MBHP_OPL3 module modifications, the 5V option

The OPL3 module originally has three TL074 op-amps, and a circuit that needs +/-12V bipolar power supply.

In Wilba and nILS sammichFM, they use two OPA4348 rail-to-rail op-amps, that can be powered by 5V.

Sauraen suggested another 5V rail-to rail op-amp, the MCP6004, which is pin compatible with the TL074, and a way to modify the OPL3 module to use these.http://midibox.org/forums/topic/18492-mbfm-5v-option/

- Replace R5,R7,R10 and R13 with jumpers
- Bridge IC6 pads 1&3, 5&7, 8&10 and 12&14
- Leave out:
IC6
R4, R6, R8, R9, R11, R12, R14, R15
C15, C16, C19, C20, C23-C30
- Bridge C20 pads (to supply Ground for the op-amps)
- Leave out bridges to IC6
- Use MCP6004 for IC3 and IC5
- Supply 5V to the +12V pin, and Ground to Ground

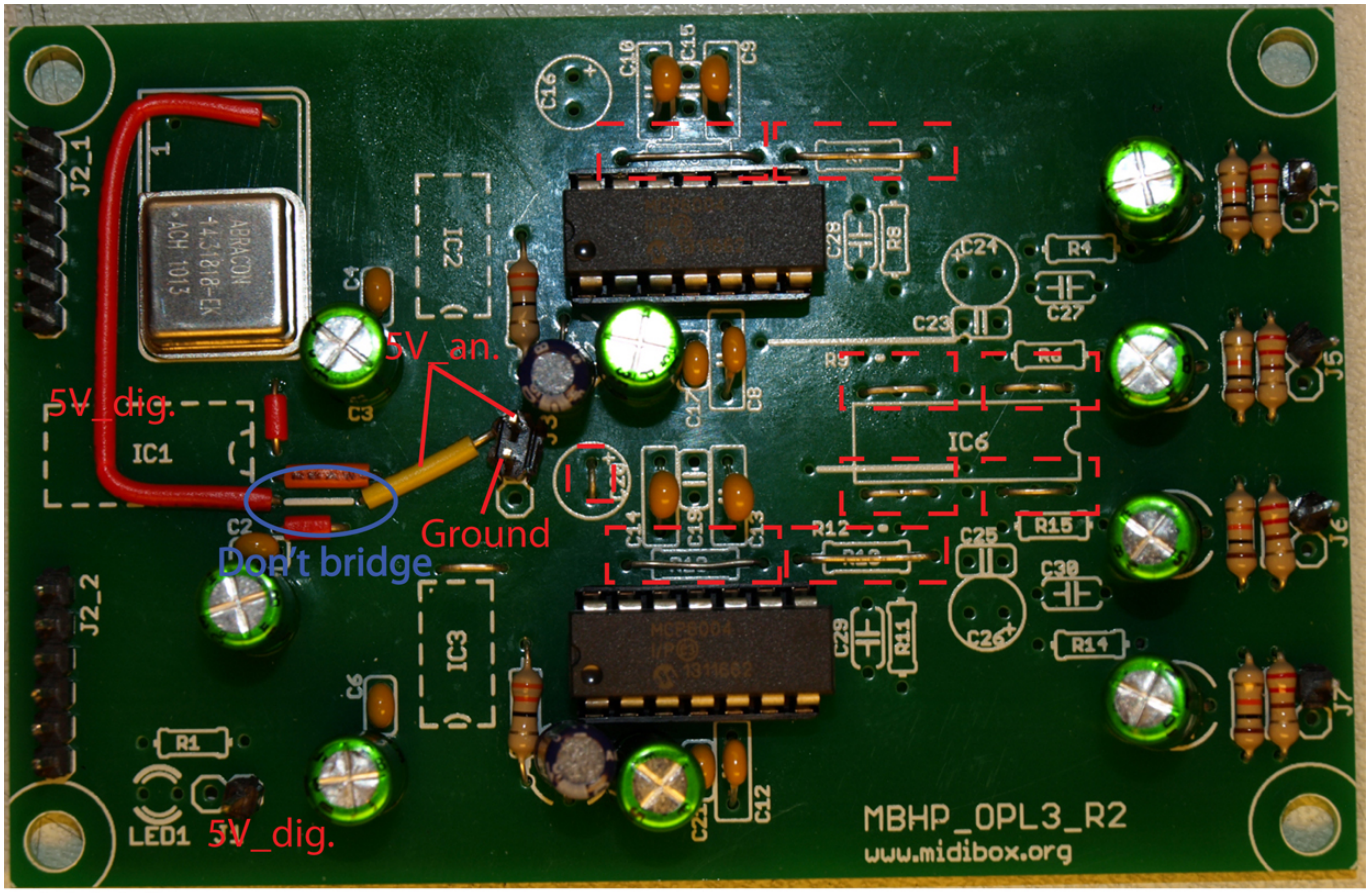
This way the second buffering stage is left out.

In the sammichFM, nILS designed a separate dedicated 5V supply for the DACs (YAC512) and the op-amps.
To modify the OPL3 module for this approach:

- Cut the trace between the 5V pin of the Oscillator and the DAC
- Leave out the middle horizontal bridge from IC1
- Connect the right pad of this bridge to the 5V pin in the middle of the board with a jumper
- Connect the left pad of this bridge to the 5V pin of the Oscillator with a jumper
- Two separate 5V voltage regulators, IN pins connected through a ferrite bead
- One 5V source to Core and J1 of OPL3 module
- The other 5V source to J3 of OPL3 module
- Ground ONLY to J3!

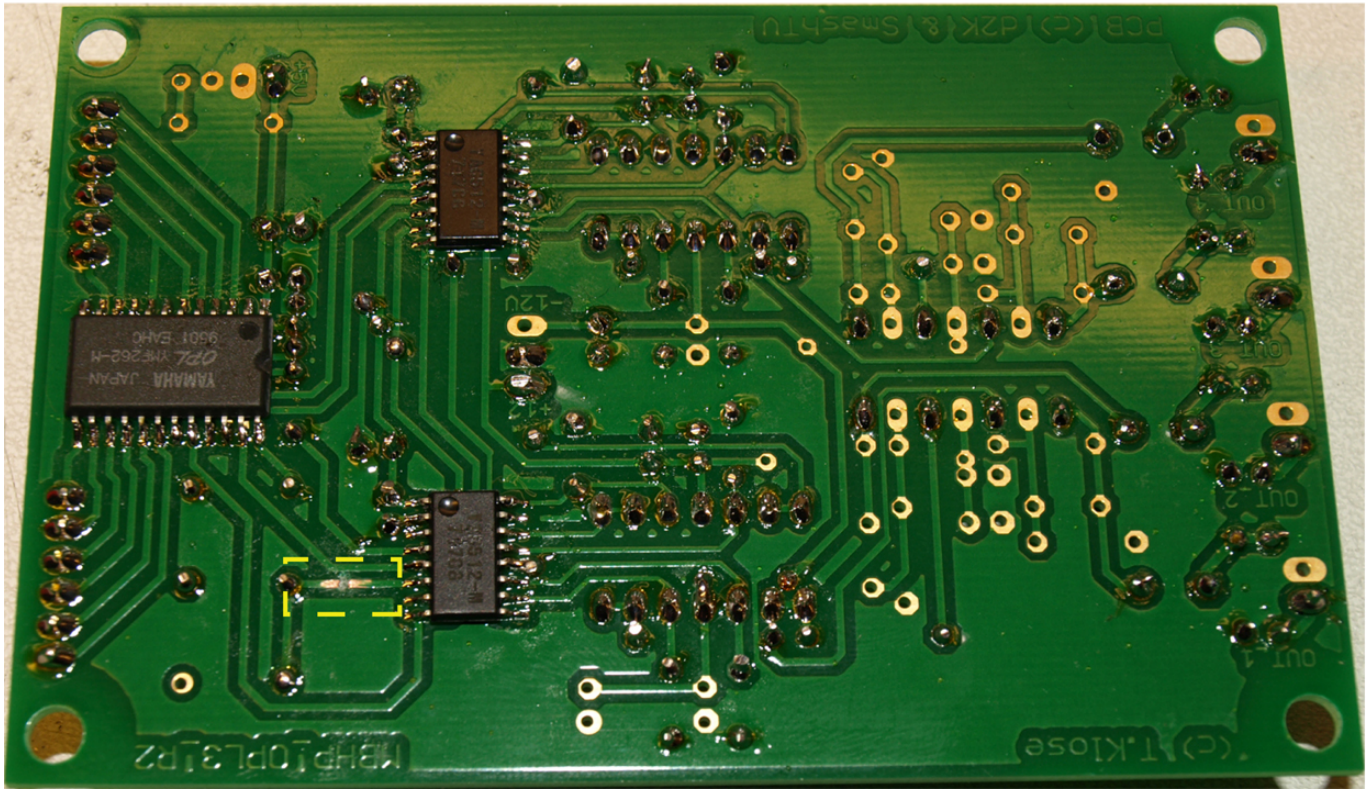
Tips:
- Starlike wiring (Ground from PSU to each module + Audio outputs)

I can vouch for these mods :)
My MIDIbox FM V1 has hardly any noise, and it has enough gain.



Bridge

Cut trace



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