

• 6HP Eurorack Module

• Built & designed in Belgium

• [www.shakmat.com](http://www.shakmat.com)



# Shakmat Aeolus Mixer Building Guide

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# 1. Preamble

Thank you for purchasing a Shakmat DIY kit !

We spare no effort in our kit packing process to prevent any mistakes or missing parts. In this document as well, we do our best to describe the assembly process in the most practical and comprehensive way. If by any chance there is a missing/damaged part in your kit or if you have any suggestion, feel free to contact us via [shakmat.com](http://shakmat.com).

The assembly process will be dramatically simplified if you follow the order defined by this building guide. We tested various orders of steps before finding the most convenient, and the one presented here is the best!

## 2. Component list & necessary tools

### Pack 1

22x Jack connectors  
22x Jack connector nuts  
4x 2 pin male header  
4x jumper  
9x 3 pin male header  
9x 3 pin female header  
1x 2x5 pin power header  
2x 22  $\mu$ F electrolytic capacitors  
2x Slide switch  
2x M3 screws

### Loose parts

1x Power cable  
1x User manual

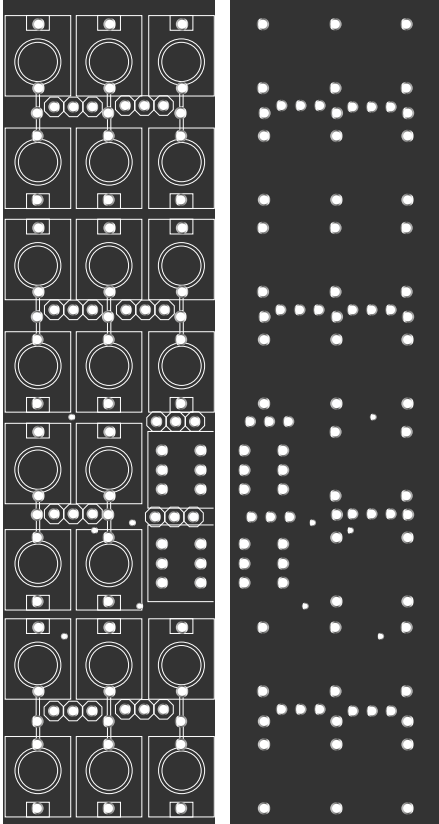
### Pack 2

Top PCB  
Bottom PCB  
Front Panel

# 3. PCB details

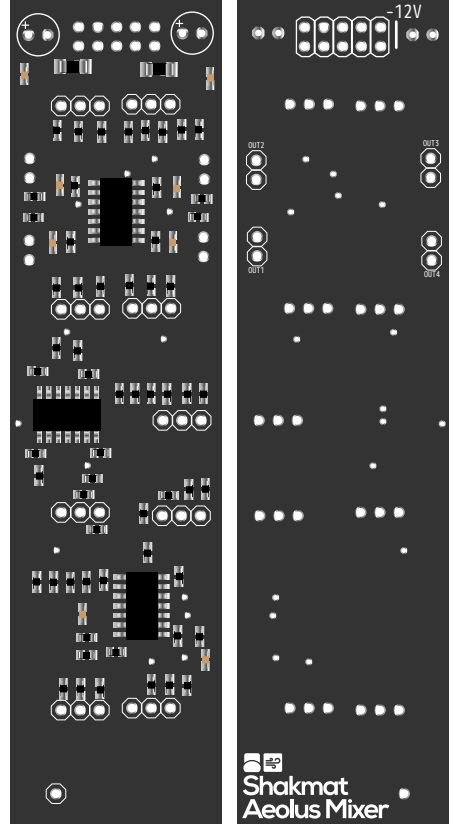
## Top PCB

Front & back



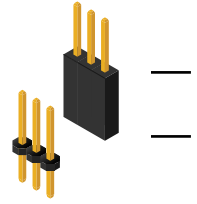
## Bottom PCB

Front & back



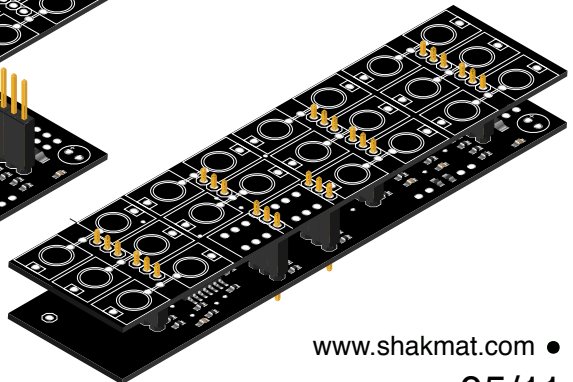
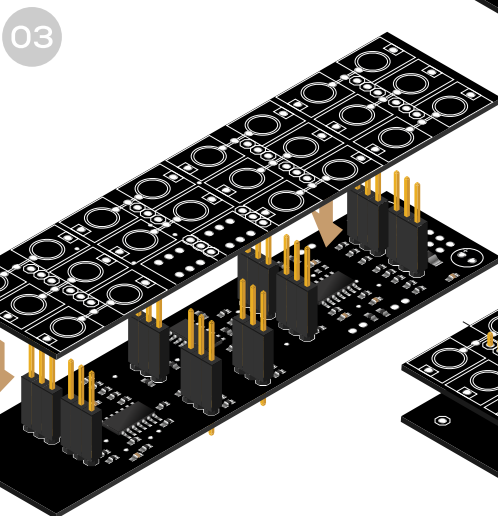
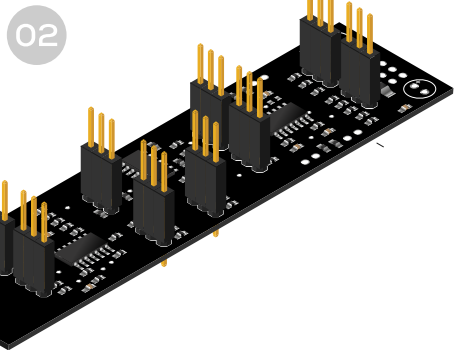
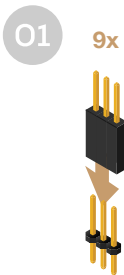
# 4. PCB stacking

## 4.1 Male & female headers (x9)



Headers are used to stack the two PCBs together, There are nine pairs of 3 pin male & female headers. First assemble all the headers with their mate. Then place them on the bottom PCB , male side down. Then assemble the two boards together and solder one pin, on each side, for each header. Check the alignment of the PCBs, if it's not right, re-heat the leg of the faulty header and correct. Once everything is held together and the two PCBs are correctly aligned, you can solder all the remaining points.

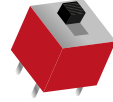
Be very careful with the soldering of the female part of the headers. Once the Jack will be in place, those solder points will be very hard to access, so better triple check them! When everything is well soldered, disconnect the two boards and proceed to the next step with the top PCB.



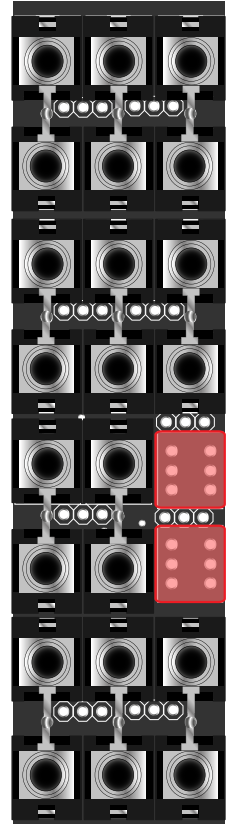
# 5. Top PCB assembly

## 5.1 Front

### 5.1.1 Slide switch (x2)



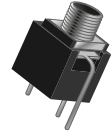
Place the two slide switches. Be sure to lay them flat on the PCB, then solder one leg of each switch. Check alignment and solder every remaining points.



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## 5.1.2 Jack connectors (x22)

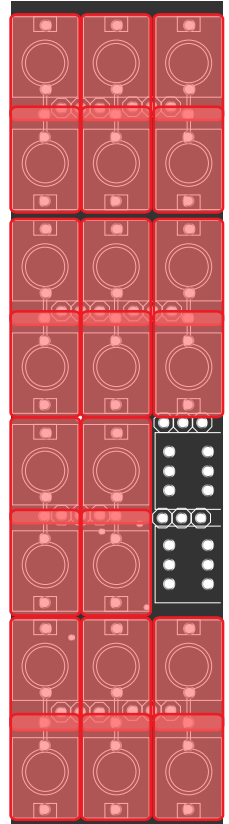
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Place and solder the twenty-two jack connectors. All of them share the hole for their outer leg with another jack, this is normal.

Be sure to lay the jacks completely flat on the PCB before soldering. If those jacks aren't perpendicular, the front panel will be very hard to mount.

If one of the jack is not perfectly perpendicular with the PCB, you can reheat the pads and push it down with your thumb to re-align.



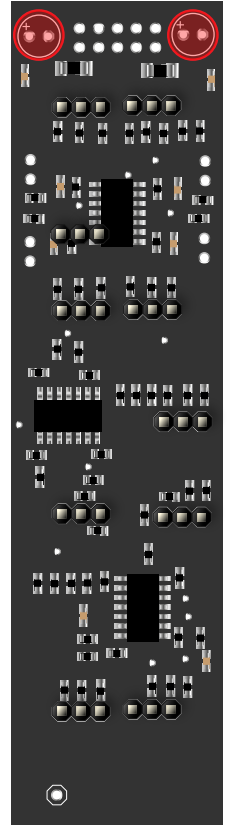
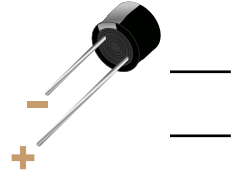


# 6. Bottom PCB assembly

## 6.1 Front

### 6.1.1 Electrolytic capacitors (x2)

Solder the two  $22\mu\text{F}$  capacitors.  
You must pay attention to the orientation of these components. The long leg is indicating the positive side, therefore it has to match the + sign on the PCB silkscreen.

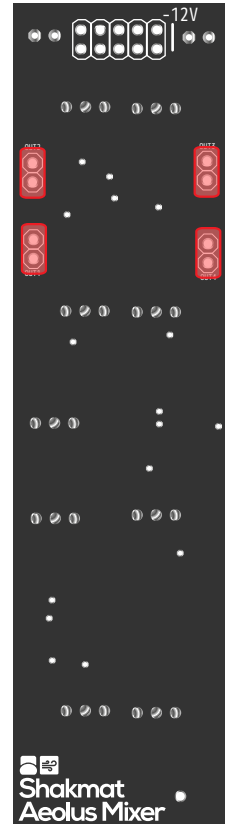


## 6.2 Bottom

### 6.2.1 2 pin male header (x4)



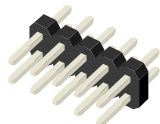
Place and solder the four two pin male headers at the back of the bottom PCB. Solder only one pin of each header, then check the alignment, correct if necessary, then solder the remaining points.



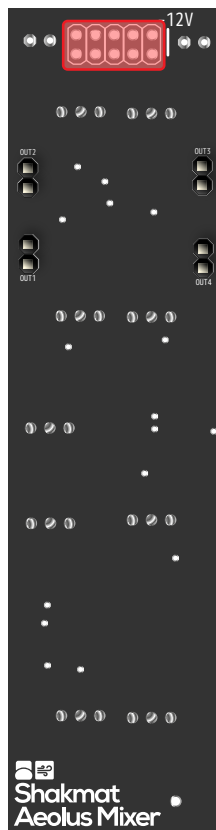
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## 6.2.2 Power header

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Place the power header, short pin side in the hole and solder only one of the pins. Check the alignment and correct with the same method as for a two pin header. Then, once your component is upright and flat with the PCB, solder the remaining pins.

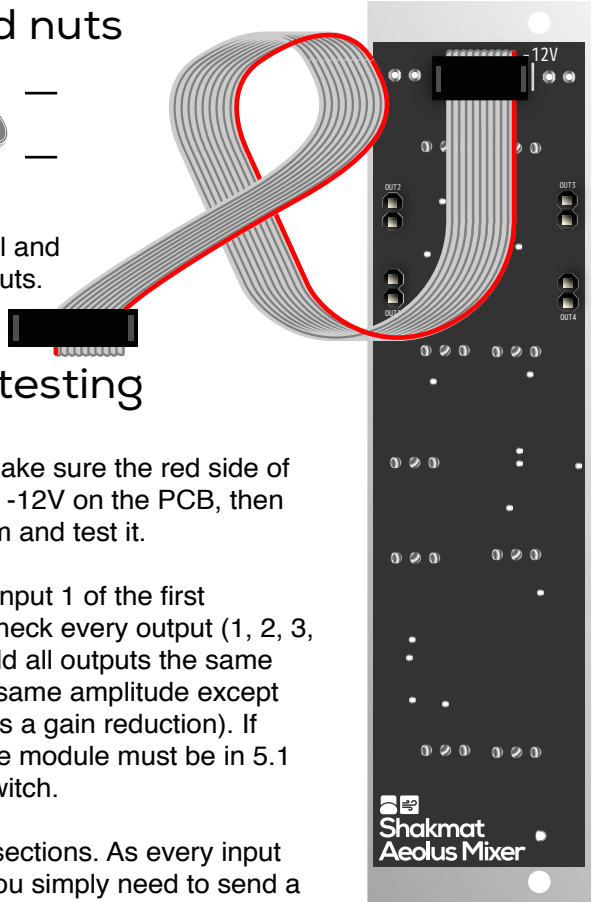


## 7. Front panel and nuts

Jack nuts (x22)



Re-assemble the two PCB together, mount the front panel and secure it with the twenty-two nuts.



## 8. Power & basic testing

Plug in the power cable and make sure the red side of the ribbon cable matches the -12V on the PCB, then plug the module in your system and test it.

Send an audio signal into the input 1 of the first quadraphonic input section. Check every output (1, 2, 3, 4, Center & Sum), which should all outputs the same signal as the input 1 (with the same amplitude except for the Center output which has a gain reduction). If outputs 1 and 2 are quieter, the module must be in 5.1 mode, simply toggle the 5.1 switch.

Now, let's test the other input sections. As every input section has a normalisation, you simply need to send a signal into the input 1 (or L for the stereo sections) and test outputs 1, 2, 3 and 4. When testing the second stereo section, mind the cross switch position which causes the L input to go to outputs 1 & 4 (instead of 1 & 3) and the R input to go to outputs 2 & 3 (instead of 2 & 4). To test the switch function you'll need to send two different signals into the L and R inputs.

If the module does is silent at any outputs, check the power cable, the power header solder pin and the electrolytic capacitors orientation and solder joints.

For any problem related to a specific input or output, recheck the corresponding jack socket solder pins plus the PCB to PCB headers solder pin close to it. For any problem related to a switch function, recheck the switch solder pins plus the PCB to PCB headers solder pin close to it.

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