● 8HP Eurorack Module ● Built & designed in E.U. ● www.shakmat.com

Shakmat Knight's Gallop 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 by email at support@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

Paper bag 1

2x Green LED
1x White LED
1x 1x8 pin male header
1x 2x5 pin power header
1x 78L05
6x Jack connector
4x Push button
4x Push button cap

Paper bag 2

2x Potentiometer
2x Potentiometer nut
6x Jack connectors nut
7x Amber LED
1x Quartz
1x M3 nut
2x M3 screw

Anti-static foam

2x PCB
1x IC & IC socket

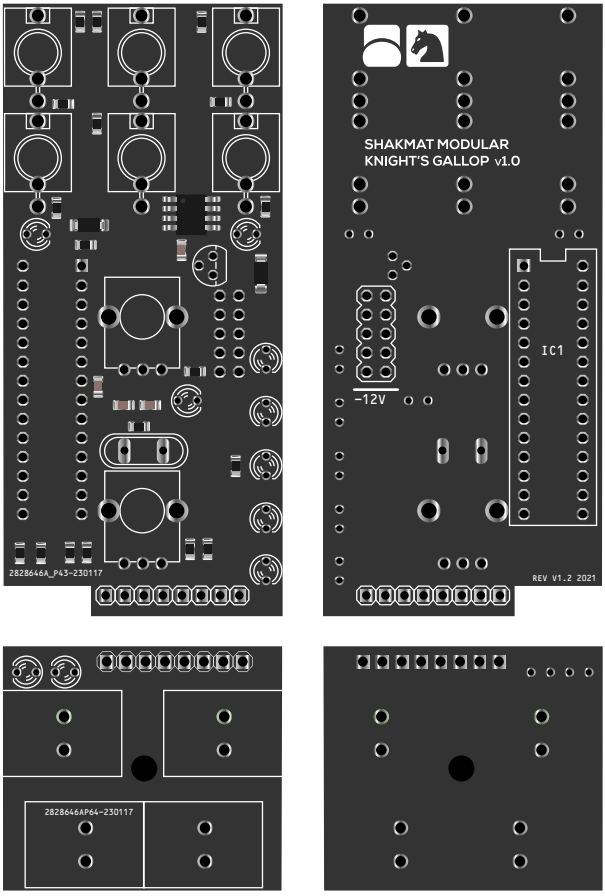
Loose parts

1x Front Panel
2x Black rubber knobs
1x Power cable
1x User manual

Necessay tools

Metal file
Soldering iron
Solder
Cutting pliers

3. PCB details

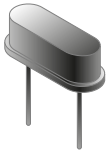


PCB
Top & bottom, back & front

4. Assembly

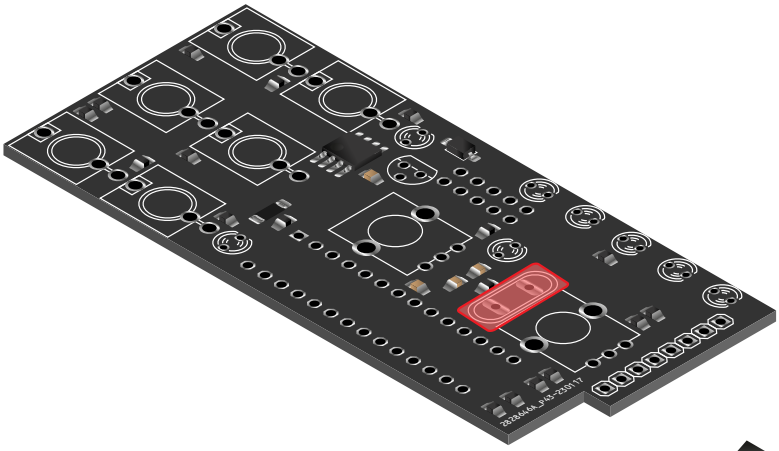
Top PCB, front side

4.1 Quartz

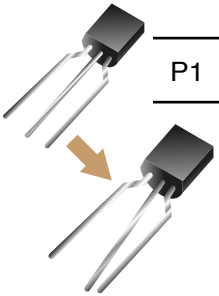


P2

Solder the quartz on the front side of the top PCB.
Be very careful to solder the component well and trim the legs flush.

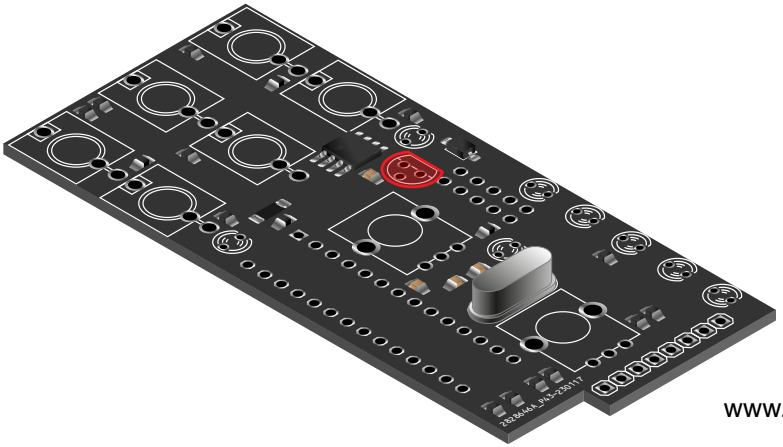


4.2 78L05

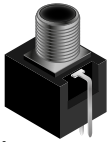


P1

Before soldering the 78L05, bend the central leg a little to help it sit flush with the PCB. Also pay attention to the orientation, the flat & round contour of the component have to match the contour of the PCB silkscreen.

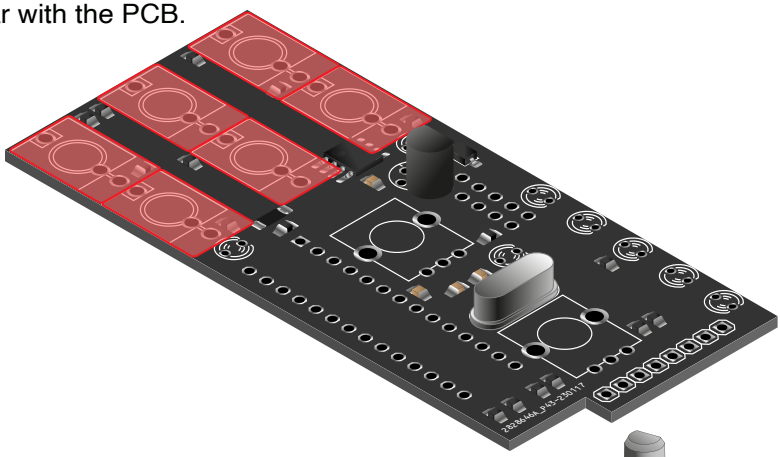


4.3 Jacks (x6)

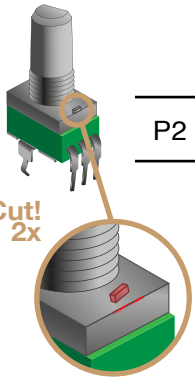


P1

To ensure perfect alignment of all the jack connectors, start by soldering the top-left one. Be sure to lay them completely flat & perpendicular with the PCB.

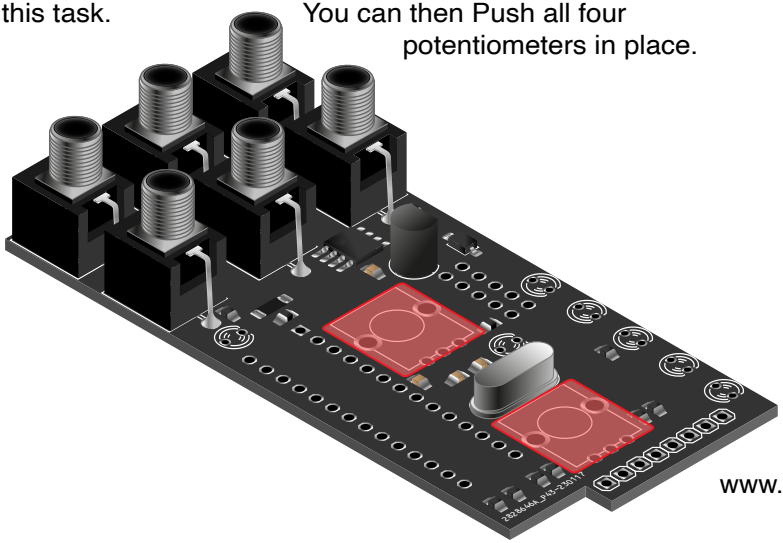


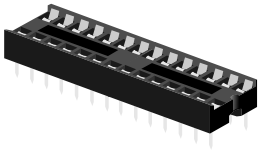
4.4 Potentiometers (x2)



P2

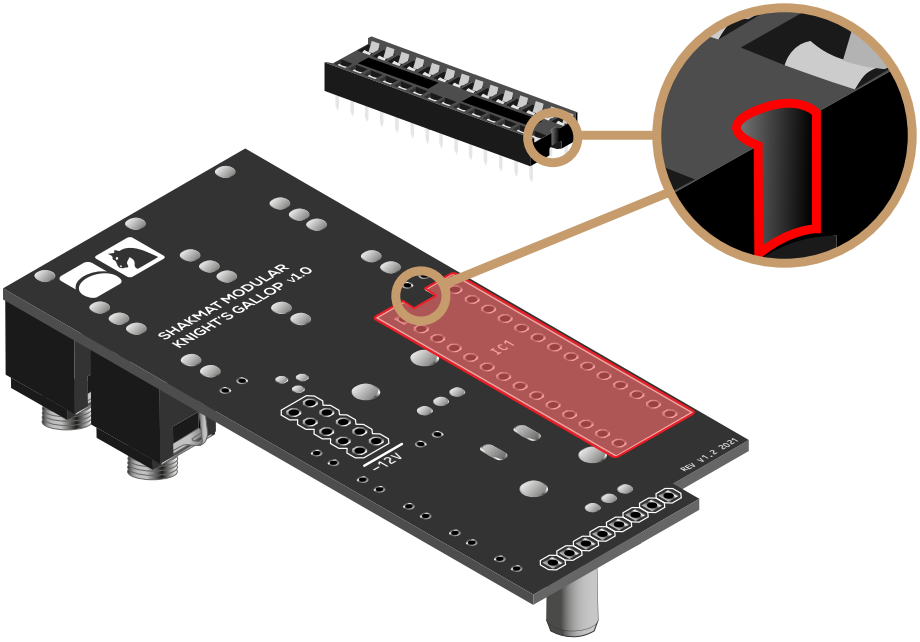
Before soldering, you have to cut a little metal piece off the top of the two metal potentiometer (as shown here to the right). This little piece prevents the front panel from sitting properly. Use some small & sharp cutting pliers for this task. You can then Push all four potentiometers in place.



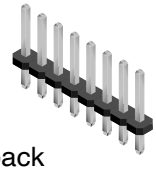


4.5 IC socket

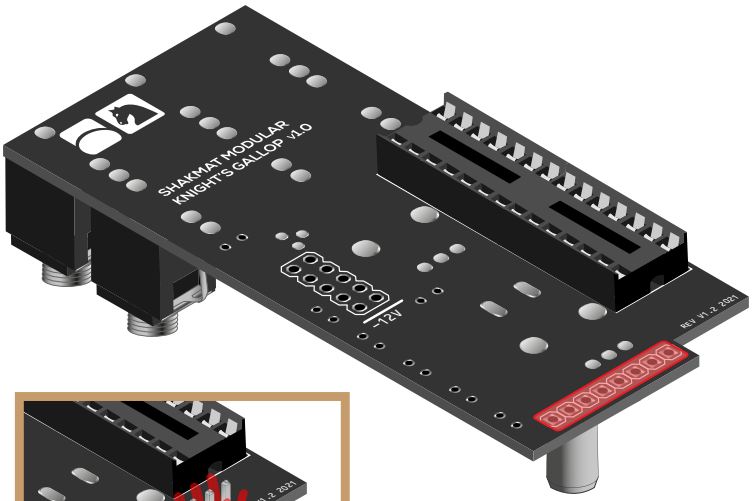
Place the IC socket and be sure to match the orientation shown by the silkscreen. The red line on the magnified picture shows the indentation that has to match the indentation on the PCB silkscreen. We recommend you to only solder one of the socket's pin, then check that the socket is laid flat with the PCB and if not, reheat the soldered leg and correct the alignment. Once you are satisfied with you placement, solder the remaining pin.

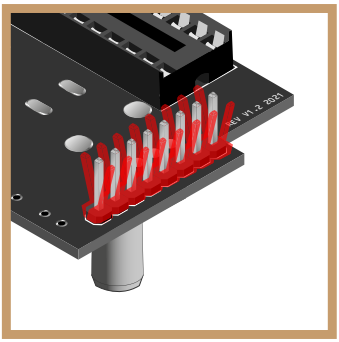


4.6 Interconnection header



The PCB interconnection header is also mounted on the back of the top PCB. For now we are taking care of the short legs side of the header. Be very carefull with this piece: it has to lay completely flat with the PCB and perfectly perpendicular. We recommand you to place de header and solder one leg then check alignment before soldering the remaining pins.





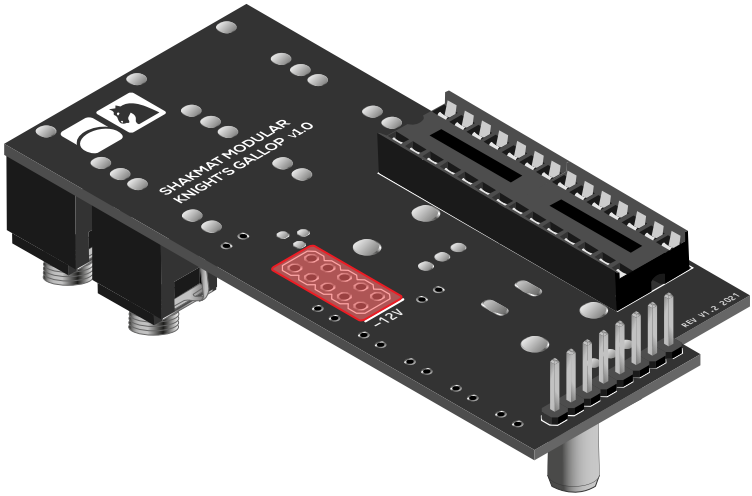
Caution !
The interconnection header needs to be soledered perpendicular and flat with the PCB

4.7 Power header

P1

Place the power header, short pin side in the holes.
Solder only one pin. If your power header is perfectly flat against the PCB, you can proceed with the relmaining points.

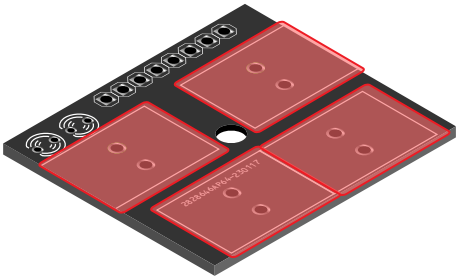
If you need to correct the alignment, reheat the soldered point and simultaneously press the plastic part of the header against the PCB until it's flat. Pull off the soldering iron but keep pressing the header and PCB together (use your finger nail to push on the plastic part). Avoid touching the pins themselves because they will become hot very quickly and move out of alignment within their plastic bracket. Once you are satisfied with you placement, solder the remaining points.



4.8 Push buttons (x4)

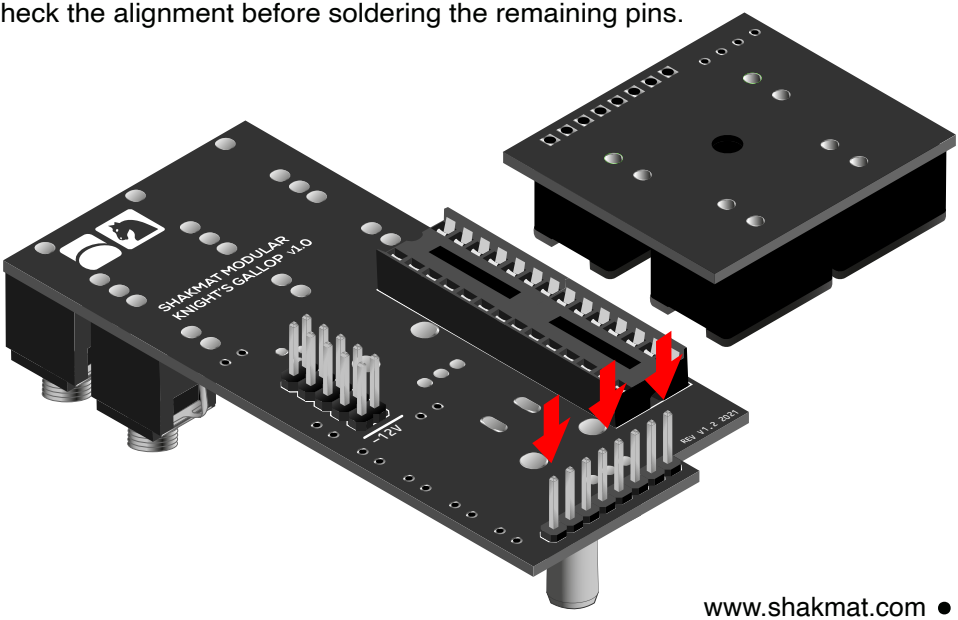
P2

The buttons are easy to solder but they need to be thoroughly pushed on the PCB. Before soldering, we recommand to place the four buttons, then flip the PCB and press it against your table in order to ensure that every button is well placed.



4.9 Top & bottom PCB connection

Be very carefull that the header you're soldering is well passed through all the bottom PCB holes and that the two PCB's are perfectly horizontal. **If there is a gap between the header and the PCB's, or if they're not correctly aligned, the push button could be pourly placed and hard to press.** As you did before, we recommand you to only solder one pin of the header and check the alignment before soldering the remaining pins.

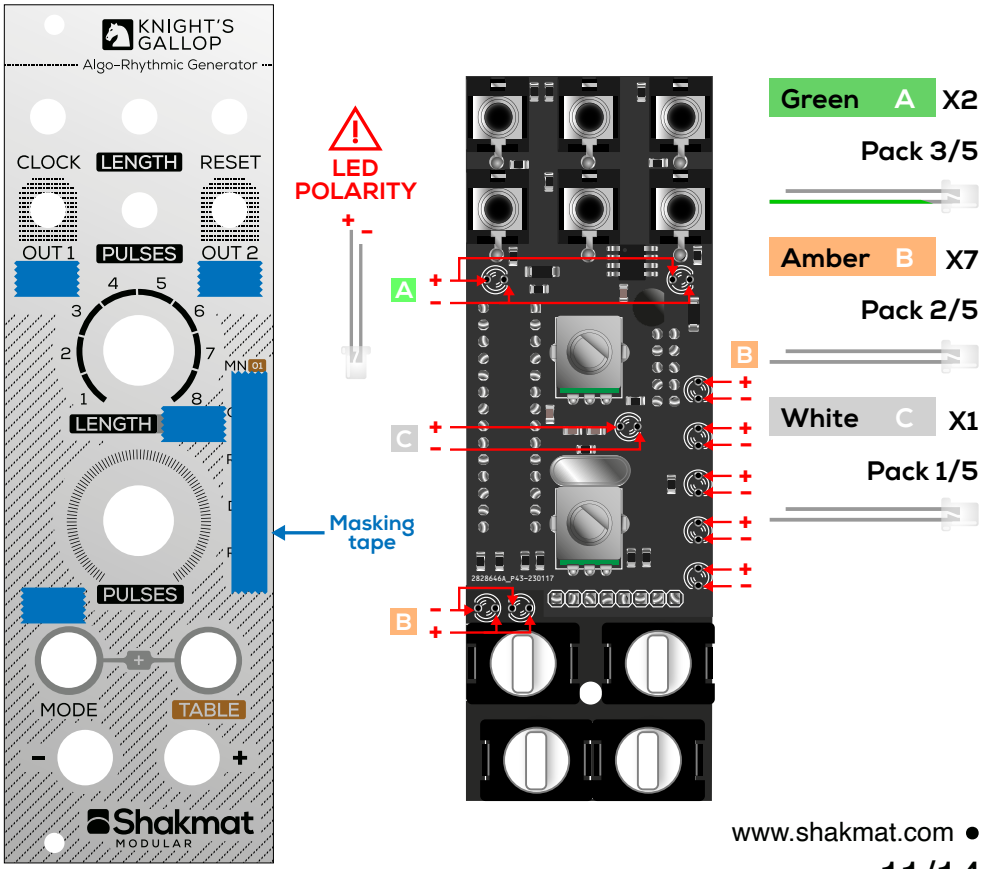


4.10 LEDs

To get well soldered LED flush with the panel, you need to assemble the front panel to the PCB. We recommand you to do this by finger tightenning the two hex nuts on the potentiometers.

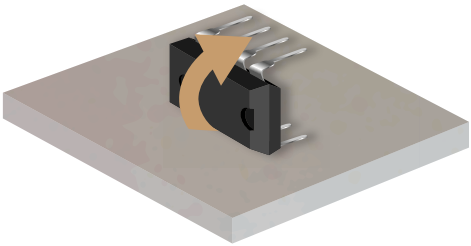
Then, place masking tape to cover the panel LED holes. Therefore you can place the LED on the PCB, assemble the PCB and front panel with the potentiometer nuts and push every LED's through the panel until they sit flush and stick to the tape. Only then, solder them.

Be carefull with the LED polarity, the long leg is always the positive side. Please refer to the following picture to know wich LED goes where. You also need to pay attention to not mix LED's from different packs, when inactive the clear LED's are very hard to differenciate from each other.



4.11 IC, nuts, bolts and caps

It’s now time to plug the IC in its socket. Make sure the IC orientation matches the socket orientation (indentation on the IC must match indentation on the IC socket). The legs of the IC are generally bent outward a bit too far to easily get them into the socket. To ease the process you can bend the leg rows inward by pushing them flat on your table, as shown below.



You can now place the six knurled nuts on the jack connectors and the M3 nut on the screw that is welded on the back of the front panel. The function of this nut is to prevent the bottom PCB for bending when the buttons are pushed. Do not screw the M3 nut to far or it will push the bottom PCB out of it’s parallelism with the top PCB and interfer with the buttons caps. Just tighten it until it sits flush with the bottom PCB. To prevent this nut to move over time, we recommand you to put a small amount of nail polish on it. Some glue will also do the trick but can be problematic to remove if you need to unscrew this nut.

Finally, mount the four buttons caps and two potentiometers knobs. Plug the power cable and make sure the red side of the ribbon matches the -12V on the PCB. Now let's plug the module in your system and test it. The module LEDs doesn't blink if the module isn't running. So don't panic if the modules seems quiet when nothing is connected to it.

A fast and easy way to check if the module is working is to feed the clock input with a trig gate signal and mangle with the potentiometers, both LEDs should be blinking. If ever you get some troubles or questions, send us an email at support@shakmat.com.

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