are the power connections. A 10 pin header connects to the modular power supply. The positive and negative rails are filtered by a low pass filter formed by a 10 ohm resistor and 10 uf capacitor to prevent noise from the power supply from affecting the module. The rails then connect to pins 4 and 11 of the op-amp to power it. Additional .01uf capacitors are placed by the pins of the op-amp to provide further filtering.

III. Construction
A. Parts List

Semiconductors

Value	Quantity	Notes
TL074	1	14 pin DIP
1N4148	4	Or other small switching diode

Resistors

Value	Quantity	Notes
10 ohm	2	5mm lead spacing. Use 3.5mm body length or stand up
1Kohm	1	" "
2.2K ohm	4	" "
2.7K ohm	4	" "
100 Kohm	5	" "

Capacitors

Value	Quantity	Notes
.01uf	2	Small ceramic disc. Value not critical
10uf	2	Electrolytic

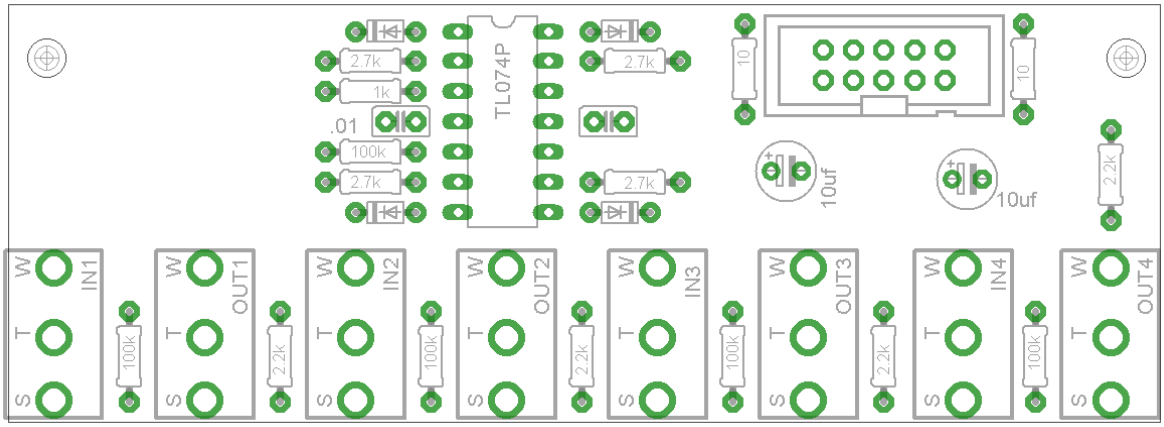
Other/Off Panel

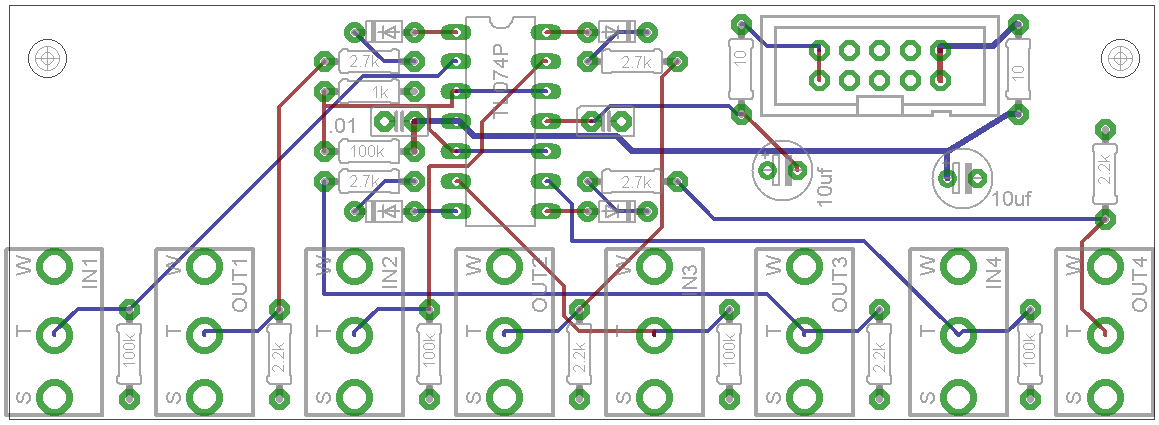
Value	Quantity	Notes
Power connecter	1	Right angle 2x5 2.54mm, like this.
Jacks	8	PCB is designed around these jacks: PJ-323M
14 pin DIP Socket	1	

B. PCB Layout

Below are renderings of the PCB. The rendering showing the traces does not show the ground fill plane, so assume any missing connection is a ground fill.

The PCB measures 97mm x 35mm and the jacks are spaced 12.7mm apart.





This is a photo of a completed module