

Intro

The M3D V1.0 is a conversion effort that allows the MME analog board to be used for a full-size keyboard. The MME is for the most part faithful to the original classic synthesizer circuit. There are a few alterations to note, being the addition of buffers for envelope outputs, pulse-width modulation circuits for each VCO pulse wave as well as the omission of the A-440 tone generator, overload driver/lamp combo and the headphone amplifier circuits. The added portions in the MME happen to be placed on the MME control board allowing the possibility of including the supported circuitry within a custom board - producing an even more faithful clone of the original.

In order to use the MME analog board for this conversion effort there are two simple modifications that must be performed.

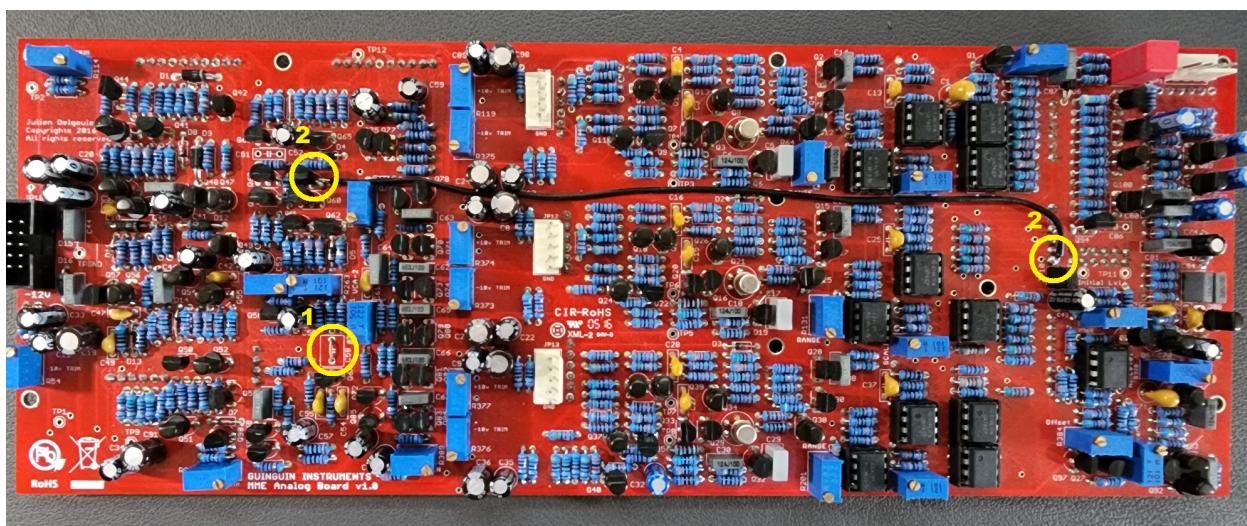
Preparing the MME analog board

1: Bypass the preamp output capacitor.

To snub in the overload lamp driver circuit C58 must be jumpered and relocated to the M3D Control Board 1 as C1. Since the overload lamp driver is prior to the preamp's output capacitor a jumper is used to replace the capacitor so that the signal may be carried over to the M3D boards with the default inter-board connection.

2: Run a wire to the open connector

To inject the A-440 tone into the VCA a wire must be soldered from the collector of Q59 (2N3392, pin 3) to pin 1 of connector JP5. The VCA circuit that the A-440 tone is injected into is constrained within the MME analog board which warranted a creative solution. Fortunately there is one unoccupied inter-board connector pin that can be used to transfer the signal with the help of a wire.



1: bypassed preamp output capacitor.

2: soldered wire from Q59, pin 3 to JP5, pin 1.

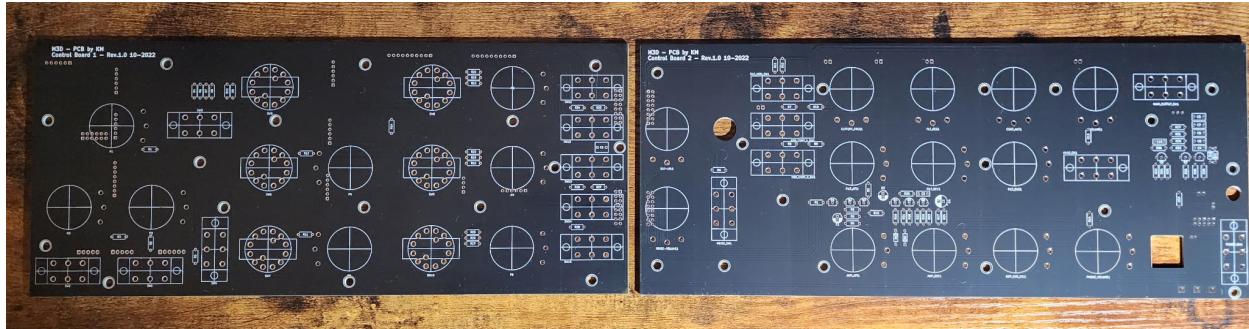
PCB Documents

[Control Board 1 ibom](#)

[Control Board 2 ibom](#)

[Control Board 1 schematic](#)

[Control Board 2 schematic](#)



V1.0 contains some silkscreen confusions for the pot designations. Use the iboms provided above.

Build Guide

It is important to follow this assembly process to ensure that everything has been installed adequately. Use the interactive-bill-of-material(ibom) documents provided above to ensure the correct placement of parts.

1: Install the small stuff

- Install and solder all transistors, resistors, capacitors and connectors to both applicable sides of the M3D boards.
- Install the 0.75" standoffs to the front side with 1/4" 8-32 panhead screws through the back.

2: Prep & install the hardware

- Using pliers or wire snips remove the mounting tabs on each pot and rotary switch. The tabs on the pots snap off easily while the rotary switch tabs may be wiggled until it fatigues.
- Install but don't solder the pots, rocker and rotary switches. To keep the parts flush against the front panel, place one of the 6 0.25" spacers onto the bushing of each rotary switch.
- Align and insert each component into the front panel. On the panel, install 1/4" 8-32 100° flathead screws to each of the 3/4" standoffs. Install washers and nuts to each pot and rotary. Now that the mounting height is established, solder each component into place.

If desired, at this point jacks may be installed to the CV, Gate & Main output connectors to proceed to test and calibrate the unit. The control boards may be removed from the front panel to aid troubleshooting.

Calibration

- Follow the [Adjustment & Tuning](#) page provided in the MME Build Guide.

A-440 Adjustment

- Activate the A440 generator by pressing the switch.
- With a scope or frequency counter on the main output turn the "A-440 ADJ" trimpot until 440Hz is achieved.

Note:

The two "TRIM" capacitors C7 & C8 are in case 440Hz is not within the adjustable range and more capacitance is needed - these are included since there was space in the original board for this but are usually not required and unpopulated.