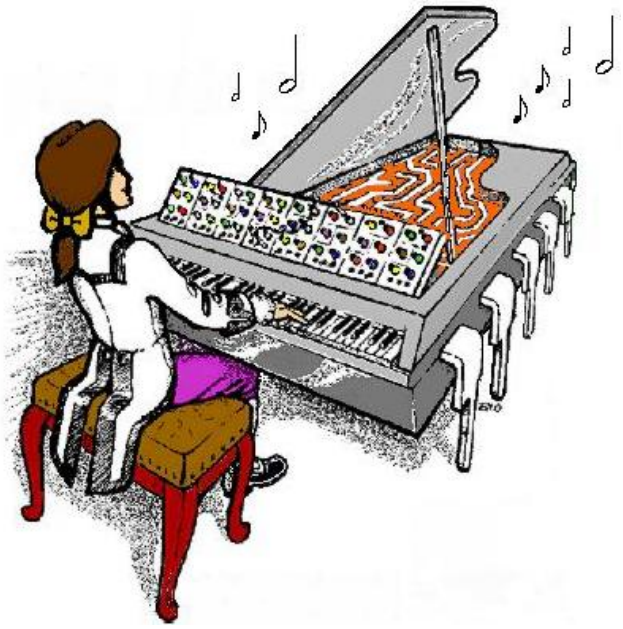

AVRSynth Construction Notes
Revision 1.0

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Elby Designs – Laurie Biddulph
Kariong, NSW 2250, Australia
elby_designs@ozemail.com.au http://www.elby-designs.com

Construction of the AVRSynth is fairly straight forward and requires only basic soldering and assembly skills.

Stage 1 (AVRSynth Console)

Construction should start with some mechanical preparation. Place the pcb in the base of the Enclosure and mark the four mounting points. We recommend the board be placed centrally on the base with the voltage regulator at the rear to allow clearance when the front panel is fitted. Drill the four fixing holes using a 3.2mm drill (approximately ⅛"). You will need to lightly countersink the holes from the outside to allow the screw heads to sit properly and flush to the case – do not over countersink!.

Stage 2

Construction should then move on to the pcb itself. Build the board up from the smallest components like diodes and resistors up to the largest components such as the connectors. The component overlay supplied with the board indicates, by designator, the location of each component which should be cross-referenced with the BOM to identify each component. Pay particular attention to the orientation of polarized components such as diodes, electrolytic and tantalum capacitors and the semiconductors.

The voltage regulator should be mounted last. Start by fixing it loosely to the heatsink using the supplied nut and bolt. Insert the complete assembly in to the pcb and tighten the screw and nut. Finally solder the regulator legs in to place.

3D Model

Mount the pcb on to the enclosure base using the supplied spacers, nuts and bolts.

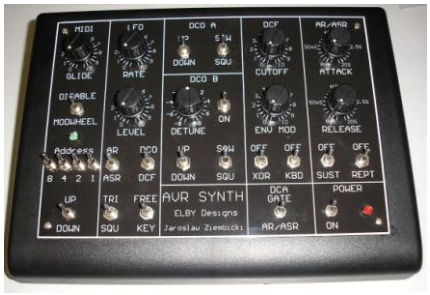
An error on the pcb requires that 2 pins for the ATMEGA be swapped. All pcbs supplied fitted with a 40-pin DIP socket installed have already been modified.

Stage 3 (AVRSynth Console)

Now fit the components to the Rear Panel. Wiring for this is very straight forward. You should use the supplied Equipment Wire (sometimes called Hook-up Wire). The pcb has screw-terminal connections for terminating these wires.

We recommend 7/0.2mm (0.22mm^2) but any cable of a similar size will be fine.

Stage 4 (AVRSynth Console Mk 1)



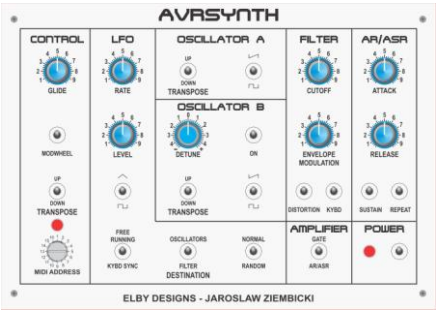
You should handle both the front and rear panels carefully to minimize finger marks. You should also protect the panel from possible scratching. Once pots have been fitted then it should be safe to work with the panel face down.

Next is the Front Panel. Refer to the wiring diagrams to position all the components in their correct locations. Use the supplied Equipment Wire to inter-connect between the various components on the panel.

Mount the Front Plate on to the enclosure top using the supplied M3x10mm bolts and nuts.

Wiring between the pcb and Front Panel is done using 40-way, 1.27mm (0.05”) Pitch IDC Ribbon Cable. Minimise the length of this interconnecting cable by placing the enclosure base next to the upside-down top. Leave enough slack in the cable to allow the two halves of the enclosure to be opened and closed to assist with any future work that may need to be done inside the unit.

Stage 4 (AVRSynth Console Mk 2)



Mount all the panel components on to the Carrier PCB.

Position the Front Plate on to the enclosure top.
Position the Carrier PCB on to the front panel using the supplied M3x10mm bolts, spacers and nuts.

Connect the 2 boards together using the 40-way IDC cable.

Stage 5 (AVRSynth Console)

Final assembly simply involves joining the 2 enclosure halves together. Secure using the supplied fixing screws.

Software

The pcb will take either the ATMEGA16 @ 8MHz or the ATMEGA32 @ 16MHz. Software is available for both of these variants. Experimenters may use other combinations of crystal speed and ATMEGA pin compatible microcontrollers but will need to make the necessary adjustments to the software.