

**BMC 076. 4HP Common Input Logic Gates
Build Documentation.**

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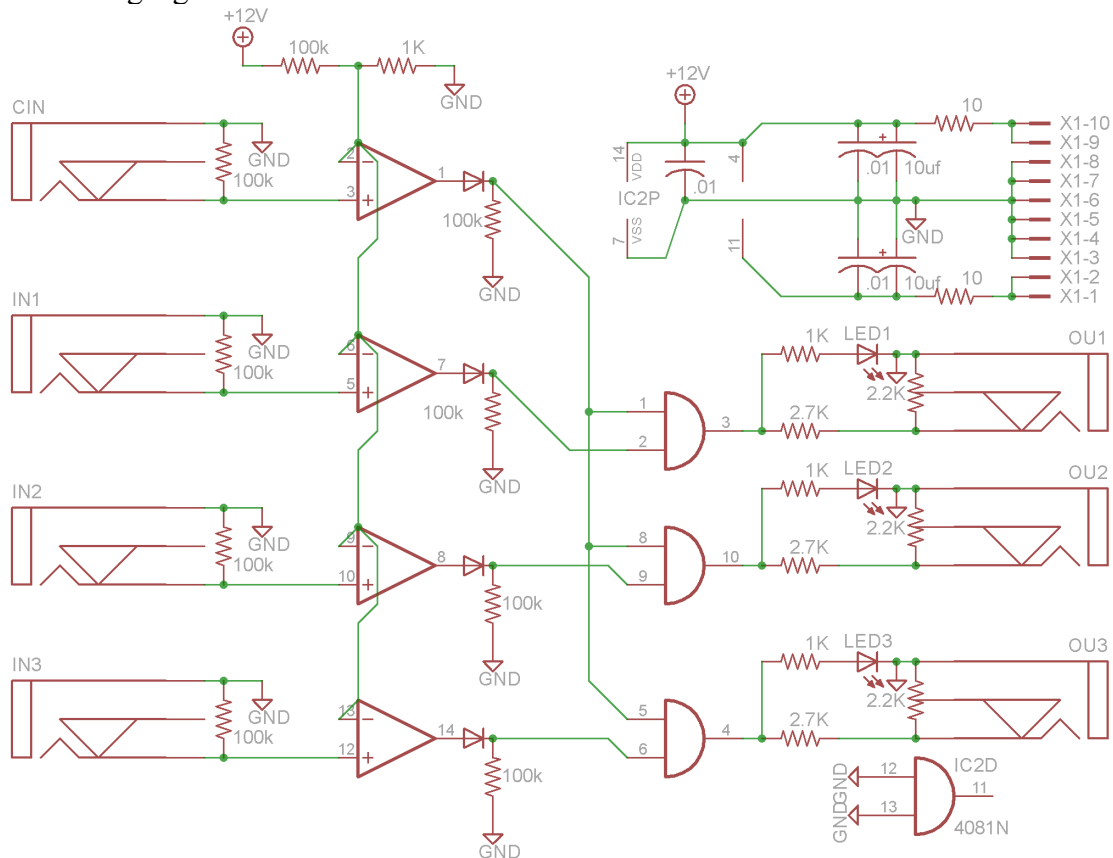
A. Parts List

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I. Using The Module.

This module provides three logic gates that share a single input. By swapping CMOS logic chips the gates can be set up as AND, OR, XOR, NAND, NOR or XNOR. It outputs +5V gates and accepts any signal as an input.

I've found it most useful when used as an AND gate, applying a clock to the common input to synchronize timing signals.



II. Schematic.

Above is the schematic for this module. Starting at the left, each input has a 100K resistor to ground and then connects to a comparator. Each comparator's threshold is set at .012V by the 100K/1K voltage divider at the top of the schematic. Each comparator's output goes through a switching diode to only allow positive voltages and then connects to a 100k resistor to ground which grounds the signal when no current flows through the diode.

These outputs then connect to the inputs of the logic gates, an AND is shown in the schematic. The output of each gate connects to an LED through a 1K current limiting resistor and then to the output jack through a 2.7K/2.2K resistor voltage divider that attenuates the +12V output of the gate down to +5V. The inputs of the unused gate are grounded.

At the top right are the power connectors. The positive and negative voltage rails are low pass filtered by a 10ohm/10uf RC pair. Additional .01uf capacitors are placed near the power pins of the ICs. The TL074 is connected to the positive and negative voltage rails, while the logic gate IC is connected to the positive rail and ground.

III. Construction

A. Parts List

Semiconductors

Value	Quantity	Notes
TL074	1	14 pin DIP
CMOS Logic chip	1	14 pin DIP, see table below
1N4148	4	Or other small switching diode
LED	3	3mm through hole

LOGIC FUNCTION	Chip to use
AND	CD4081
OR	CD4071
XOR	CD4030
NAND	CD4011
NOR	CD4001
XNOR	CD4077

Resistors

Value	Quantity	Notes
10 ohm	2	5mm lead spacing. Use 3.5mm body length or stand up
1Kohm	5	" "
2.2K ohm	3	" "
2.7K ohm	3	" "
100 Kohm	9	" "

Capacitors

Value	Quantity	Notes
.01uf	3	Small ceramic disc. Value not critical
10uf	2	Electrolytic

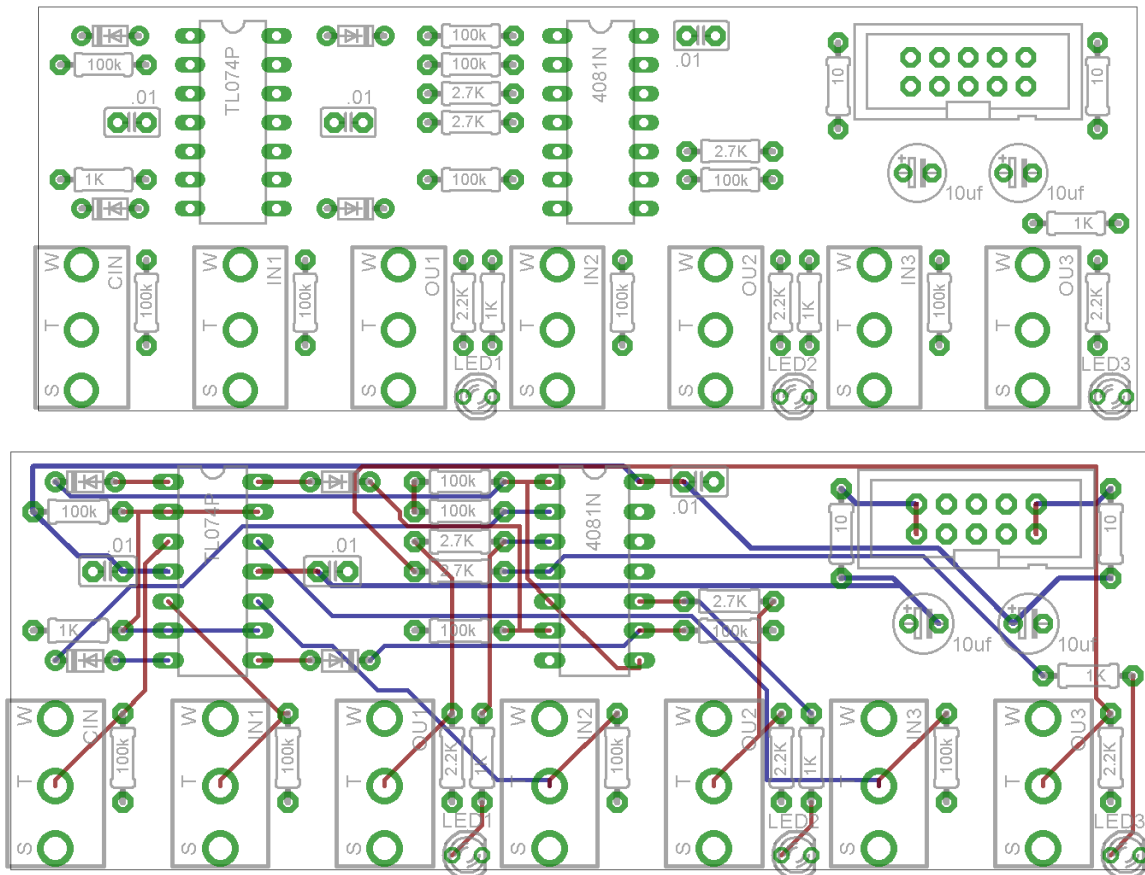
Other/Off Panel

Value	Quantity	Notes
Power connecter	1	Right angle 2x5 2.54mm, like this.
Jacks	7	PCB is designed around these jacks: PJ-323M
14 pin DIP Socket	2	

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 36mm and the jacks are spaced 14mm apart.



This is a photo of a completed module

