

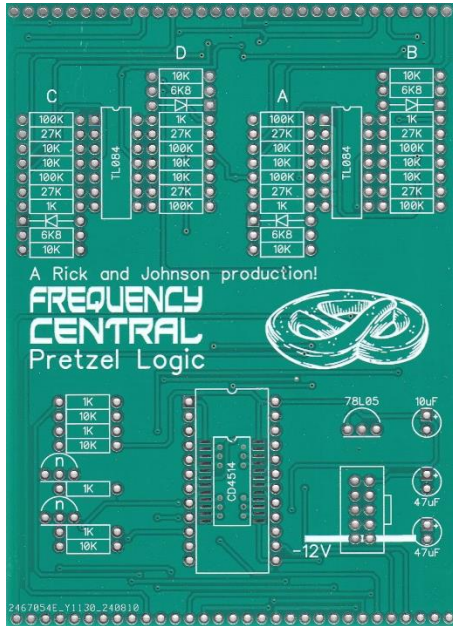
FREQUENCY CENTRAL

Build documentation for:

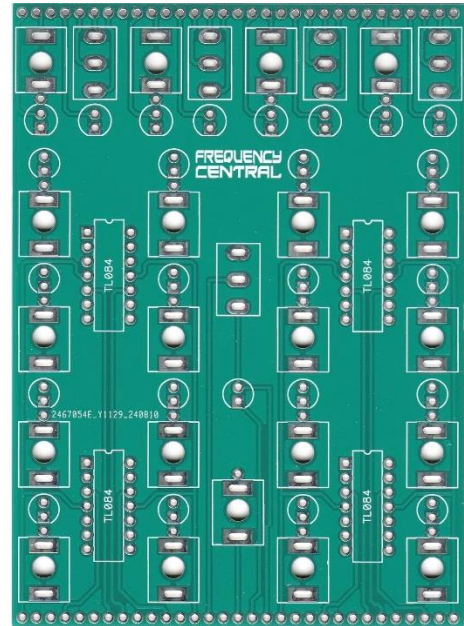
PRETZEL LOGIC

Fancypants logic module - 4 to 16 Line Decoder with external latching - get your truth table on!

Main PCB



Control PCB



CD4514 through hole are getting harder to find, although CD4514 SMD are widely available. There are three choices here:

1. Source your own CD4514 through hole. Take care of fakes out there.
2. Use one of our [CD4514 SMD](#) and solder it directly to the PCB (recommended for skilled DIYers)
3. Use one of our CD4514 on daughterboard. These are CD4514 SMD that we have soldered onto a tiny daughterboard PCB and added headers to. We then test them in an assembled Pretzel Logic. They are a drop-in replacement for CD4514 through hole. For these, we recommend that you solder the 24 pin socket 0.6" to the PCB then plug the CD4514 on daughterboard into it.

Bill of Materials

<p><u>1/4 watt metal film:</u> 1K x 8 6K8 x 4 10K x 15 27K x 8 100K x 8</p> <p><u>1/8 W 1% 0805 SMD:</u> 1K x 16 10K x 16</p>	<p><u>10uF x 1</u> <u>47uF electrolytic x 2</u></p>	<p><u>CD4514 x 1</u> or <u>CD4514 SMD x 1</u></p> <p><u>TL084 x 6</u></p> <p><u>78L05 x 1</u></p> <p><u>1N4148 x 4</u></p> <p><u>BC549 x 2</u></p> <p><u>3mm red LED x 20</u></p> <p><u>3mm green LED x 5</u></p> <p><u>14 pin socket x 6</u></p> <p><u>24 pin socket 0.6" x 1</u></p>	<p><u>SPDT on/off/on x 4</u> <u>SPDT on/on x 1</u></p> <p><u>3.5mm socket x 21</u></p> <p><u>Male 40 pin header x 2</u> <u>Female 40 pin header x 2</u> <u>10 pin box header x 1</u></p>
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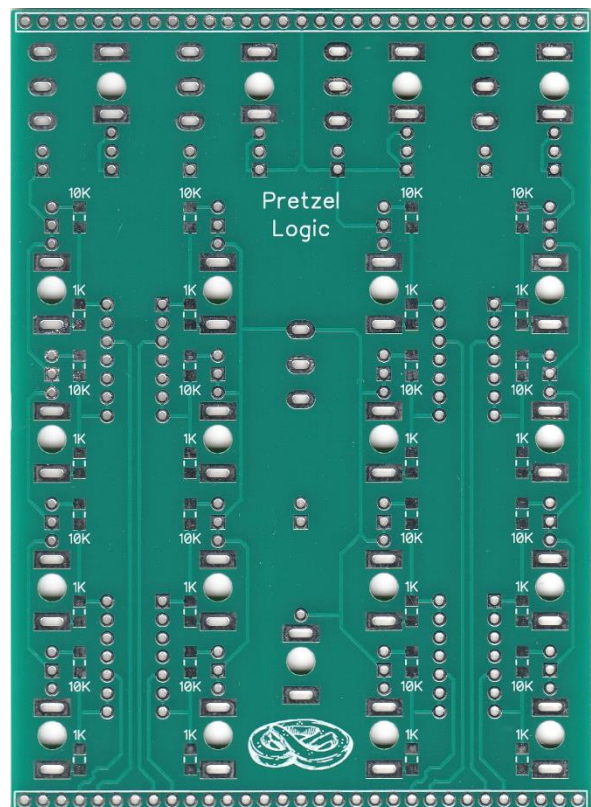
Control PCB rear assembly – the SMD resistors

Pretzel Logic uses 32 surface mount resistors on the rear of the Control PCB. This may sound intimidating if you haven't used SMD before, but its quite easy really. We've even used larger 1206 pads to make it easier. We recommend that you use 0805 resistors. The combination of 1206 pads and 0805 resistors means that there is plenty of space to apply solder/heat around the resistor.

1. Lightly tin all SMD resistors pads on the PCB. This means that you should use your iron to heat each pad and apply a small amount of solder.
2. Pick up a 0805 resistor with tweezers and present it to the pads. While holding the resistor in place, heat the pad. This should hold the resistor in place. Now heat the other pad to complete the process of placing this resistor.
3. Sometimes it's worth retouching both pads just to make sure!

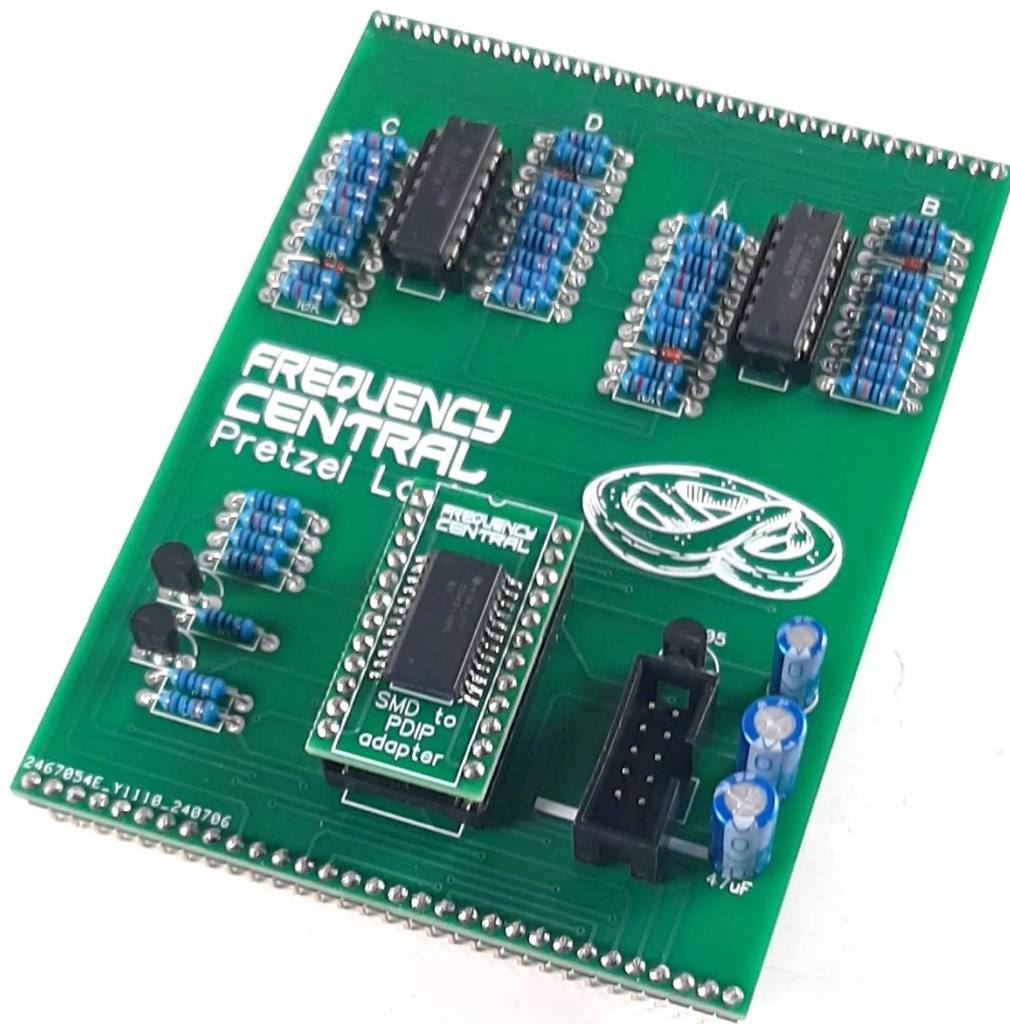
NOTE:

First pass: 1K resistors
Second pass: 10K resistors
Don't mix them up!



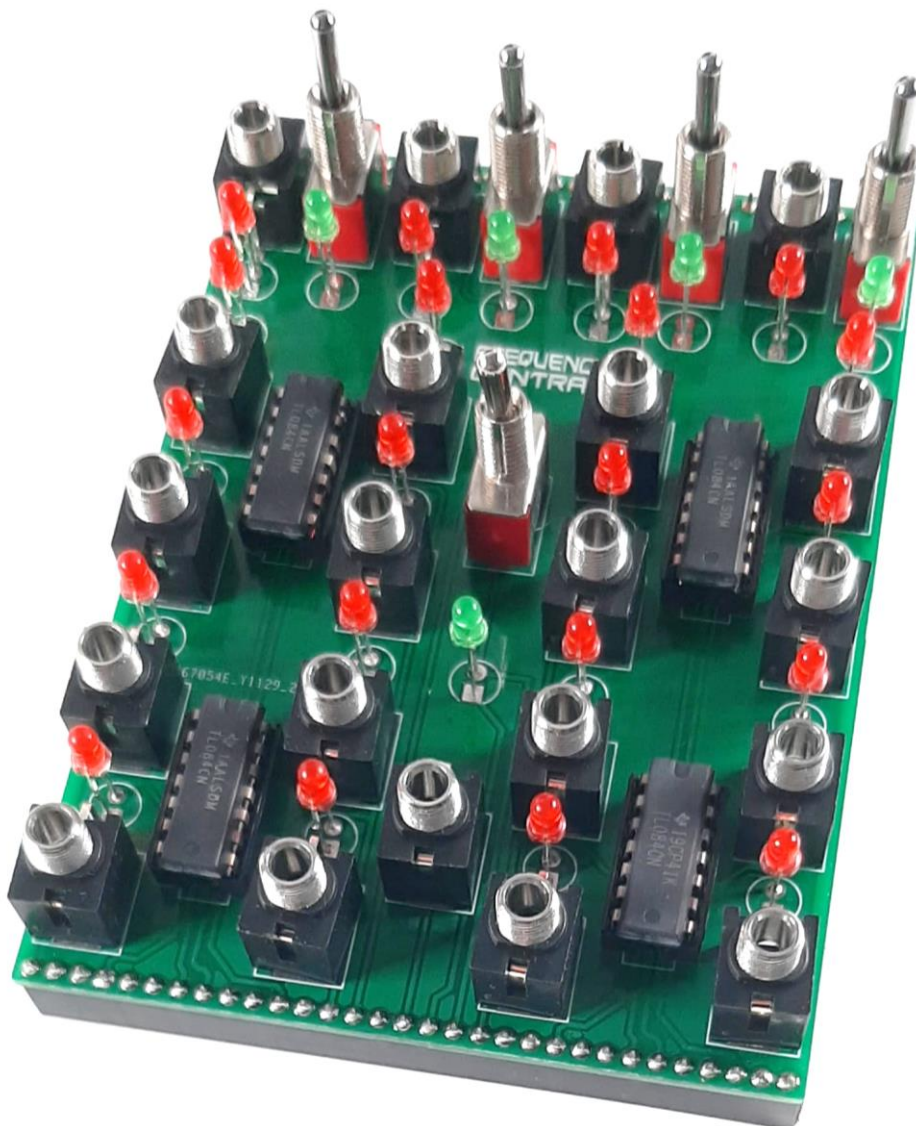
Main PCB front – the through hole components

1. If you're using CD4514 SMD, solder this part now
2. Solder all diodes and resistors
3. Solder all IC sockets
4. Solder the two transistors and 78L05
5. Solder the power header – if you're using box type, observe correct polarity
6. Solder all electrolytic capacitors
7. Cut male headers to size and solder them into place. Make sure that they stick out of the bottom of the PCB.

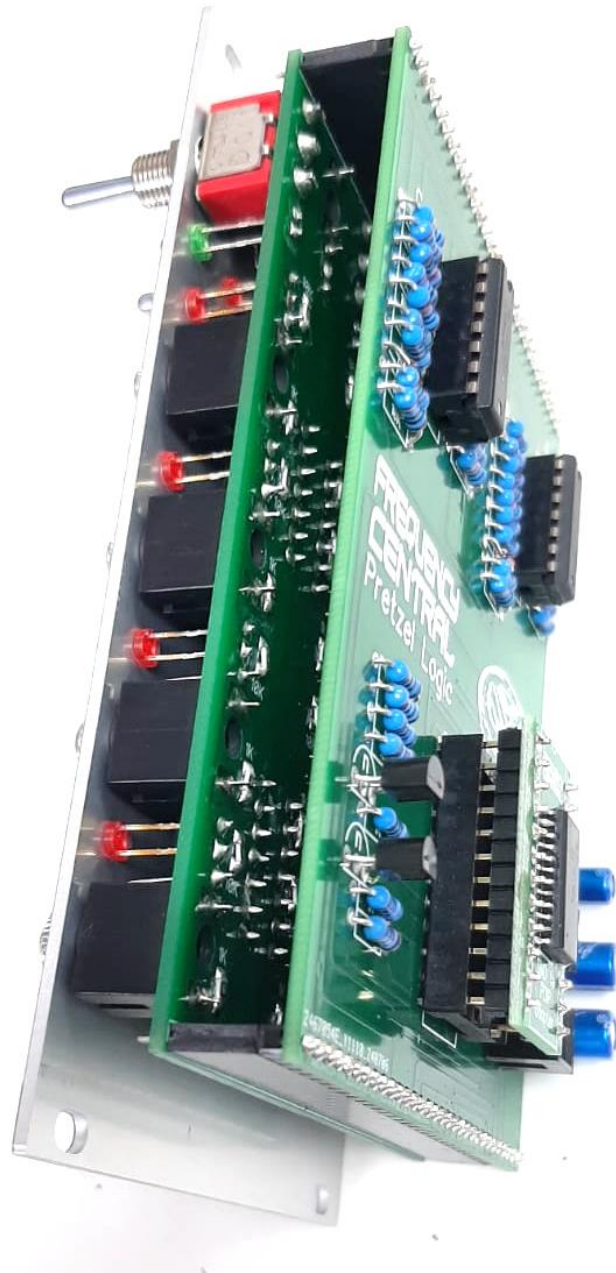


Control PCB front assembly

1. Solder all 4 x 14 pin IC sockets into place, then install the 4 x TL084.
2. Place all sockets on the PCB, making sure the ground tabs line up with the PCB's ground pads, then place the panel over them. This will assure that the sockets are correctly positioned. Flip the whole lot over and solder the sockets into place.
3. Place all 5 toggle switches on the PCB, then place the panel over them. This will assure that they are correctly positioned. Flip the whole lot over and solder into place.
4. Place all 25 LEDs (short leg = square pad), then place the panel over them, making sure that they are all poking out of the panel correctly. Flip the whole lot over and solder into place.
5. Cut female headers to size and solder them into place. Make sure that they stick out of the bottom of the PCB.
6. Present the panel to the PCB, then mount all of the hardware nuts for switches and sockets.



Finally, plug the Main PCB into the Control PCB. Make sure that you plug the Main PCB into the Control PCB the right way around – Frequency Central logo should be the right way up.



RDH 05/02/25

<http://www.frequencycentral.co.uk/>