

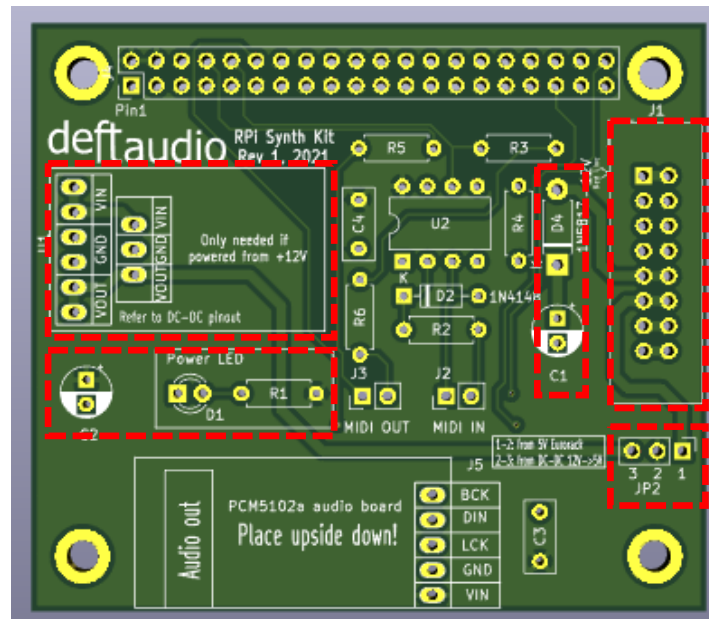
RPi Synth Kit Hardware Layout and assembly tips.

Synth kit designed to be fully or partially populated depends on the needs. It has three main blocks:

- Eurorack power circuit
- Burr-Brown PCM5102a I2S audio interface
- UART-MIDI circuit

The only mandatory part is 2x20 pin header to connect to RPi, everything else can mix and match.

Eurorack power circuit



16-pin header J1 is for Eurorack power connector. It allows to use either +5V or +12V rail depends on what Eurorack chassis can provide. Keep in mind, the average RPi current consumption is ~1A@5V with possible peaks up to 3A (depends on the USB external load as well). So, if Eurorack +5V rail is not designed for that, it's better to use +12V.

Requirements for 5V rail operation:

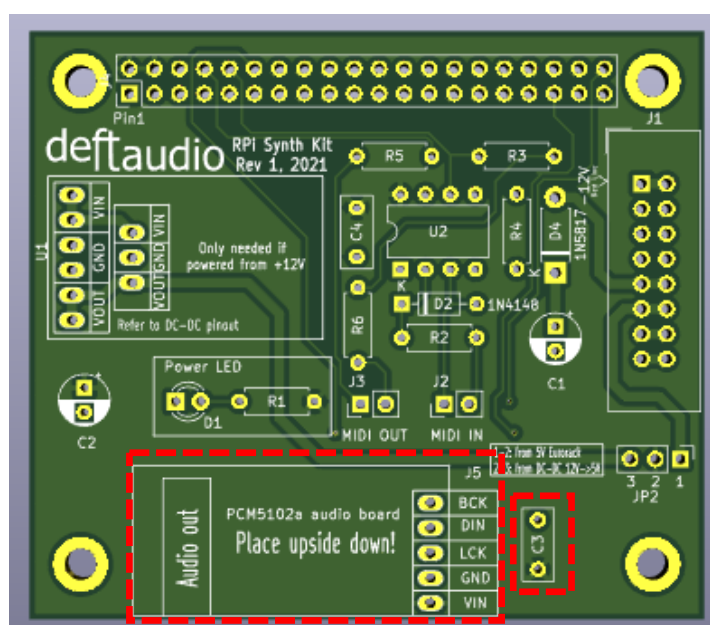
- JP2 set in 1-2 position
- U1 DC-DC BUCK is not required
- D4 and C1 are not required
- C2 and C3 are optional smoothing capacitors
- LED D1 and R1 resistors are optional

Requirements for +12V rail operation:

- JP2 set in 2-3 position
- U1 DC-DC BUCK required, refer to BOM list for recommendations
- D4, C1, C2, C4 required
- LED D1 and R1 resistors are optional

If RPi is powered through USB-C connector, then all Eurorack power circuit parts can be omitted. It's still a good practice to keep smoothing capacitors C2 and C3.

Burr-Brown PCM5102a I2S audio interface



Synth kit can adopt any PCM5102a add-on board, however the layout is designed for specific footprint and pin assignment. If you can't find recommended add-on board from BOM list, you can use any other one connected by dupont wires.

In the meantime, the recommended board should be also properly configured by hardware jumpers (and later in software, follow software manual). The picture below indicates proper solder joints for jumpers H1L, H3L, H3L, H4L. Also, please, note SCK pin is not soldered.

