Synth Controller
Building instructions V3.5

(Board V3.4 06/2024)

Building instructions 'Stereoping Synth Controller' V3.5
Stereoping Germany, Meschede 2024

Hi

and thank you for having chosen the 'Stereoping Synth Controller' assembly kit. If you were looking for the manual you are unfortunately wrong here, this is the building instructions for getting together the assembly kit. You can find the manual here: www.stereoping-shop.com → Downloads → SynthController

With version 3.x the Synth Controller will be produced in SMD technology (Surface Mounted Device). This means the majority of electronic parts is already soldered correctly onto the circuit board. You only need to populate the following parts:

- 16 potentiometers
- 3 jacks (all 3 are populated from the backside of the pcb!)

The kit and the instructions were developed very thoroughly and are verified multiple times. We can not be held responsible for any problems or damage caused by the building or usage of this assembly kit.

These instructions contain the following parts:

1. Content of the kit

2. Building the kit

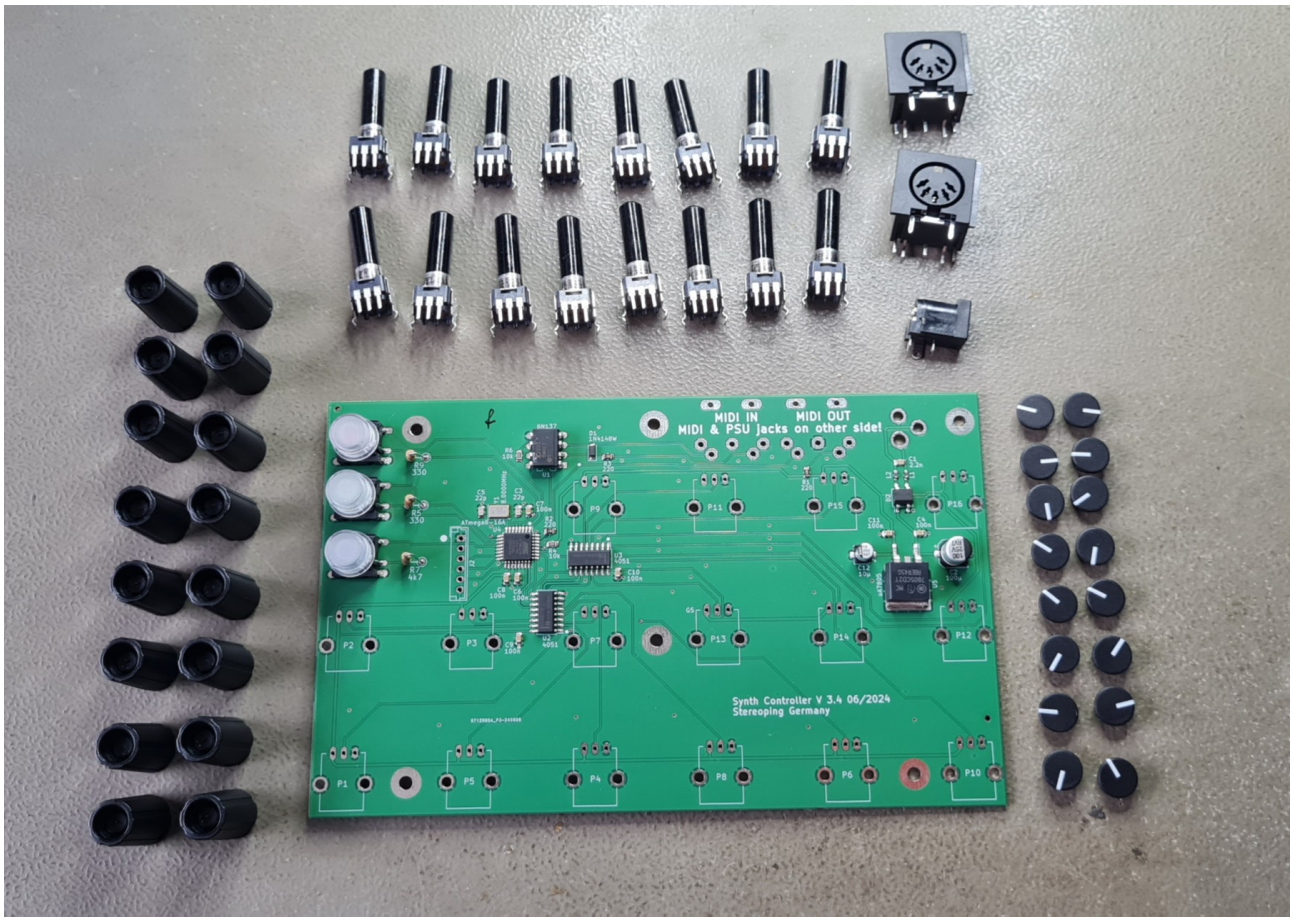
3. Assembly, firmware flashing & attaching knobs

4. Technical data

5. Imprint

1. Content of the kit

- Metal case (not in the picture)
- PCB with preassembled buttons
- 16 x potentiometer (10k linear)
- 2 x Midi-jack
- 1 x Power-jack
- 16 x knob body
- 16 x knob cap



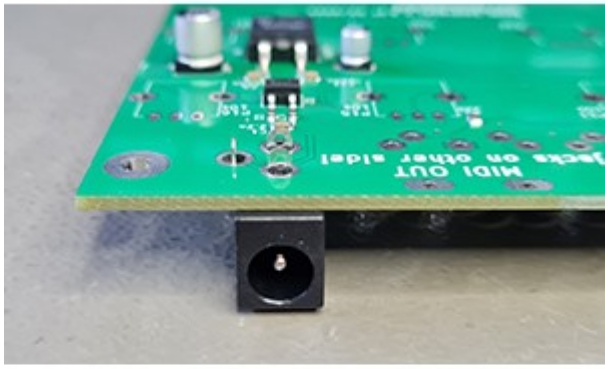
2. Building the kit

Tools you will need

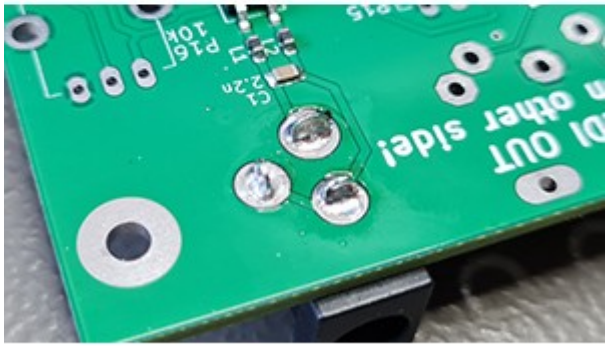
To build the kit you will need the following tools:

- solder iron or better a solder station
- lead free or leaded solder (works perfect with both)
- a philips screwdriver mid size for the screws holding the pcb into the upper half of the case and to screw the two halfs of the case together

Power- and Midi-jacks

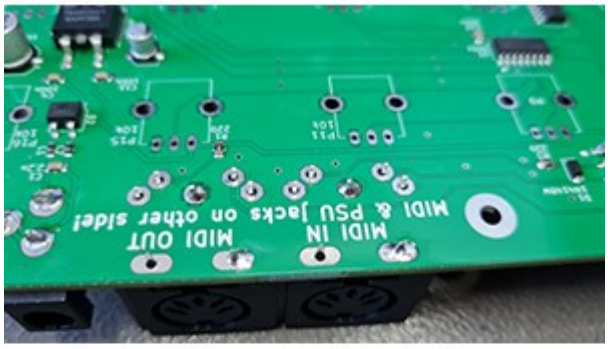


Caution! The jacks for power and midi will be put on the pcb's backside. It is important to have all 3 jacks aligned flat on the pcb like in pics to the right. Otherwise your midi- or power-cables plugged in later will sit crooked. That's not what you want.

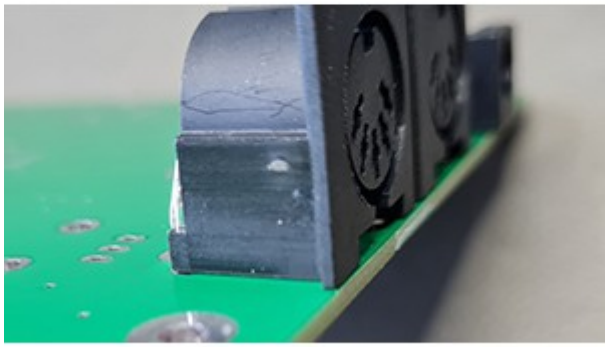


First populate the power jack and place the PCB with the part side upwards as in the 1st picture. Also have a look from above to insure it's rectangular to the PCBs's edge, then solder it in this position.

For the Midi jacks it's best practice to first solder one of the front pins and the middle pin of the 5 back pins. Turn the PCB around and have a thorough look onto the area where the jack hits the pcb. There should not be any gap. If there is one, press the jack onto the pcb with forefinger and thumb and heat up the solder again, the jack should jump into the flat position then.



Solder all pins of the jack and do not be stingy with solder. If you own a soldering station, give it another extra heat now.

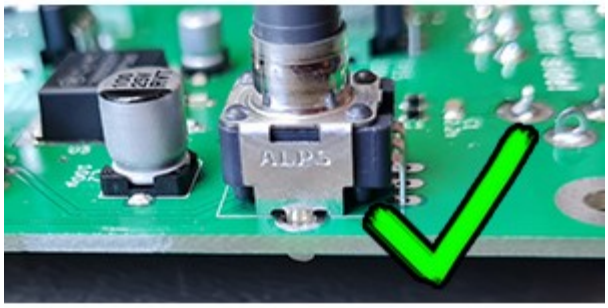


Potentiometer

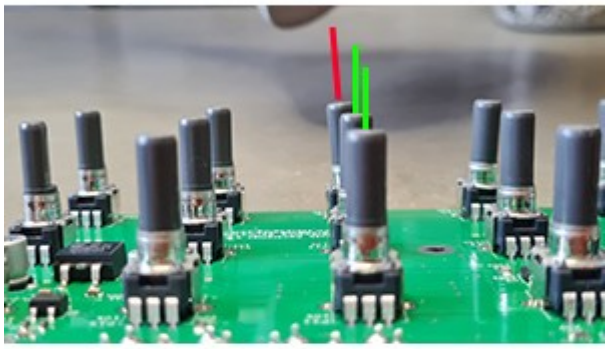
There are some serious traps here. To get a pot straight again after it was soldered in a crooked orientation is NOT fun. Put them all in place but do not solder them yet!

Trap 1: have a careful look on all 3 pins to find their drilling holes before pushing the pot down onto the pcb. The pins could be bent from transportation. It happened to ourselves we overlooked one leg and twisted it seriously while pressing the pot's metal brackets into the pcb with force.

In addition both cones of the bracket on both sides of the pot must lie flat on the pcb. In the second picture you see a bracket snapped into the pcb but the pot is touching the PCB.



Trap 2: the pots have some slight freedom to move. There might be the one or other pot pointing into a crooked direction. You therefore have to examine each of the 16 pots for being in line with the others when you look with one eye straight through the lines.

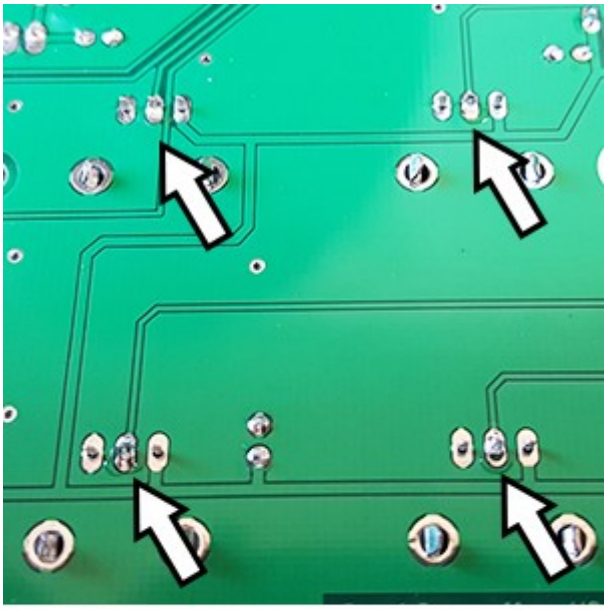


If you are sure each pot is perfectly vertical you can put the pcb on the table with the pot axis facing down and start to solder the middle pin of each pot. Then check all pots again. It also makes sense to lay the pcb into the upper half of the steelcase for having a look with another reference.

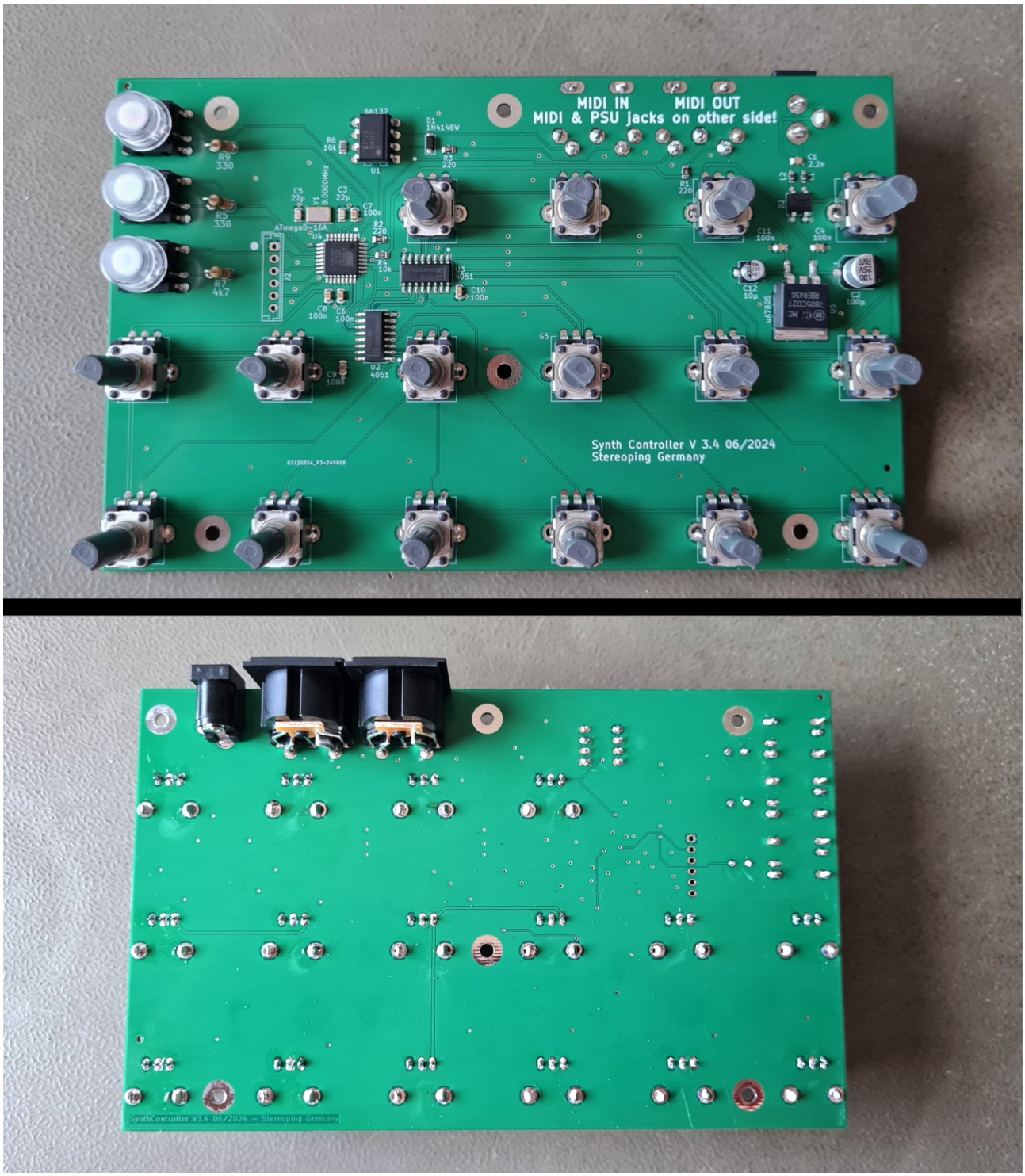
If everything is still in position you can finally solder all the other pins.

I increase the temperature of my solder station because the metalbrackets conduct a lot of the heat away from where we want it. It works better with more heat. After having soldered some brackets i clean the tip to get rid of the slag. New solder will not get tainted by the slag, resulting in a better fluid characteristics and heat conduction and therefore a better soldering result.

A quite good solder result is shown in the pictures to the right.



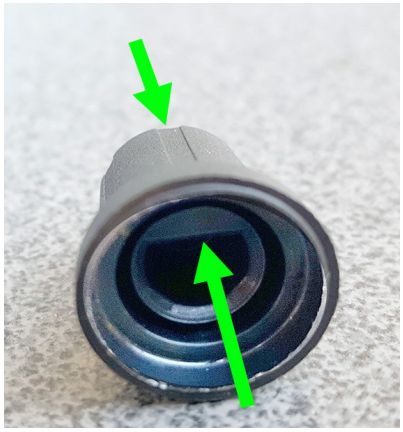
Your built should look like this



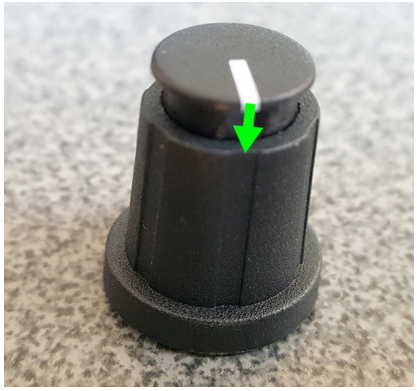
Assembling the knobs

Note: the pictures show the skirted knob of the Programmer, your's should longer and without skirt. The principle is the same on both.

As you purchased a DIY Kit, there is another step: assembling the knobs and their caps. Now each knob got a flat side for the D-axis. One of the 6 indentations on the outside of the knob exactly matches this D-axis side.



This is the indentation where to align the cap's marking.



f you press the cap into the knob using both thumbs ...

... or if you prefer to put the knob on the table and press the cap into position with one thumb (or whatever) is perfectly up to you.

If you happened to screw the alignment: press a cutter's blade between knob and cap to hinge the cap from the knob for the next try.

3. Assembly, firmware flashing & attaching knobs

Now you screw the PCB into the upper half of the steelcase using the 6 threaded screws. Screw all 6 losely first to allow the pcb to center itself. Then screw them tight, well not too tight, a bit tight will do.

Next step is flashing the firmware: connect the power supply and press the first button, the second LED should light up. The Synth Controller is in bootloader mode, ready to be programmed with the edition's firmware through MIDI IN. Please check the manual how to flash the firmware. There is also a video on youtube about the fashing process. Just do a search for ‚Synth Controller firmware flashing'.

At least use the black screws to connect the halfs of the steelcase. Make it the same way: all 4 screws losely first to center the steelcase halfs, then screw them in fully.

Putting the knobs onto the pots: you can't do anything wrong when putting them onto the pots, they center themselves automatically. The flattening of the knob must suit the flattening of the potentiometer of course.

Congrats

Your Synth Controller is finally finished and you can be proud for having it built on your own. Now we wish you happy knobbing.

4. Technical data

Do It Yourself assembly kit for Hardware Midi Controller

Connections: Midi In, Midi Out, Power supply

Operation voltage: 9-12 V, any polarity will work, even 9V AC power supplies can be used.

Current flow ~30 mA

Size incl. knobs 180 x 130 x 60 mm

Weight incl. plastic knobs 661 Gramm

5. Imprint

Adress Stereoping
Gregor Zoll Musikelektronik
Hermann-Voss-Str. 21
59872 Meschede
Germany

E-Mail hello@stereoping.com

Homepage http://www.stereoping.com