W8KHK / N1BCG Audio Processor Version 4.0 Errata

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This version of the W8KHK / N1BCG Audio Processor is the final prototype, and, as such, it contains several issues which must be addressed by the builder. The resulting product will be identical, in features and performance, to the final production version 5.0 PCB artwork. Here are the basic issues:

1) A track on the schematic was incomplete, requiring a single wire to be added to the underside of the board to complete the circuit.

2) The base and emitter leads on a transistor were inadvertently exchanged, requiring the transistor to be inserted in the board with the base and emitter leads crossed.

3) The legend above the LEDs header provides incorrect LED pinout data, requiring the builder to reference alternate information when wiring the LED array.

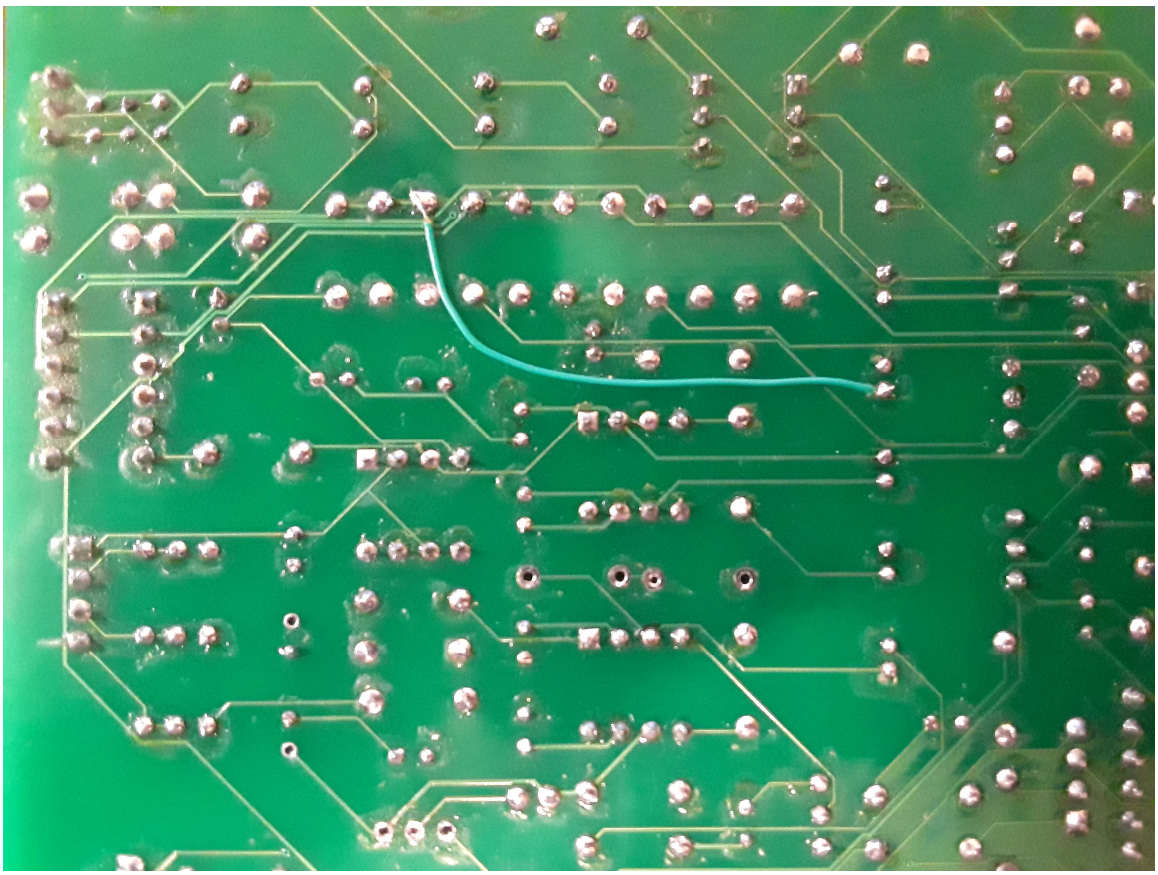
4) One of the power status LED lands is not in the same orientation as the other three, requiring attention to detail when installing the plus five-volt status LED.

5) Because this is a final prototype, several extra components were included in the artwork to aid in fine-tuning of the component values. The processor contains many modules, which may individually be switched in and out of the audio path. In order to balance levels, and eliminate jumps in signal level when performing this switching, each module was fine-tuned to "unity-gain". Trim pots were included on the board, as well as traces to accept fixed resistors after the values were determined. The parts list includes correct values for these fixed resistors, while the traces provided for the trim pots remain empty. In addition, most op-amp stages were laid out such that the stage gain may be set with resistor pairs. In some cases, basic unity gain proved optimal, and as a result, some resistors were replaced with jumpers or left open. This has no impact on the performance of the device, so long as the builder does not find it "cosmetically-uncomfortable" to have some un-populated lands on the board.

Adding the wire to the bottom of the board

The missing trace coupled the regulated five-volt source to the rest of the circuitry. In order to complete the missing path, a wire is run on the bottom of the board from the positive terminal of C310 to the left side of resistor R311. This is the end of the resistor closest to the C304 logo on the top of the board. To simplify the addition of this wire, it is suggested that a short wire, or the leg of a resistor, be passed through each of these two holes from the top of the board, prior to the installation of any other components. Using these wires as a guide, the proper location for each end of the jumper wire may be marked on the solder side of the board with an indelible pen. The wire may then be installed and soldered later, after C310 and R311 are placed on the board.

Below is a photo of a section of the board indicating correct application of the jumper wire.



LED Wiring and Transistor Orientation

The correct LED wiring and transistor installation may be determined by referring to the photograph which covers both in a small area of the board. Simply ignore the silkscreen references on the board for the LED connections, and follow those on the photograph.

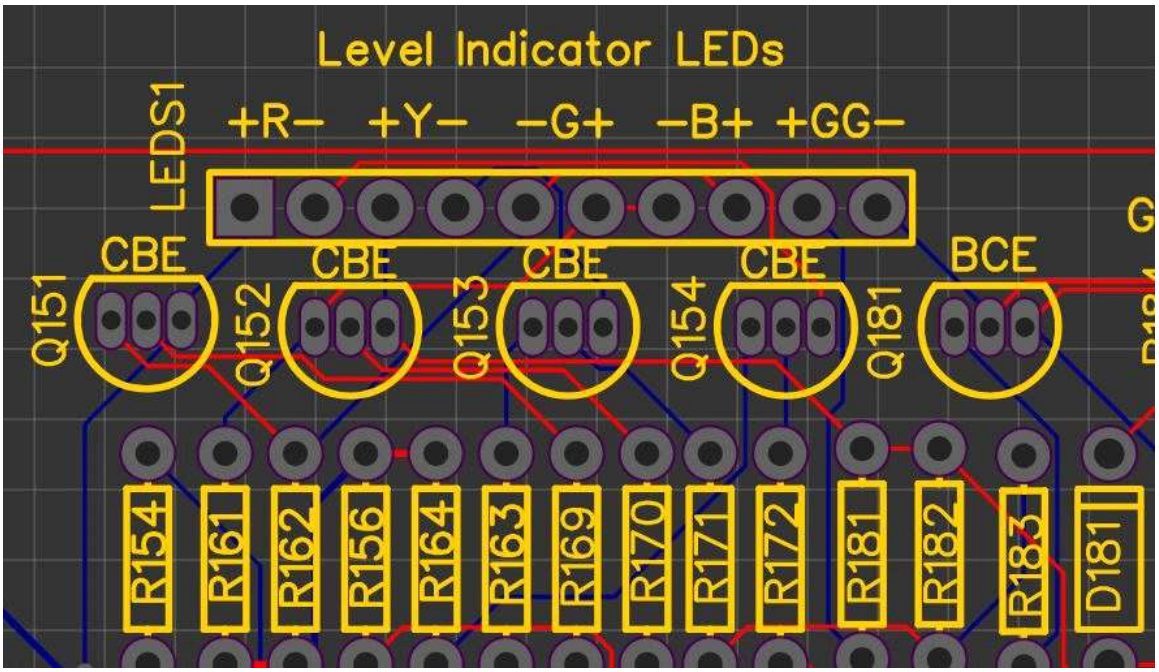
+R- indicates the positive and negative lead of the RED "Peak" LED.

+Y- indicates the positive and negative lead of the YELLOW "Normal" LED.

-G+ indicates the negative and positive lead of the GREEN "Positive" LED.

-B+ indicates the negative and positive lead of the BLUE "Negative" LED.

+GG- indicates the positive and negative lead of the WHITE "Gain Gate" LED.



Notice that Q151, Q152, Q153, and Q154 all comply with the standard Collector, Base, Emitter wire sequence. The legend above Q181 requires a sequence of Base, Collector, then Emitter, matching the legend above the transistor footprint.

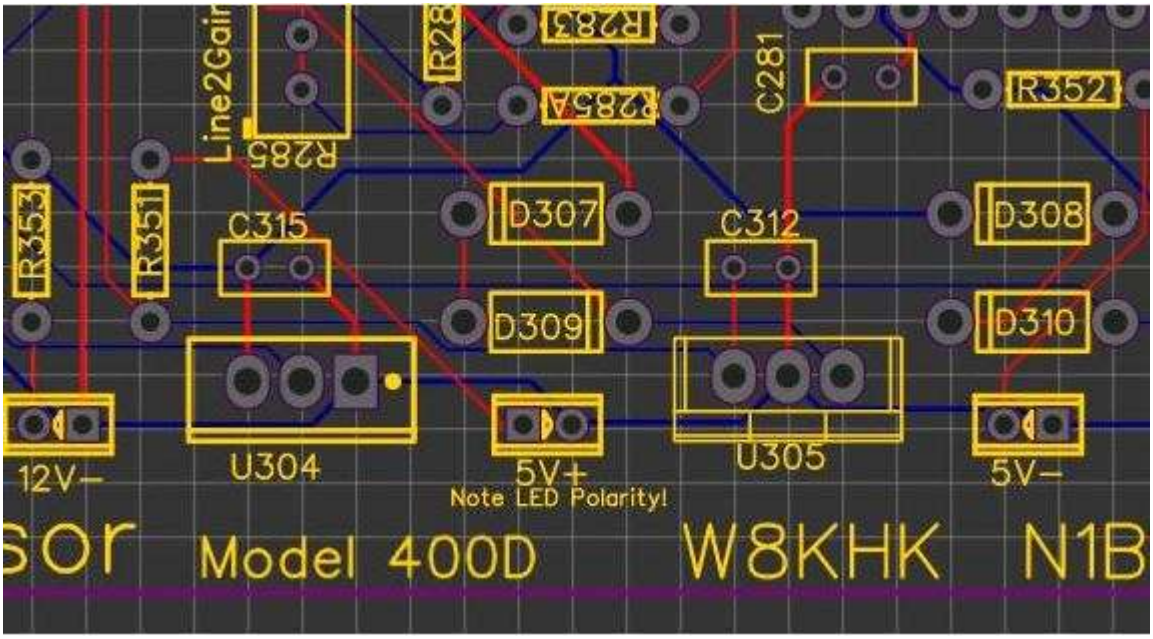
The wires from the plastic transistor are in a straight-line configuration, and two of the wires need to be crossed when it is installed. Insert the emitter wire first, then rotate the transistor about 90 degrees counter-clockwise (such that the flat side is to the left.) Now slightly bend the leads such that the center lead goes into the left hole, and the bottom lead goes into the center hole. The transistors should all be mounted above the board, leaving about 1/2 inch (approximately 12 cm) of lead exists between

the top board surface and the bottom of the transistor plastic case. Carefully solder the leads, one at a time, ensuring the leads are not touching. The transistor lands are the closest on this board and it is very easy to leave a small solder bridge. Inspect your work very carefully after soldering this section of the board.

Power Status LED Installation

Power Status LEDs may be installed directly on the printed circuit board, or wires may be run to install these LEDs at a convenient location as the builder wishes. In either case, notice that the plus five volt LED orientation is 180 degrees opposite of the other three LEDs.

The legends next to the lands simply indicate which voltage is being monitored, and these silkscreen characters have no relevance to the LED polarity. Between the two holes is a triangle, symbolizing a diode. The arrow points from the anode to the cathode terminal, (from the positive, long LED lead, to the negative, shorter LED lead).



See the picture above, in case the actual silkscreen on the board is not clear.

Trim Pots replaced by Fixed Resistors

There are many trim pots missing from the kit. Please look at the parts spreadsheet; if the part is listed as "Open", it will not be installed on the board. The remaining trim pots are needed and provide a necessary adjustment capability for the user.

While there may be others, the following trim pots will NOT be installed on this board:

R81 Pre-emphasis

R101 Compressor Drive

R147 SCAF Level

R150 Indicator Sensitivity

In addition to any desired audio level adjustment pots, the following are necessary and will be included:

R134 SCAF Clock Wide Bandwidth

R135 SCAF Clock Medium Bandwidth

R136 SCAF Clock Narrow Bandwidth

R168 Indicator Balance

R184 Gain Gate Threshold

R202 Pre-clip