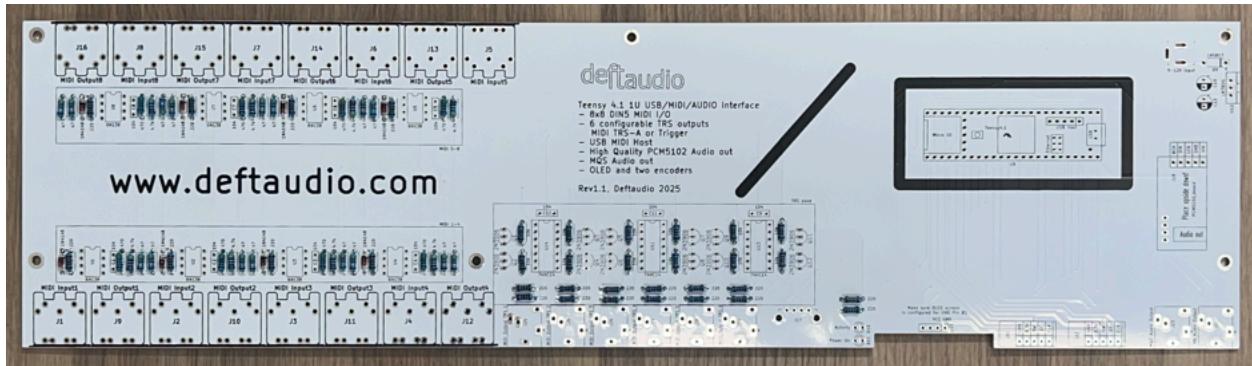


# Teensy4.1 MIDI and Audio interface

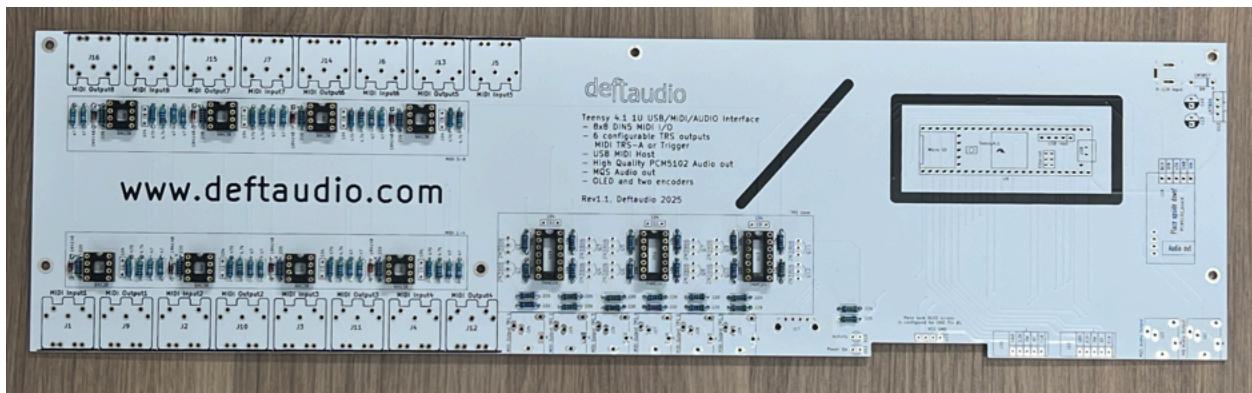
## Assembly Manual 1.0

Inspect the package and verify the BOM before starting assembling. The current BOM is located at [https://github.com/Deftaudio/Midi-boards/tree/master/Teensy\\_1U\\_MIDI\\_8x14](https://github.com/Deftaudio/Midi-boards/tree/master/Teensy_1U_MIDI_8x14)

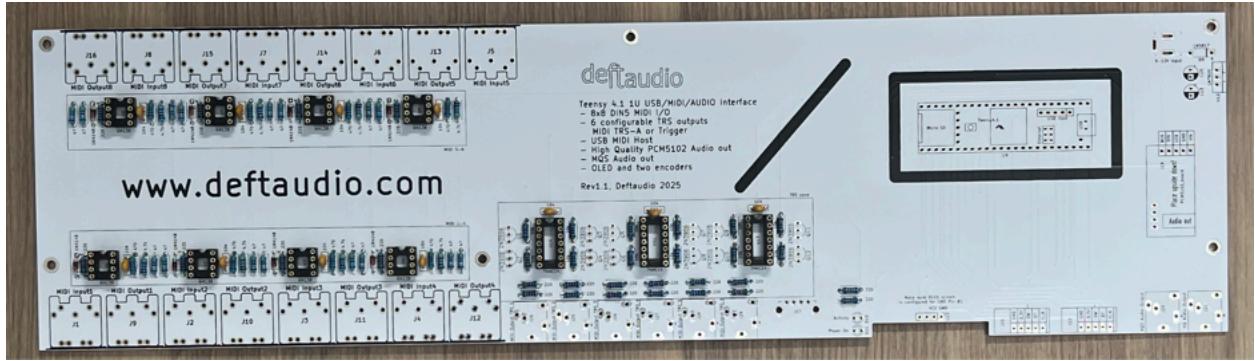
It's easier to assemble the PCB layer by layer, starting with the passive low height parts. The first should go resistors and 1n4148 diodes. Refer to PCB silkscreen for values and orientation:



Follow IC sockets next



Decoupling capacitors 104 (0.1uF) go after IC sockets:



Now it's time to populate 2n3906 transistors, TRS sockets and USB host port (Type-A):

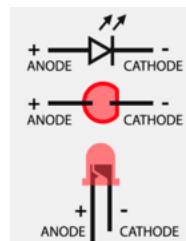


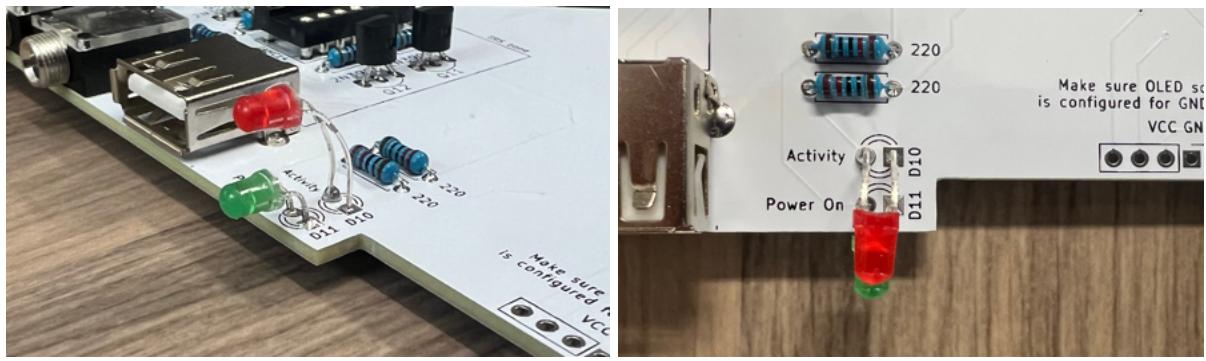
Populate female headers for Teensy and two LEDs.

Note, you don't need all headers installed, it's sufficient to have two rows and 5 pin USB pins as shown below.

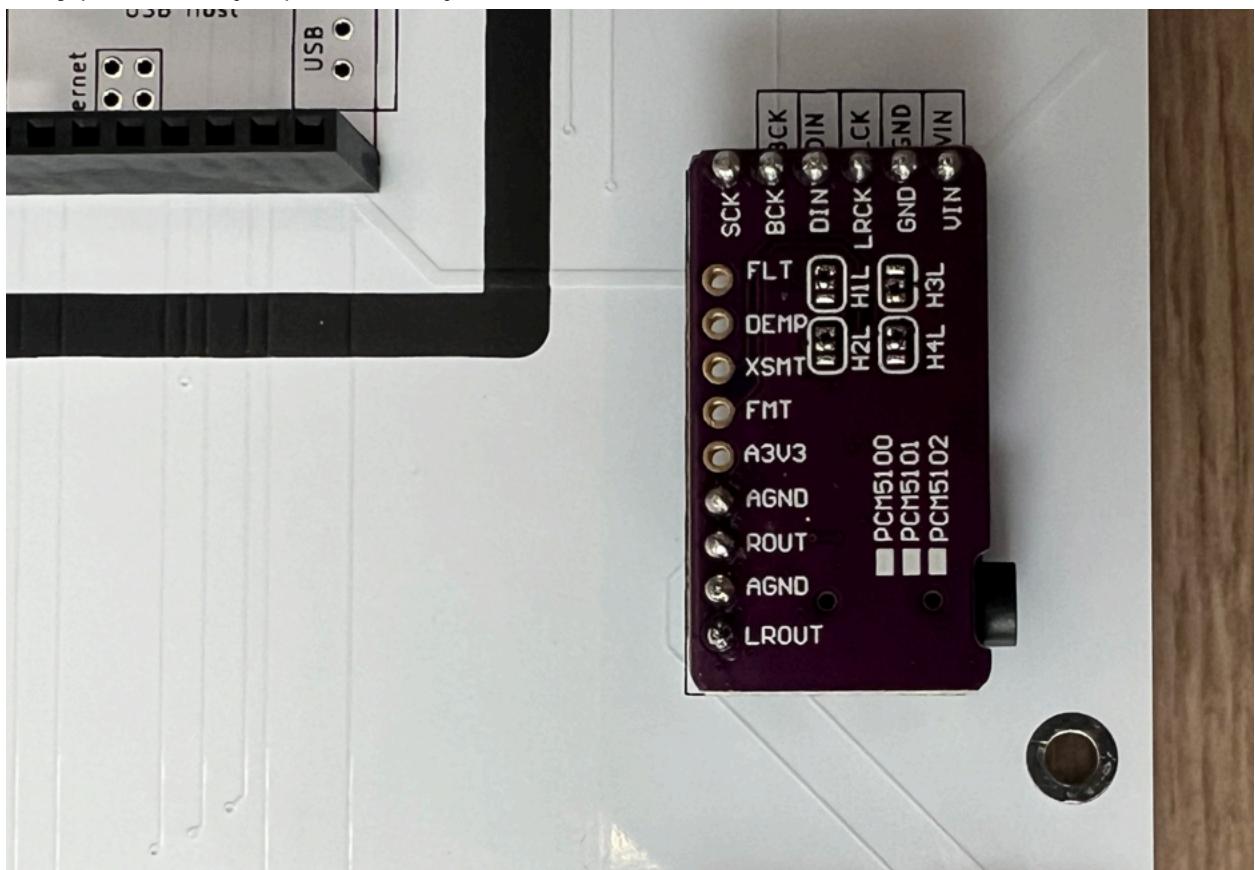


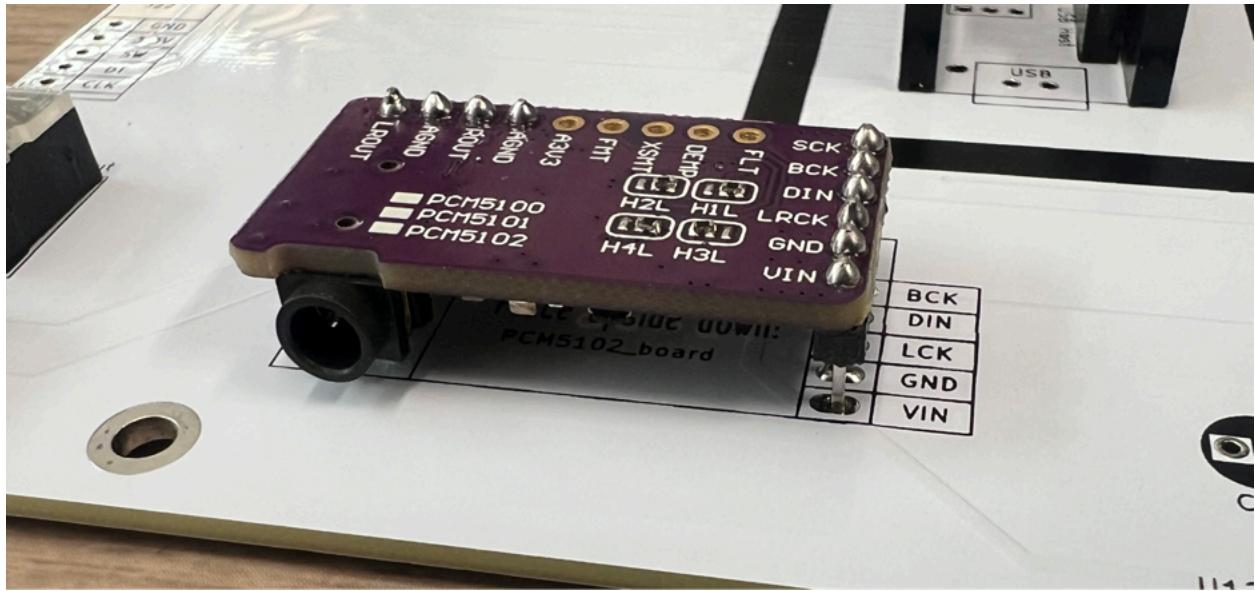
For LEDs follow the orientation. Cathode is a square pin on the right Refer to this picture:



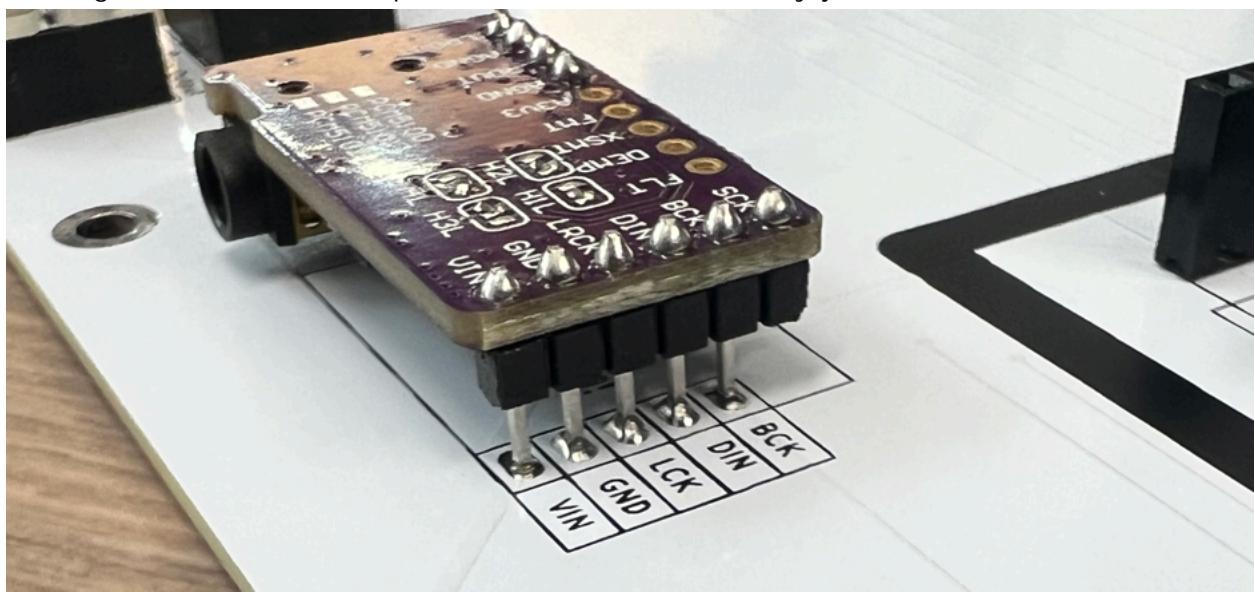


Next is the Burr Brown PCM5102 DAC. Typically it comes pre-configured correctly. Please, verify positions of jumpers (solder joints): H1L=L, H2L=L, H3L=H, H4L=L

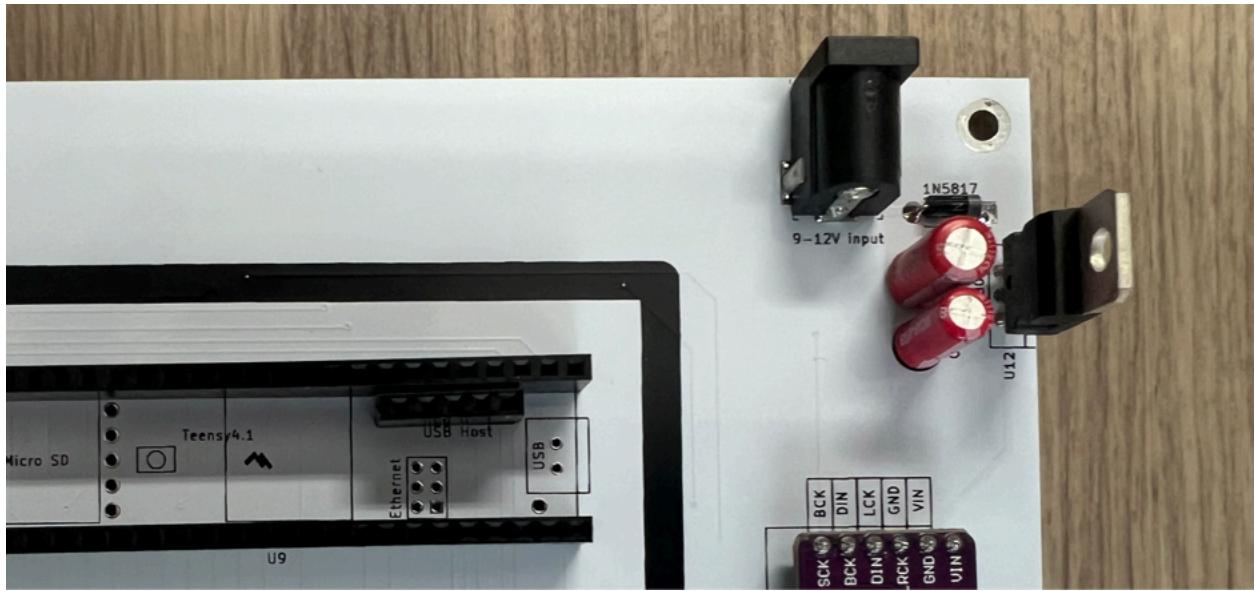




SCK leg is not used at all, if a pin header installed from factory, just cut it



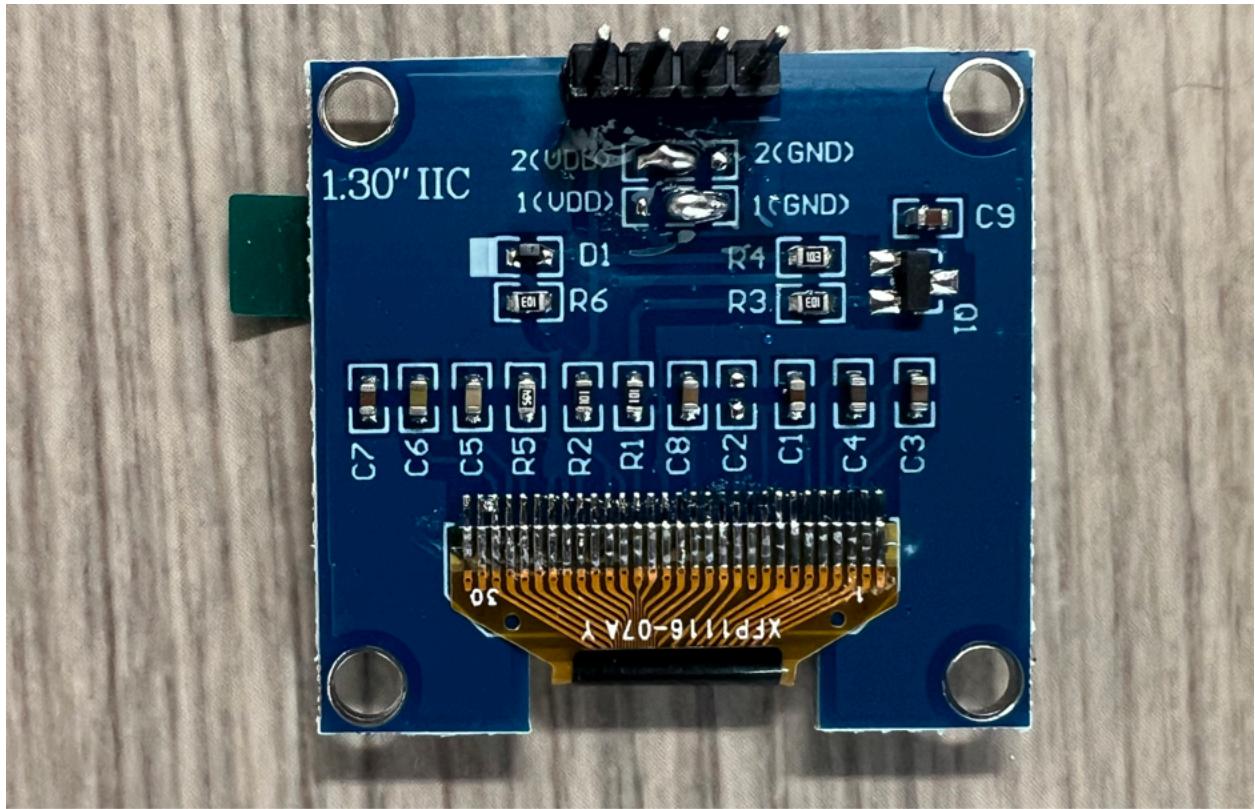
Next is the power supply section. You may skip it if you're not planning to use external 9-12V PS and only use it for USB power.



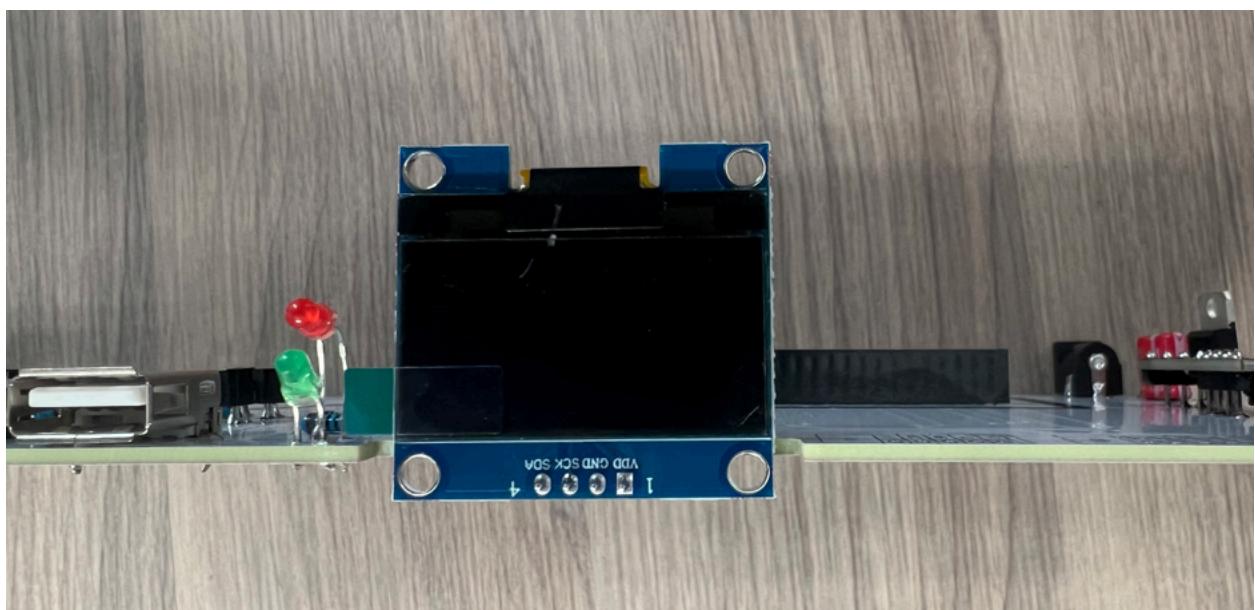
Install DIN5 connectors, make sure they are lined up:

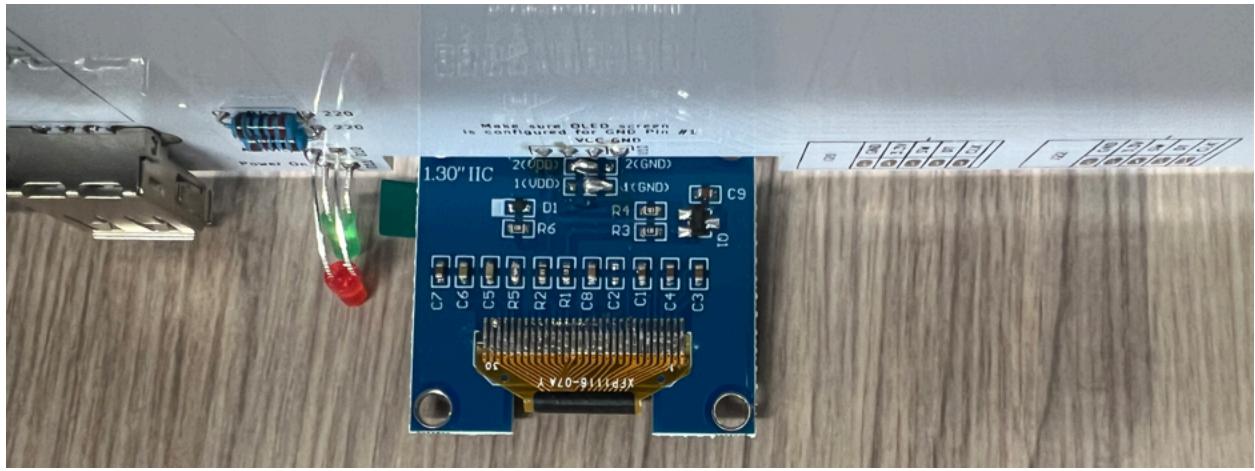


1.3" OLED display is the next. There is no strict pinout standard for those, so some OLEDs have GND on pin 1, while others VCC. This design uses GND on pin 1. Most of the OLED vendors provide an option to configure Pin 1 and Pin 2. Refer to the photo:



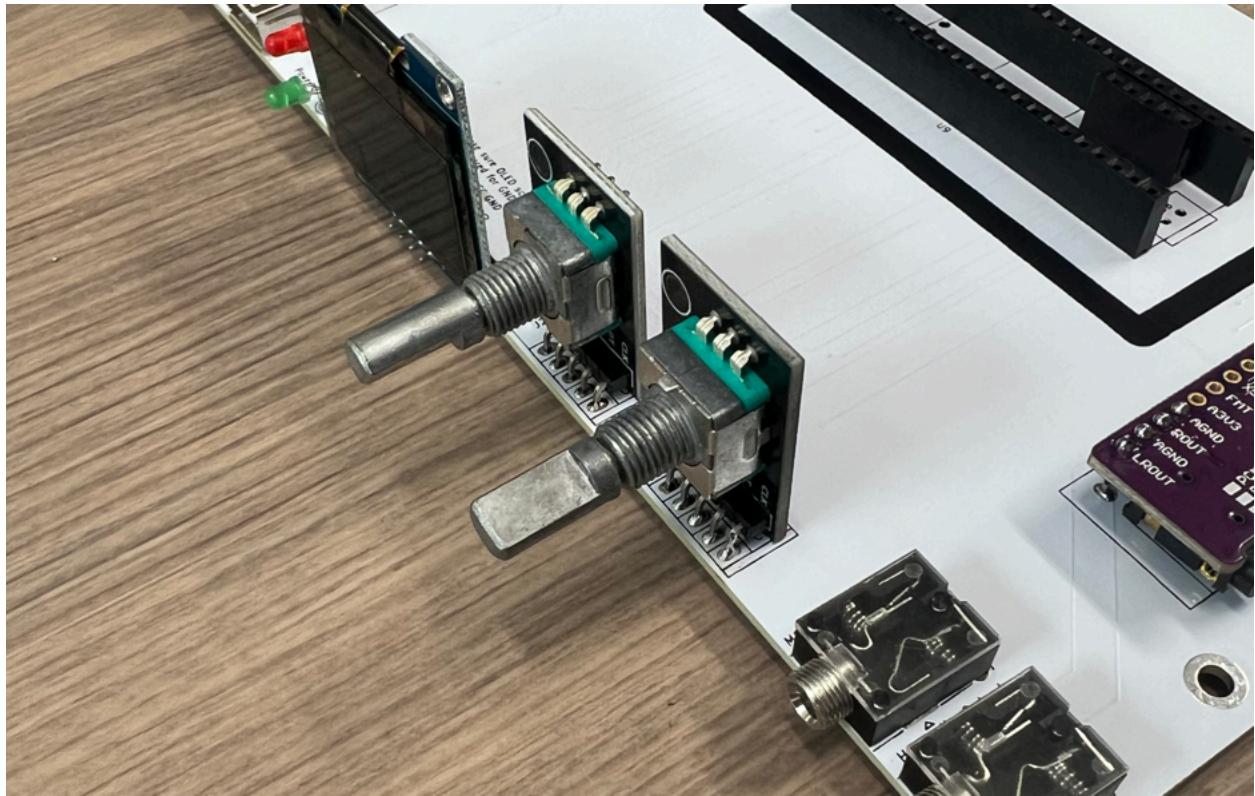
OLED pins should be bent and it's soldered from the back side. This will set the display lower than the PCB, refer to this:





Next, install two encoder PCBs:





Next, solder male pins on Teensy 4.1 and programm it with the latest firmware at  
[https://github.com/Deftaudio/Midi-boards/tree/master/Teensy\\_1U\\_MIDI\\_8x14/Firmware](https://github.com/Deftaudio/Midi-boards/tree/master/Teensy_1U_MIDI_8x14/Firmware)

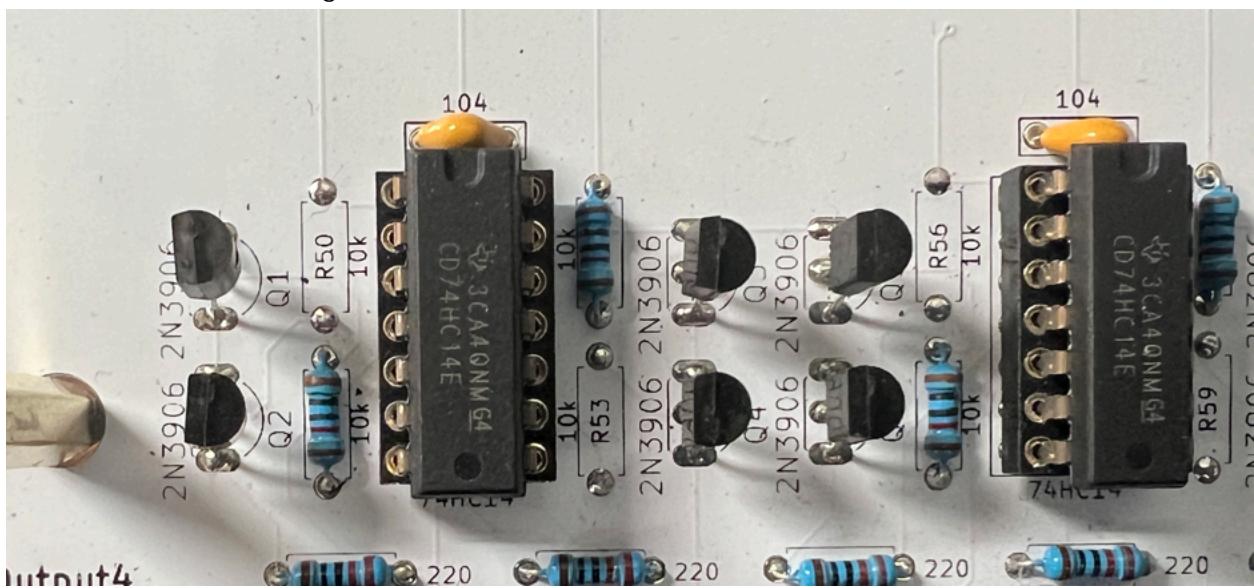
It's important that you may need to cut a jumper between two pins on Teensy (highlighted below) if you're planning to use the external PSU. This will disable Teensy from powering over USB. <https://forum.pjrc.com/index.php?threads/teensy-4-1-cut-pad-for-usb-location.70030/>



Install Teensy 4.1 following the orientation below.



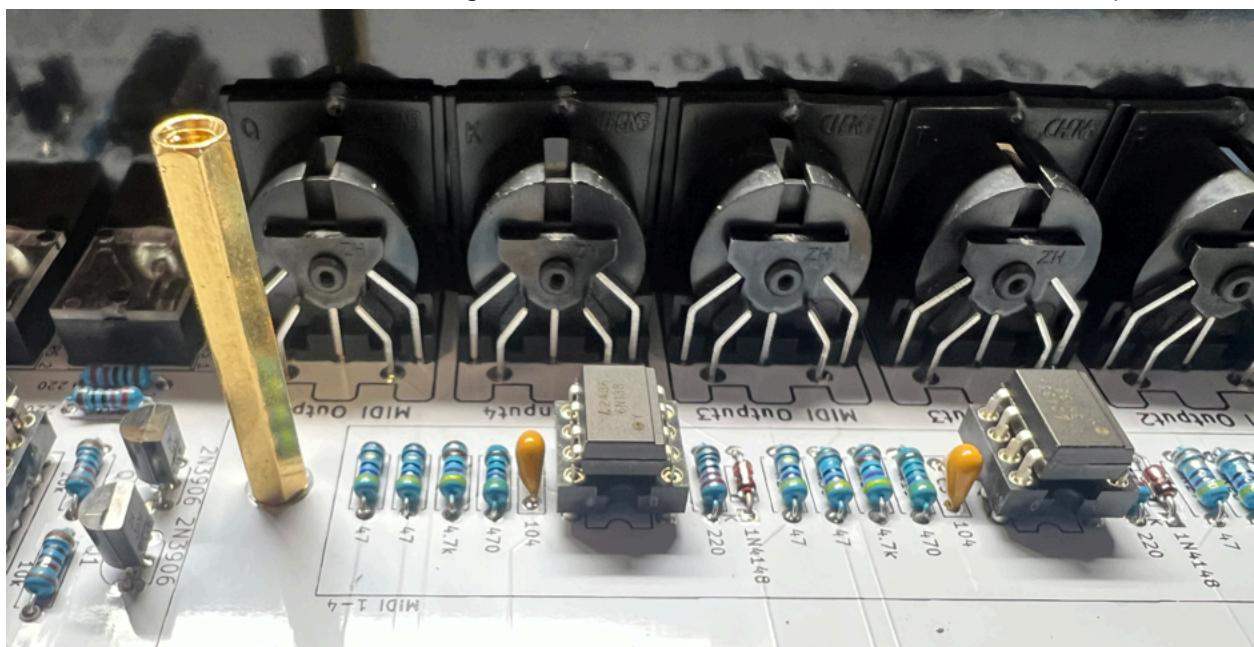
Install other ICs, including 6N138 and 74HC14:



The board is ready to be tested. Please, note, at the first power on, Teensy has no settings for TRS outputs and you need to configure them first. Press on the "Menu" encoder (left encoder), select the desired parameter and change it with the "Value" encoder. Once all parameters are configured, scroll till the exit and save settings. All settings are stored in non-volatile memory.

Attach the front panel. Use TRS and encoder nuts to hold it in place and align overall. You can use 3x M1.4 black pan screws on every DIN5 socket. This can be achieved by either drilling 1mm holes in those or tapping screws with a hot soldering iron so they melt the plastic. Either way it will provide a very tight and secure connection.

Then install 5 brass standoffs 8mm goes under the board and 30mm is attached on top:



There are several options to attach a USB cable. You can connect a microUSB cable to Teensy directly, make a cut in the enclosure and run it through it. Or you can add a USB extender with a PCB mount USB-B (or USB-C) socket. You'll need to drill holes for it.



Attach the lower bottom panel first to PCB first, use 5x M3 screws for this. Then plug side panels into the rear panel and plug this whole assembly into the lower panel. All panels have a tight fit, you may need to apply some force to lock it together.

Before attaching a top panel first install 3x metal brackets (Keystone 612) to the top panel. They need a gap between the panel and the bracket itself. So, use M3 screws, attach a nut to it and tighten it, then put a bracket and lock with the second nut



