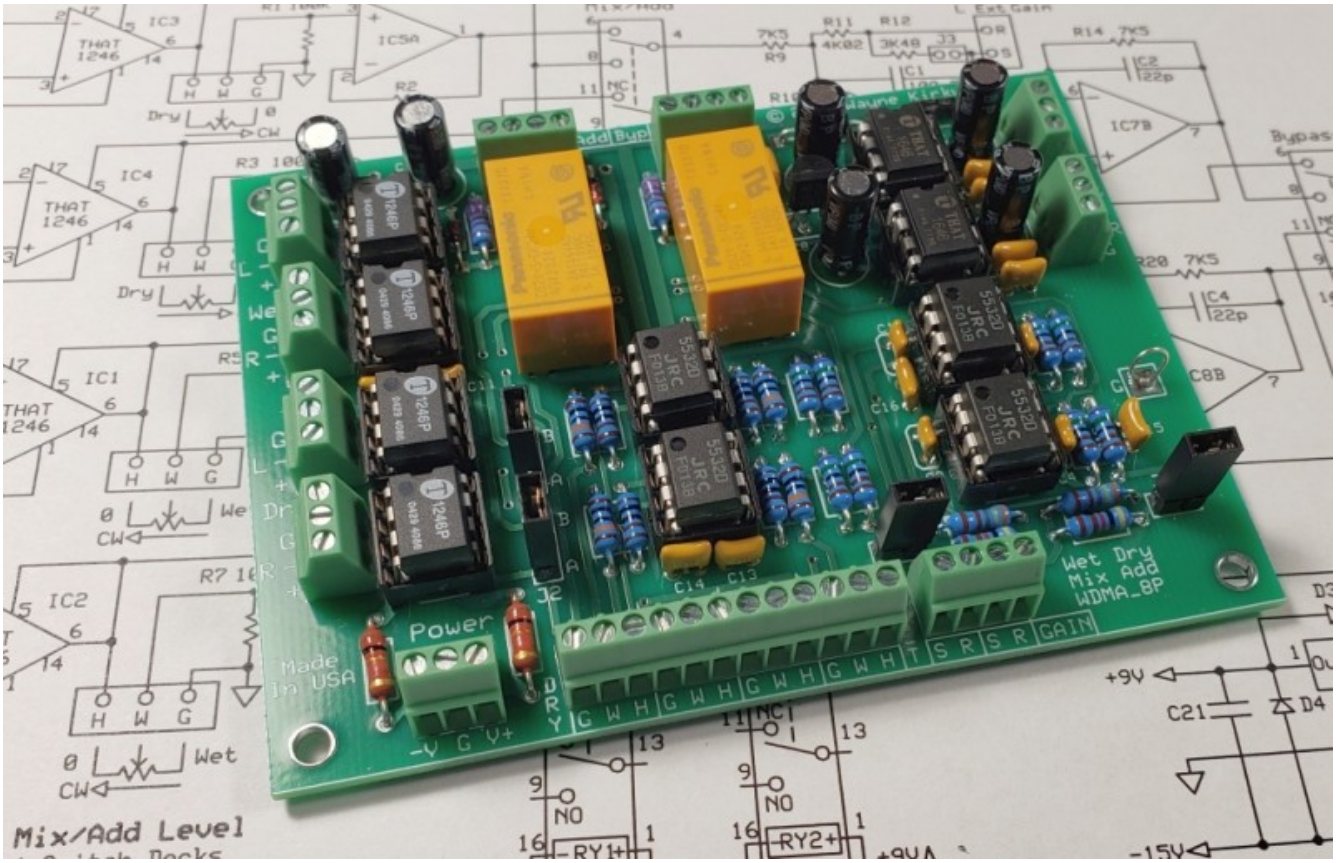
Assembly Instructions for the KA Electronics Wet Dry Mix Add "WDMA"

8.25.22



Mid Side MS Mini PC Board

Install IC sockets

Place the PC Board on the work bench silkscreen side face up.

Place **(10)** 8 pin IC sockets into their respective locations. Observe orientation of the notch. Make sure that you do not place the sockets in the bypass capacitor holes.

Tip: Lift the board up and place a piece of cardboard on top of the board to form a sandwich of PC board, sockets and cardboard. The cardboard is used to hold the sockets in place so the board can be turned over without the sockets dropping out. Flip the board over.

Tack Solder only two of the corner IC pins. Put downward pressure on the PC board to make certain the sockets are seated on the board as you solder.

Once all the IC sockets are tack soldered, flip the board over.

Make certain that each socket is correctly oriented, fully seated on the board and square.

If you're satisfied with the placement of the sockets, solder all of the remaining pins. Do not overfill the connection with solder because it can run underneath the socket and form a short between pins.

Visually check each pin's connection particularly those to the ground plane. Reheat any pins if needed. Do not trim the IC socket leads.

Install resistors and diodes

Install **(4)** 100KΩ 1% resistors at R1, R3, R5 and R7.

Install **(4)** 1KΩ 1% resistors at R2, R4, R6 and R8.

Install **(8)** 7K5Ω 1% resistors at R9, R10, R13 R14, R15, R16, R19, and R20.

Install **(2)** 4K02Ω 1% resistors at R11 and R17.

Install **(2)** 3K48Ω 1% resistors at R12 and R18.

Install **(2)** 1Ω 1W metal film "fusible" resistors at R21 and R22.

Install **(2)** 2K21Ω 1% resistors at R23 and R24.

Install diodes in the following locations.

Install **(2)** 1N4004 diodes at D1 and D2. Observe polarity.

Install **(4)** 1N4148 diodes at D3 to D6. Observe polarity.

Install ceramic capacitors

Install **(2)** 100 pF at C1 and C3.

Install **(2)** 22 pF at C2 and C4.

Install **(11)** 100 nF (0.1uF) at C11-C21.

Install jumper headers

Install the jumper shunts onto the header pins before you solder them. (The shunts serve as insulators that allow you to position them while soldering without burning your fingers.)

You will need **(4)** shunts. The shunts are positioned during installation in the locations that will be used in final test.

The shunts should be installed with small openings on the bottom.

When installing the headers, tack solder only one pin and reheat it to adjust the position of the header so that it's square and flush with the board. Once you're satisfied with the orientation of the headers solder the remaining pins.

Install **(2)** 3 pin headers at J1 and J2. Link position "A."

Install (2) 2 pin headers at J3 and J4. Install the links.

Install Phoenix connectors

When installing the Phoenix connectors make sure the openings for the wires point outward to the edge of the board. When installing the connectors, tack solder only one pin and reheat it to adjust the position of the connector so that it's square and flush with the board. Once you're satisfied with the orientation of the connector, solder the remaining pins.

Install **(7)** 3 pin Phoenix connectors.

Install **(3)** 4 pin Phoenix connectors.

Install **(1)** 12 pin Phoenix connectors.

Install electrolytic capacitors

Note: The + (positive) terminals for the electrolytic capacitors have a square pad. Where space permits there is also a "+" silkscreen marking. The longer capacitor lead is the positive lead.

Bipolar capacitors, which do not have a polarity, will also be installed in four locations. Make certain that you have the right type of capacitor before soldering it.

Install **(4)** 10uF 35V (or 50V) bipolar electrolytic capacitors at C5-C8.

Install **(2)** 47uF 35V polarized electrolytic capacitors at C9 and C10. The polarity of these capacitors are critical.

Install the relays

When soldering the relay tack-solder the corner pins first. This will allow you to adjust the relay so it lines up correctly.

Install **(2)** 24V DPDT relays at RY1 and RY2.

Install the relay voltage regulator

Install **(1)** LM78L24 regulator at IC11. Note the orientation of the TO-92 package.

Note: Do not install the ICs at this time.

Check all solder connections and reheat or re-flow them if necessary

When component leads are trimmed after soldering the solder joint becomes fractured. It is always a good idea to reflow all solder connections after lead trimming while checking for bridges or pins which may have missed being soldered.

If you add solder during this step do so sparingly particularly under IC sockets. Solder can flow through the PC board vias to the underside of the IC socket and cause shorts between pins.

If you prefer to remove the solder flux residue from the PC board now is a very good time to do it.

When you're finished cleaning the PC board inspect every joint under magnification.

Install spacers

Install **four** 4-40 threaded hex spacers at the board mounting holes. Place the **four** fiber washers between the PC board and the hex spacer and secure using four 4-40 1/4" screws. Four additional screws and fiber washers are in the bill-of-materials for securing the PC board to the chassis.

Initial Tests

The board should be tested on a power supply before installing the ICs.

Initial DC Tests

Connect a source of bipolar DC power.

If a variable power supply is used, slowly raise the voltage to about +/-15V.

There should be no significant current draw. If excess current is drawn check the board for solder bridges and correct polarity of D1 and D2 and all the electrolytic capacitors.

The following steps check the voltages at the IC sockets without the ICs installed.

Check the voltages at pin 7 of IC1-IC4. It should be +15V. The voltages at pin 4 of the aforementioned ICs should be -15V.

Check the voltages at pin 8 of IC5-IC8. It should be +15V. The voltages at pin 4 of the aforementioned ICs should be -15V.

Check the voltage at pin 6 of IC9 and IC10. It should be +15V. The voltages at pin 5 should be -15V.

If any of the voltages are out of range look for solder bridges or an un-soldered pin or component lead.

Remove power.

Install the ICs

Install **(4)** THAT1246 at IC1-IC4.

Install **(4)** NJM5532 at IC5-IC8.

Note: If using a potentiometer for crossfading, FET input op amps, such as the OPA2134PA, are recommended due to their lower bias current which reduces wiper noise. For stepped switch applications an NJM5532 is the better choice.

Install **(2)** THAT1646 at IC9 and IC10.

***Begin Edit for WDMA**

Offset and Current Draw Tests

Reconnect power.

Wet Dry Mix Add Parallel Processor

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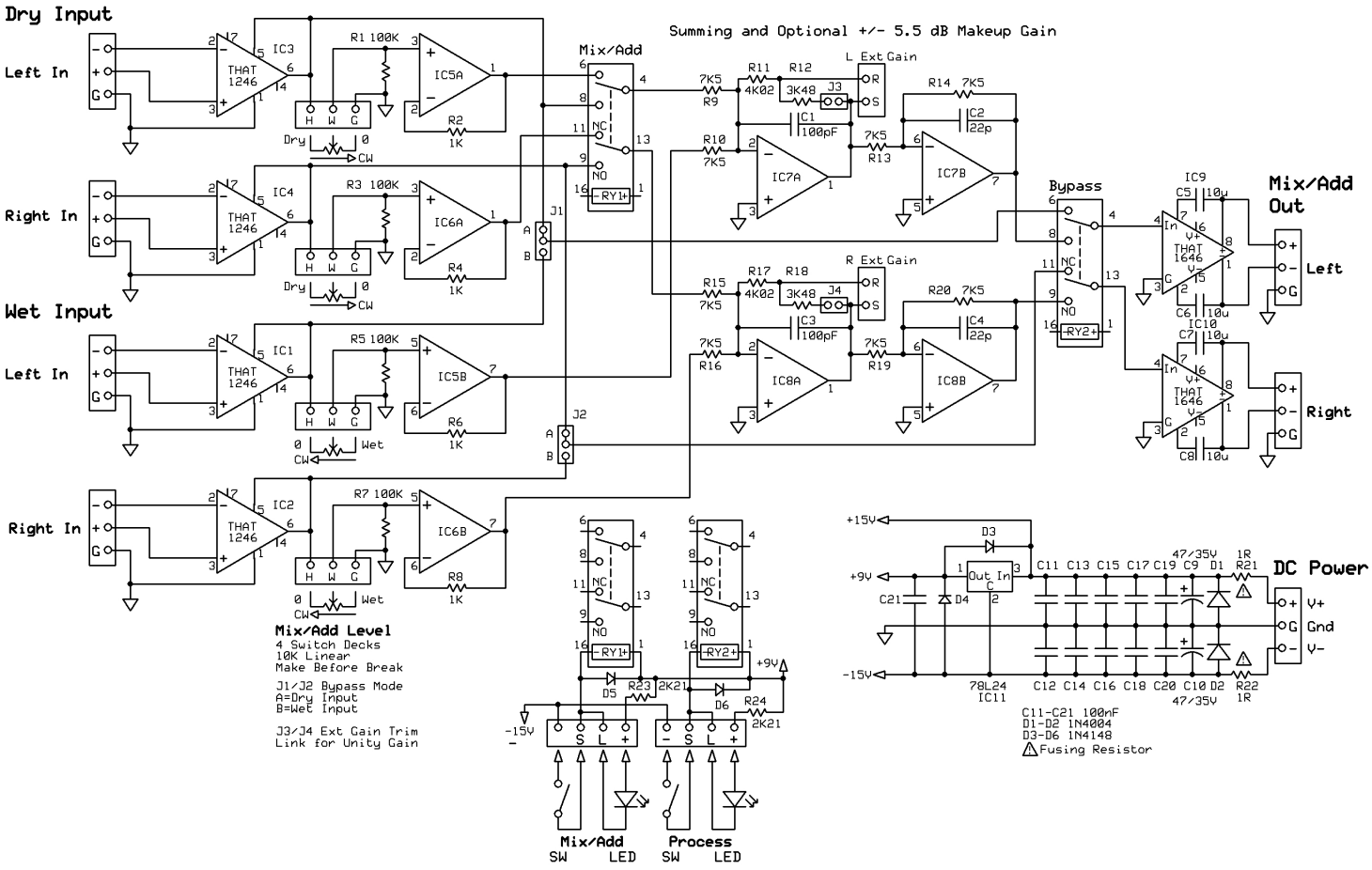

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Wet/Dry Mix/Add Parallel Processor		
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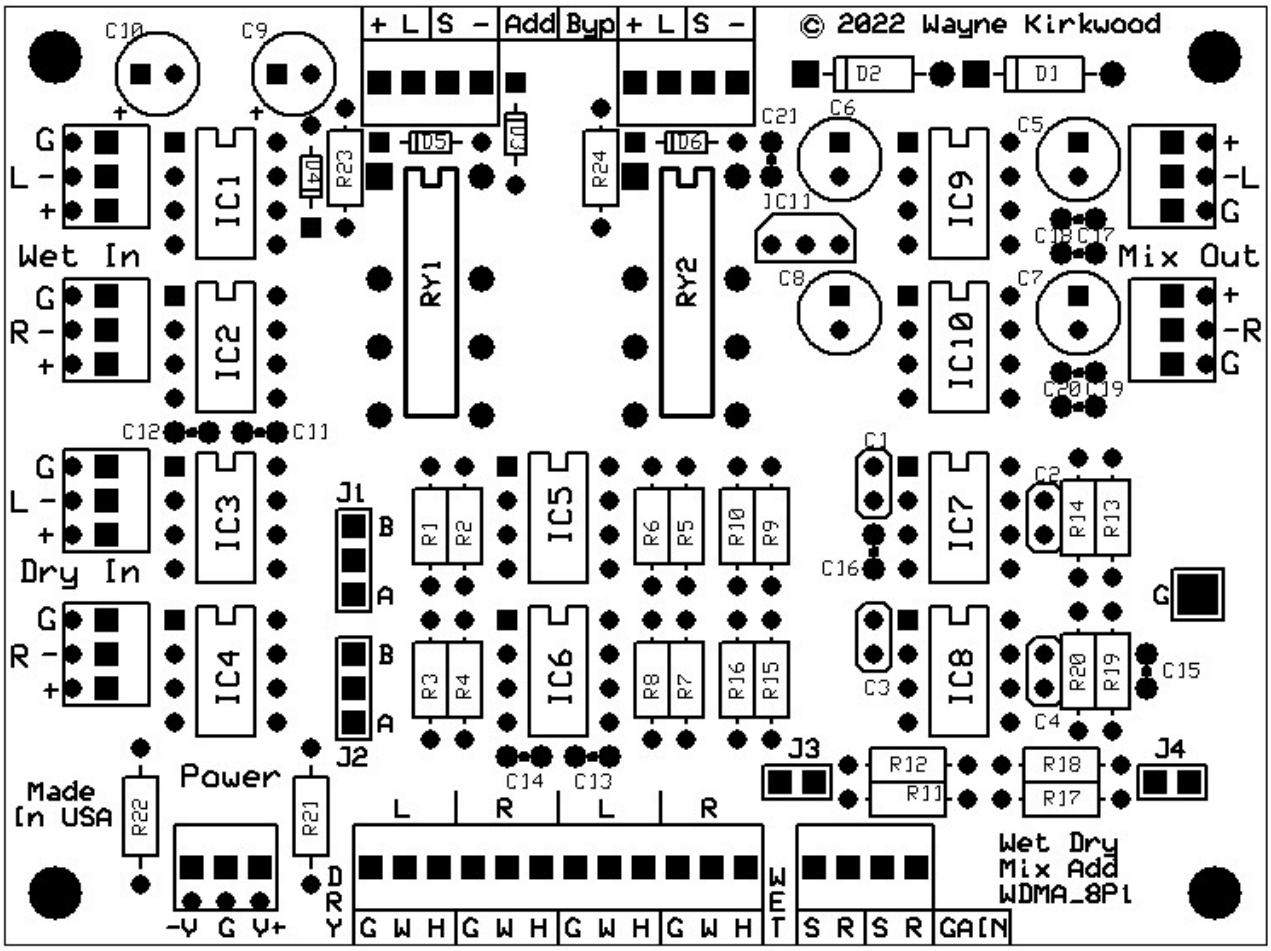

Wet Dry Mix Add Component Placement

Detailed Parts List

A complete bill of materials is available from Mouser Electronics:

Wet Dry Mix Add WDMA PCB with THAT ICs:

https://www.mouser.com/ProjectManager/ProjectDetail.aspx?AccessID=09c51b12f8

Other Resources

Pro Audio Design Forum Wet Dry Mix Add Build Thread:

https://www.proaudiodesignforum.com/forum/php/viewtopic.php?t=1291

For more information contact: sales@ka-electronics.com