



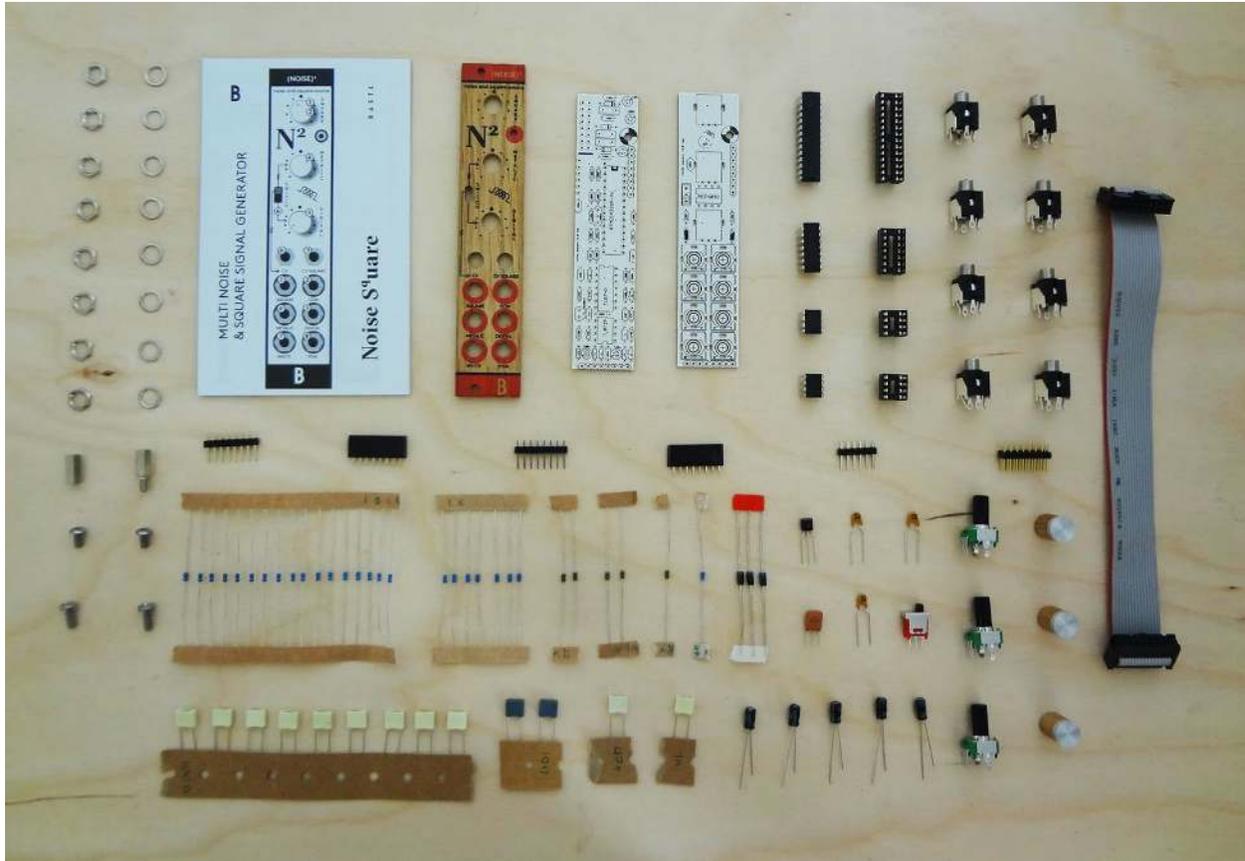
NOISE SQUARE V1.0 ASSEMBLY

Before starting this kit, prepare the following tools: Soldering iron (15-20W will do), flush cutters, small hex screwdriver or allen key and phillips screwdriver. Also briefly go through this guide and make sure that you understand all the steps, if you are having any troubles don't hesitate to seek help at the forum. We suggest that you work in a clean and a well lit environment to avoid accidents or losing any of the small components.

IMPORTANT!

If you have never soldered before, check out this great [tutorial first](#).

And please check that your boards are the same version as this guide and that your kit contains the following items:



BOM – BILL OF MATERIALS

17 x 100k resistor	1 x 74 IC	1 x 14 pin socket
7 x 1k resistor	1 x 2N3904 transistor	2 x 8 pin socket
2 x 22k resistor	1 x ATMEGA328	1 x 28pin socket
1 x 270k resistor	1 x 20MHz resonator	1 x MCP6002
1 x 47k resistor	8 x jack connector	1 x ribbon cable 2x8
2 x 470k resistor	3 x 1N4007 diode	3 x pot knob
9 x 100nF capacitor	3 x 100mA fuse	1 x nut - nut hex spacer
1 x 1n capacitor	3 x 100k potentiometer	1 x nut - screw hex spacer
2 x 10n capacitor	1 x 2x8pin male header	8 x jack washers
5 x 10uF capacitor	1 x 22pin male header	8 x jack nuts

1 x 47n capacitor	1 x 16pin female header	2 x 6mm screws
1 x 72 IC	1 x switch	2 x 8mm panel screws
2 x PCB	1 x Front panel	

The NOISE SQUARE module consists of two boards, the top board is used for all of the UI components and the bottom board is the heart of the sound generating circuit.

BOTTOM BOARD

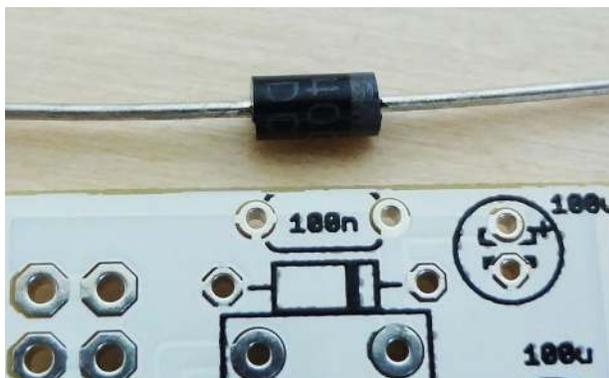
Lets start with the bottom board, with the shortest and smallest parts.

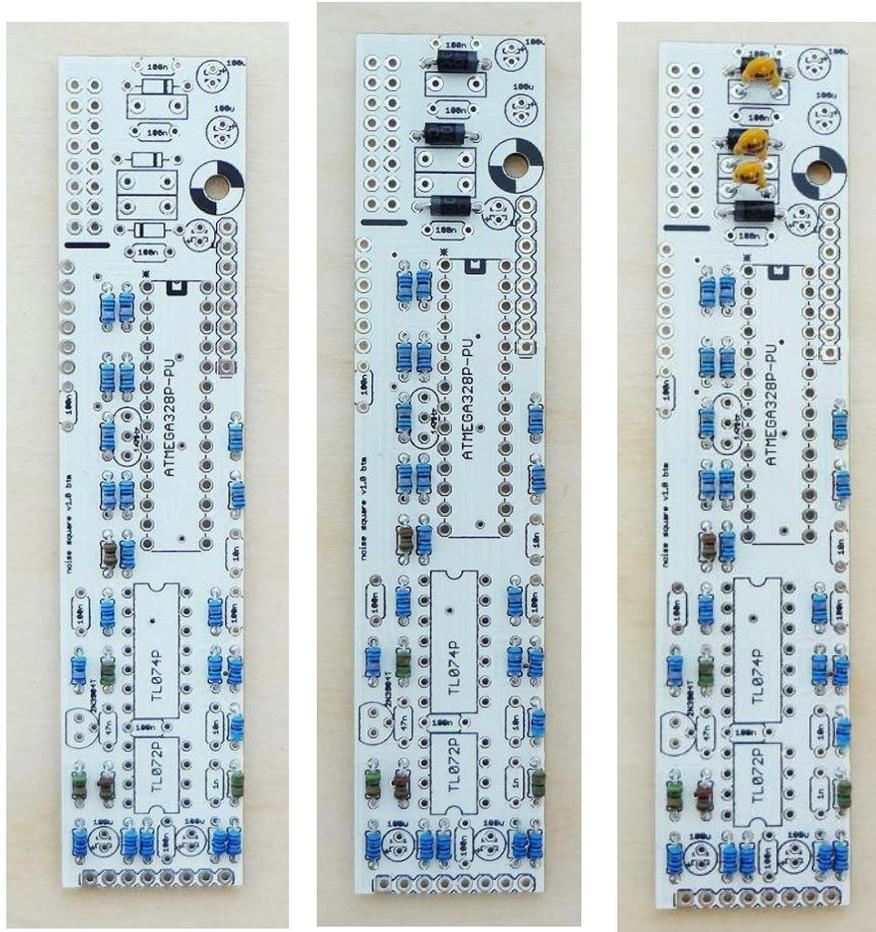
Take a strip of resistors and look up the values printed on the circuit boards. Start with the 100K, since there are 13 of them it will be easier to locate the rest on the board. Place them through the board, solder them and clip off the excess leads. Do the same for the rest of resistors.

Your board should look like this (click on the images to enlarge):

Next populate the board with the diodes and solder them in. Be careful though, diodes are **polarized!** Make sure that the marking ring on the diode body matches the marking on the circuit board.

Now move on to the protective fuses. They look quite similar to ceramic capacitors and are placed in the blank rectangular markings on the board between the diodes.





Next place and solder the sockets. Make sure that the notch is in the **same direction** as printed on the circuit board.

Then add the capacitors, there are nine 100n capacitors (marked 104), two 10n (103) one 1n (102) and one 47n (473). They might be in ceramic or polyester film package, don't worry they are not polarized.

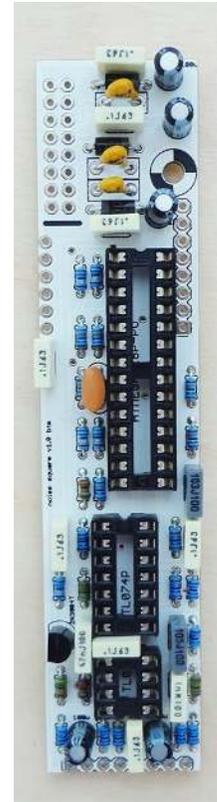
Next solder in the 2N3904 transistor and the 20MHz resonator, its an orange component with 3 leads, don't worry it's not polarized.

ATTENTION!

Wrong label on the board. The 100uF electrolytic capacitors are replaced with 10uF.

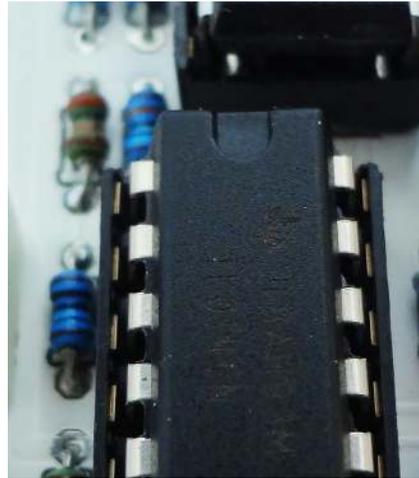
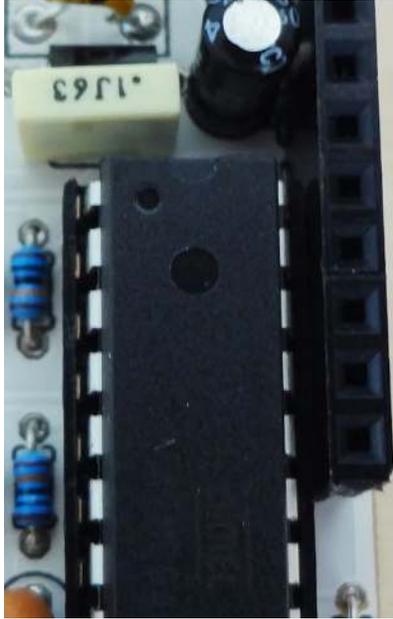
Now, it's time for more capacitors. Take the five 10uF capacitors and place them on the board. Be careful, these are **polarized!** capacitors and should be soldered the **right way** in. There is a + marking on the circuit board that should match the long lead of the capacitor, the - side is also marked on the body of the capacitor with a white strip.

Your board should look like this now.



SUPER MEGA IMPORTANT!!! RESPECT CHIP POLARITY.

Before connecting the boards together again, insert the IC chips into their sockets of the bottom board. Again make sure that the **notch** on the chips is **facing the same direction** as the notch on the sockets.



BOTTOM BOARD BACK SIDE

Take the 16 pin power connector and place it also on the back side of the board. It might be tricky to solder it straight, but you can place something like your cutter under the board to hold it level. Also first solder in just one of the pins, then take the board in your hand and re heat that pin while pressing down on the header to align it (be careful though, you don't want to touch the pin you are heating up) wait for it to cool and solder the rest of the pins. Do the same for the programming header.



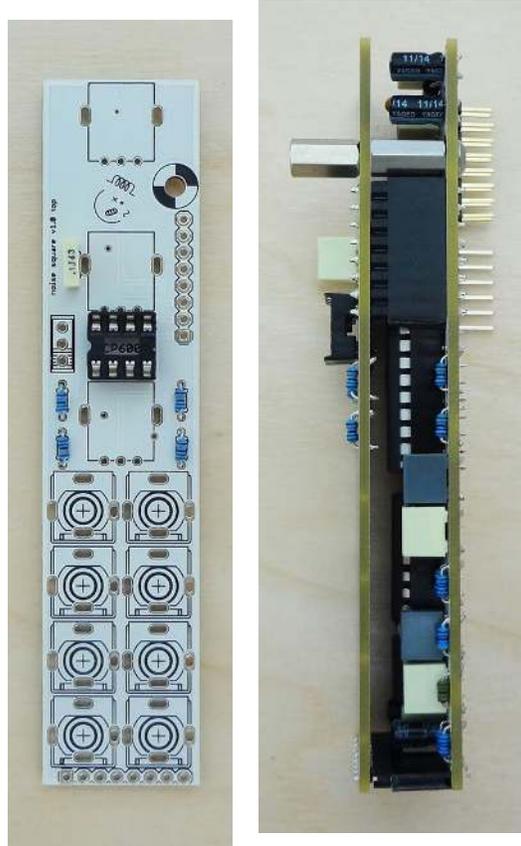
TOP BOARD

Now populate the top. Again start with the remaining resistors and solder them in. Then solder the IC socket and the 100n capacitor. Make sure that the notch on the socket matches the print on the board.

ATTENTION!

Wrong label on the board. The crossed out resistor value is 100K.

Now to ensure that the headers are properly aligned, screw the hex screw and the standoff on bottom board. Place the female headers on button board with the male pins inserted. Now place top board, screw with the standoff screw and finally, solder the headers to both boards. Just like in the image below.



Unscrew the top spacer again and disconnect the two boards.

Place the three potentiometers to their respected places on the board. Push them well until they **sit absolutely flat on the board**, but don't solder them yet.

Next, place the mono jacks on the board and the switch.

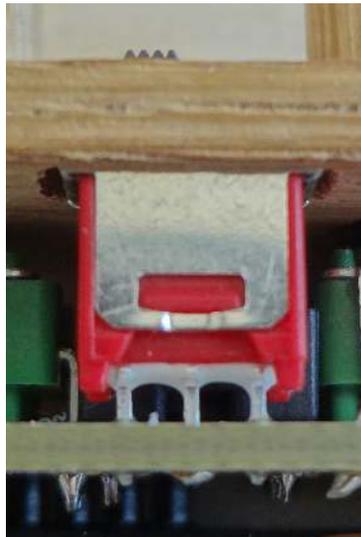
Again we want to make sure that all the **components are properly aligned** with the front panel, so take the standoff and place it in the opening. Check that all the components came through and then screw the wooden front panel with the second hex screw. Also secure the jacks to the panel with the washers and the nuts.

IMPORTANT

Don't tighten the screws and jack washers too much as you may damage them!



The switch **should have some space** off the board, or else it won't come through the panel, like in the image below. Solder the switch and the rest of the components.



Congratulations! You have made it through, now just connect the bottom board, add the knobs and you are ready to enjoy your new module.



Before you connect anything, make sure that your system is disconnected from power. Also double check the polarity of the ribbon cable, the red cable should match the -12V rail both on the module and on the bus board!